Examining Predictors, Moderators, and Mediators of Parent Management Training and Collaborative and Proactive Solutions for Children with Oppositional Defiant Disorder

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Doctor of Philosophy

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Certificate of Original Authorship

I, Anna Dedousis-Wallace, declare that this thesis is submitted in fulfilment of the requirements for the award of Doctor of Philosophy, in the Graduate School of Health at the University of Technology Sydney.

This thesis is wholly my own work unless otherwise referenced or acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

This document has not been submitted for qualifications at any other academic institution.

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Statement of Thesis Format

The present work is in the format of thesis by compilation, including a mixture of published and unpublished works. The content of manuscripts of published papers is identical to the published versions.

Publications and presentations

Publications

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Abbreviations used:

ADHD - Attention Deficit-Hyperactivity Disorder

ADIS-C/P - Anxiety Disorders Interview Schedule (Child and Parent Version)

ADIS CSR - Anxiety Disorders Interview Schedule, Clinician Severity Ratings

BPT - Behavioral Parent Training

CD - Conduct Disorder

CP - Conduct Problems

CPS - Collaborative and Proactive Solutions

DBDRS - The Disruptive Behavior Disorders Rating Scale

DSM - Diagnostic Statistical Manual

HNC - Helping the Non-Compliant Child

IY - The Incredible Years

IY-PT - The Incredible Years, Parent Training

ODD - Oppositional Defiant Disorder

PCIT – Parent-Child Interaction Therapy

PMT - Parent Management Training

PMTO - Parent Management Training Oregon Model

RCT - Randomised Controlled Trials

SES - Socio-economic Status

Triple P - Triple P-Positive Parenting Program

Abstract

Disruptive behaviour disorders, such as Oppositional Defiant Disorder (ODD), are associated with significant impairment as well as considerable societal and economic burden. Parent Management Training (PMT) and Collaborative and Proactive Solutions (CPS) are evidence-based treatments used to treat ODD. While both treatments have shown significant reductions in ODD, there is substantial room for improvement. Examining predictors, moderators and mediators of treatment response may be key in furthering our understanding of how to improve the outcomes associated with both treatments. The overarching aim of this thesis is, therefore, to investigate potential predictors, moderators and mediators for both PMT and CPS for youth with ODD.

Study 1 is a systematic review investigating parental and familial predictors and moderators of improvement in PMT for conduct problems. Twenty-one studies were included in the review. Of these studies, only five examined moderators of treatment outcomes. Results indicated that a positive parent-child relationship was most strongly associated with better outcomes; however, little additional consistency in findings was found. Study 1 highlights gaps in the existing literature and partially informed the selection of variables to explore in Study 2. The exploration of predictors and moderators of behavioural improvement in children presenting with ODD following treatment with PMT and CPS was the goal of Study 2. Initial problem severity, inconsistent discipline, parental attributions of child misbehaviour, and child lagging cognitive skills were examined. Each of these variables were found to predict treatment outcomes but only parental attributions of child misbehaviour moderated treatment outcome - better outcomes were found for CPS than PMT when parents had high pre-treatment child-responsible attributions. Study 3 aims to contribute to our understanding of how treatments for ODD work by extending our findings from Study 2. Specifically lagging skills, inconsistent discipline, and parental attributions were examined as

possible mediators of behavioural improvement in children who received treatment (PMT or CPS). We used a longitudinal mediation analysis framework to address issues associated with a lack of temporal precedence in previous mediation studies. Inconsistent Discipline emerged as a significant mediator of changes in disruptive behaviours, whereas parental attributions and child-lagging skills did not. Study 3 highlighted the complexity inherent in understanding treatment mechanisms, and the need for further nuanced investigations is discussed.

In summary, this thesis represents a significant, albeit tentative, step in advancing our understanding of which individuals benefit most from CPS or PMT in the treatment of ODD in children. Overall, it provides insight into the possible mechanisms of change underlying these two treatments.

CHAPTER 1

General Introduction

Disruptive behaviour disorders are associated with significant impairment as well as significant societal and economic burden (Kessler et al., 2012). Of these disorders, Oppositional Defiant Disorder (ODD) has been identified as the most common in children and adolescents (Kessler et al., 2012). Due to its prevalence and associated costs, effective treatment programs have been a focus of considerable research with Parent Management Training (PMT) considered the "gold standard" treatment for ODD. Despite the strong evidence base for PMT, a significant portion of individuals do not benefit to a satisfactory degree with symptoms continuing to be observed in up to 50% of children and adolescents following treatment (Murrihy et al., 2023). In light of this, there has been a call to better understand how, for whom, and under what conditions these treatments work in the hope of offering avenues to optimise treatment outcomes (Forehand et al., 2021; Kazdin, 2007; Kraemer, et al., 2002). As such, exploring predictors, moderators and mediators of treatment outcomes represents a step towards this goal. Unfortunately, the exploration of such factors within disruptive behaviour disorders has been limited and is discussed in the literature as a work in progress (Forehand et al., 2021; Prins et al., 2015). The aim of the current thesis is to contribute to advancing our understanding of the aforementioned factors by exploring predictors, moderators and mediators of two treatments for ODD - the well-established PMT (Forehand et al., 2014) and an emerging, but promising, alternative intervention: Collaborative and Proactive Solutions (CPS; Greene, 2010; 2023),

Classification, prevalence, comorbidity and burden of ODD

Conduct problems are characterised by a range of disruptive behaviours, from mild behaviours like temper tantrums and minor defiance to more severe behaviours such as

stealing, destruction of property, and physical aggression (American Psychiatric Association [APA], 2013; Murrihy et al., 2010). Children with persistent conduct problems typically meet the Diagnostic and Statistical Manual (DSM) criteria for either ODD or Conduct Disorder (CD). Originally, ODD was characterised solely by hostile and defiant behaviours and was seen as a benign, less severe form of CD, raising concerns about potentially pathologising normative childhood behaviour (see Burke et al., 2022 for a discussion). Its significance was primarily understood in relation to its function as a precursor to CD (Nock et al., 2007b; Rowe et al., 2010). However, over the past two decades, emerging evidence has significantly reshaped the conceptualisation of ODD, driven by advancements in theoretical and developmental models of ODD (e.g., Burke et al., 2014; Greene & Doyle, 1999; Lavigne et al., 2015; Loeber et al., 2009; Ollendick et al., 2018). These developments have led to a change in the DSM criteria, from a unidimensional structure of ODD symptoms marked by hostile and defiant behaviours, as reflected in the DSM-IV (APA, 1994), to a three-factor conceptualisation of ODD in DSM-5 (APA, 2013). The current diagnostic categories now include symptoms related to angry/irritable mood, argumentative/defiant behaviour and vindictiveness. (APA, 2013). This inclusion of emotional symptoms in the diagnosis of ODD serves as a distinct differentiation from the behaviour-based diagnosis of CD. The current thesis focuses on ODD[1].

Classification

Commonly emerging before adolescence (Demmer et al., 2017), youth with ODD exhibit a pattern of (1) angry/irritable mood, (2) argumentative/defiant behaviour, or (3) vindictiveness (APA, 2022). Additional symptoms associated with the emotional dysregulation component of ODD include loss of temper, being easily annoyed and often

[1] Whilst the focus is on ODD much of the literature encompasses disruptive behaviours, conduct problems and symptoms related to ODD.

angry and resentful. Argumentative and defiant behaviour encompasses frequent conflict with adults or authority figures, refusing to comply with requests from authority figures or follow the rules, deliberately annoying others, blaming others for mistakes and acting vindictively towards others. According to the Diagnostic and Statistical Manual of Mental Disorders 5th edition (DSM-V; APA, 2013), for a diagnosis of ODD to be met, four of these symptoms must be present over a six-month period, exhibited during interactions with at least one individual who is not a sibling, and the behaviour problems must cause significant impairment in functioning in at least one setting. While it is not uncommon for individuals to show symptoms only at home, and only with family members (APA, 2013), the pervasiveness of these symptoms across school and community settings is an indicator of the severity of the disorder (APA, 2013; Frick & Nigg, 2012). Also, those meeting criteria for ODD often do not see themselves as oppositional or defiant, but instead often justify their behaviours as a response to unreasonable demands and circumstances (APA, 2013). This may make it difficult to disentangle the individual's contribution from the problematic interpersonal interactions the individual experiences (APA, 2013).

Prevalence

ODD is one of the most common behaviour disorders in childhood and adolescence (Kessler et al., 2012). In the National Comorbidity Survey Replication study (Nock et al., 2007a), where approximately 10,000 families from the United States participated in a face-to-face household survey, ODD had an estimated lifetime prevalence of 10.2% and point prevalence rates as high as 8.3%. These figures did not significantly differ for males (11.2%) and females (9.2%). The study by Nock and colleagues (2007a) was a landmark study as it represented the first attempt to provide an estimate of the prevalence of ODD in the United States. Unfortunately, several important limitations compromised its generalisability. Specifically, using retrospective self-report data meant some errors in recollecting events

and/or symptoms may have been present. Furthermore, it represented a departure from established research and clinical protocols in which the diagnosis of ODD is made by incorporating clinical information provided by two parties i.e., parents and teachers (Nock et al., 2007). More recent research indicates that the prevalence estimates in the general population may vary from 3.3% to 8.8%, with no apparent differences across countries or cultures (Canino et al., 2010; Ezpeleta et al., 2019; Polanczyk et al., 2015). These variations are dependent on factors such as age, gender and methodological differences across studies, such as the assessment tools employed to determine a diagnosis. (Canino et al., 2010; Ezpeleta et al., 2019; Polanczyk et al., 2015).

In contrast to Nock and colleagues' (2007a) early findings, others have found prevalence rates of ODD to vary by gender, with boys being diagnosed at a significantly higher rate than girls (male = 1.59; females = 1; Demmer et al., 2017). However, this gender gap diminishes as children transition into adolescence and adulthood (Canino et al., 2010). Interestingly, in a meta-analysis examining the male: female prevalence ratio for ODD during middle childhood found that, in non-referred children, this sex difference was only evident in Western countries (Demmer et al., 2017). While speculative, there is a suggestion that cultural differences in sex roles may be influential in diagnosing ODD with the sex difference reflecting either a decreased prevalence of ODD in boys from non-Western cultures or an increased prevalence of ODD in girls from non-Western cultures (Demmer et al., 2017). However, considering other evidence that culture does not explain disparate prevalence rates around the world (Canino et al., 2010; Ezpeleta et al., 2019; Polanczyk et al., 2015), it is not clear why Western countries would show higher rates for boys than girls (Burke & Romano-Verthelyi, 2018).

Comorbidity

Persuasive evidence exists that ODD is a highly comorbid disorder (see: Cunningham & Ollendick, 2010 for a review; Greene et al., 2002; Leadbeater et al., 2023; Nock et al., 2007a), and a diagnosis of ODD increases the risk for a wide range of secondary mental health issues (Nock et al., 2007a; Rowe et al., 2010). The clearest overlap has been established between Conduct Disorder (CD) and ODD (e.g., Biederman et al., 1996; Burke et al., 2002; Kim et al., 2023), with evidence suggesting that ODD precedes a diagnosis of CD in a substantial number of cases (APA, 1994; Lahey et al., 1994; Rowe et al., 2010). However, most children with ODD do not meet criteria for CD (Biederman et al., 1996; Rowe et al., 2010), and many children with ODD exhibit ongoing oppositional behaviour without ever developing CD (Biederman et al., 1996; Burke et al., 2010).

In terms of other comorbid disorders, in a large community sample, as many as 92% of youth with ODD met the criteria for a subsequent comorbid diagnosis in their lifetime (Nock et al., 2007a). The most common co-occurring disorders included: impulse control (68.2%), anxiety (62.3%), substance use (47.2%), and mood (45.8%) disorders, even after controlling for CD. Also, ODD was found to be temporally primary in most cases for comorbid disorders, suggesting that a diagnosis of ODD, in itself, increases the chances of developing a secondary psychiatric disorder. It was noted that the elevated risk of secondary disorders (regardless of the disorder) exists both in the presence and absence of CD, and effects are equally strong for both males and females. (Nock et al., 2007a). These earlier findings are aligned with more recent studies examining disorders co-occurring with ODD (e.g., Althoff et al., 2014; Boylan et al., 2017; Halldorsdottir et al., 2023; Leadbeater et al., 2023). In addition, the irritability dimension of ODD has specifically been shown to predict depression and anxiety across the lifespan (Déry et al., 2017; Rowe et al., 2010; Whelan et al., 2013) and has been associated with suicidality (Aebi et al., 2016), while the behavioural

dimension of ODD is predictive of borderline personality disorder, the development of later CD and delinquency (Burke & Stepp, 2012; Stingaris & Goodman, 2009; Whelan et al., 2013)

Consistent with earlier studies (Nock et al., 2007a; Ollendick et al., 2016), the project on which this thesis is based (Murrihy et al., 2023), also found that almost the entire sample (96%) had at least one comorbid disorder and over half had three or more comorbid disorders. Co-occurring internalising disorders were the most prevalent, with 71% of participants meeting the criteria for one or more anxiety disorders. ADHD was the most common co-occurring externalizing disorder, with over two-thirds (67%) of the sample receiving both diagnoses. It should be noted that children diagnosed with CD were excluded from the trial, as according to the DSM-IV criteria for ODD, individuals meeting the criteria for CD are not eligible to concurrently meet the criteria for ODD (APA, 1994; Dedousis-Wallace et al., 2022; Murrihy et al., 2023).

Burden

Non-compliant behaviour, typically towards the parent, is the primary reason parents seek treatment for their child (Burke et al., 2014). In childhood, ODD is predictive of family conflict, poor family cohesion, deteriorating parenting practices and conflicted parent-child relationships (Greene et al., 2002; Tseng et al., 2011). The impact of ODD therefore reaches well beyond non-compliance in childhood (e.g., Boylan et al., 2017; Burke et al., 2014; Evans et al., 2017; Leadbeater & Ames, 2017).

The enduring impact of ODD on interpersonal relationships is evident in adulthood, with individuals facing challenges in maintaining connections with family, peers, and romantic partners, as well as experiencing impairments in occupational functioning (Burke et al., 2014; Leadbeater & Ames, 2017). In a longitudinal study with a community-based sample

of youth ages 12 to 29, Leadbeater and Ames (2017) found that increased ODD symptoms impacted academic attainment and occupational functioning in adolescence and throughout adulthood. Increases in ODD symptoms from adolescence to adulthood were associated with poor academic performance, lower occupational functioning, and reduced annual income for males. For females, increases in ODD symptoms predicted higher debt and more significant perceived personal conflict and stress in the workplace. Both males and females experienced increased job instability the more significant their ODD symptoms. Similarly, in a clinically referred sample of 177 boys aged 7-12 years of age, Burke et al. (2014) found that childhood ODD symptoms predicted fewer friends, poorer relationships with their fathers or step-fathers, poorer quality of friendships and poorer romantic relationships in adulthood, even after controlling for ADHD, CD, depression, and anxiety.

The impairments associated with ODD represent the most common reason that families seek help in primary care and hospital settings (see Merikangas et al., 2009, for a review). Left untreated, these symptoms account for a significant cost at both the personal, societal, and economic level (Beecham, 2014; Christenson et al., 2016; Kim-Cohen et al., 2003; Merikangas et al., 2009) and, therefore, providing effective interventions for these young people is important.

Evidence-based therapies

Parent Management Training (PMT)

Parent Management Training (PMT), also known as Behavioral Parent Training (BPT)[2], is among the most extensively studied and validated treatments for ODD (e.g., Deković & Stoltz, 2015; Eyberg et al., 2008; Michelson et al., 2013). These interventions

[2] Parent Management Training (PMT), Behavioral Parent Training (BPT) and parent training will be used interchangeably.

have been shown to produce positive outcomes in both efficacy and effectiveness trials in "real-world" clinical settings across different cultures, languages, and populations (Burkey et al., 2018; Menting et al., 2013; Michelson et al., 2013; Webster-Stratton et al., 2012) and have been hailed as one of the most significant achievements in clinical psychology (Dadds & Tully, 2019). As such, PMT is considered the treatment of choice for children with disruptive behaviour (Forehand et al., 2014), especially when used with the active participation of the child (Dadds & Tully, 2019; Kaminski et al., 2008).

There are a number of parenting programs that are considered PMT programs. Some of the most widely used and researched PMT programs include: the COMET program (Kling et al., 2010); The Defiant Child (Barkley, 2013); Helping the Non-Compliant Child (HNC; McMahon & Forehand, 2003); the Incredible Years (IY-PT; Webster-Stratton & Reid, 2003); Parent–Child Interaction Therapy (PCIT; Brinkmeyer & Eyberg, 2003); Parent Management Training Oregon Model (PMTO: Patterson, Reid, Jones, & Conger, 1975); Integrated Family Intervention for Child Conduct Problems (Dadds & Hawes, 2006), and finally, Triple P-Positive Parenting Program (Triple P: Sanders, 1999). While these programs differ somewhat in form, format, and emphasis of delivery, they share core characteristics and underlying principles. More specifically, they are based on behavioural principles, including operant conditioning (i.e., processes by which parental responses to children increase and/or decrease adaptive and maladaptive behaviours) that is delivered within a social learning paradigm (i.e., child behaviour that develops, is maintained, and/or exacerbated in the context of the parent-child relationship; Kaehler at al., 2016). The maladaptive pattern of interactions described in these models is frequently referred to as the coercive style or coercive cycle of parent-child interaction (e.g., Dishion et al., 1992; Patterson 2005; Snyder & Patterson, 1995).

Essentially, the coercive cycle describes a maladaptive pattern of parent-child interaction in which a child learns that an escalation of problem behaviour is functional in

that a parent will eventually "give in" (e.g., child asks to play on their iPad, the parent says "no", the child escalates whining and pleading, the parent says "not on a school night", the child begins to become upset, the parent raises their voice or becomes punitive, the child has a tantrum and escalates further until the parent gives into the request). In the short term, the parent has reinforced the child and has alleviated everyone's frustration by giving into the child's request; however, in the long term the parent is trapped in the coercive cycle and grows increasingly frustrated with the child's behaviour and their own ineffectiveness. The child's behaviour escalates each time the parent attempts to gain control and the coercive cycle ultimately exacerbates the child's oppositional behaviour and makes it more likely that the parent will use harsh parenting practices to regain their authority and control (Kaehler et al., 2016). Furthermore, the use of ineffective parenting practices, such as the use of harsh and inconsistent discipline, also contributes to the development and exacerbation of oppositional behaviours (Patterson et al., 1998). In response to this, PMT addresses problematic parent–child interactions, especially coercive family processes and focuses primarily on altering patterns of ineffective parenting practices, such as harsh and inconsistent discipline, that contribute to the development of oppositional behaviour and problematic parent–child interactions (Kaehler et al., 2016; Patterson & Oregon, 1982.) Indeed, the underlying assumption of PMT is that replacing these ineffective parenting practices with more effective ones contributes to the improvements seen in the child's behaviour following PMT. Parenting practices are therefore seen as potential mediators and mechanisms of change (Forehand et al., 2014).

During the course of PMT, parents are taught a set of parenting strategies designed to increase positive attention for appropriate child behaviour (e.g., praising), remove parental attention for inappropriate child behaviour (e.g., planned ignoring), and implement more effective instructions and consequences for noncompliance (Barkley 1997; McMahon &

Forehand 2003). Skills taught include using clear and direct commands, positive attending (e.g., special time), use of appropriate commands, contingent attention and reinforcement (e.g., rewards), and use of time-out procedures and, importantly, being consistent in their use of these strategies (Barkley, 1997; Murrihy et al., 2010). Parents develop these skills through practice, role play, feedback, and modelling by the therapist to demonstrate how to interact with the child and change the child's behaviour.

In terms of effectiveness, in a meta-analysis examining the effectiveness of the Incredible Years parent training (IYPT; Webster-Stratton & Reid, 2003), a variant of PMT, in addressing conduct problems in young children found that IYPT significantly reduced disruptive behaviours (Menting et al., 2013). The review examined 50 studies that compared the outcomes of an intervention group that received IYPT against a comparison group. Findings supported IYPT as an efficacious intervention, with positive outcomes observed across different domains and sources of information. However, the treatment studies demonstrated stronger effects compared to the prevention studies. Specifically, the treatment studies that used the IYPT showed medium effects (d = .50) based on parental reports, as compared to smaller effects (d = .20) found in the indicated prevention (intervention aimed at children who are identified as having minimal, but detectable signs or symptoms) studies and selective prevention studies (d = .13; intervention targeted at children who are considered at high-risk due to biological, psychological or contextual factors). A Cochrane review of behavioural group-based parenting programs for conduct problems, as well as a recent review of behavioural parenting programs for ODD yielded similar findings to the treatment studies examined in this meta-analysis (Kaur et al., 2022; Furlong et al., 2012). Specifically, parent training produced a statistically significant reduction in child conduct problems, whether assessed by parents, or independently assessed (i.e., home, clinic or classroom observations, teacher report, or clinical diagnostic interview).

Limitations to Parent Management training. While there is substantial empirical support for the use of PMT for ODD, limitations are evident. PMT does not work to a satisfactorily level for up to 50% of youth - they continue to meet criteria for a diagnosis of ODD following treatment (Greene et al., 2004; Murrihy at al., 2023; Ollendick et al., 2016). Attrition rates are also high (Nock & Feerter, 2005) and the benefits that are obtained following treatment are not routinely maintained over time (Lundahl et al., 2006).

In terms of effectiveness more specifically, Scott (2002) examined the effectiveness of the Incredible Years Basic program with fifty-nine children aged 3-8 years of age with conduct problems in the United Kingdom. They found that while the majority of children fell within the normal range for conduct problems after the intervention (as measured by the Parent Account of Child Symptoms; Taylor et al., 1996), 37% of children showed clinical levels of conduct problems after the intervention. Similar findings have been observed in Norway (Larsson et al., 2009). In a RCT ($N = 127$), children (aged 4-8) diagnosed with ODD or CD were randomized to either the Incredible Years Basic Parent Training (PT) program, PT combined with child therapy (PT + CT) or to a wait list control condition. After treatment, children in both treatment conditions showed significant improvement in conduct problems when compared with those in the wait-list control group. However, immediately after treatment and 1 year later, approximately 40% of the treated children still had conduct problems in the clinical range.

Ollendick et al. (2016) examined the effectiveness of PMT, compared to Collaborative and Proactive Solutions (CPS) and a wait list control group (WLC). In this trial, 134 youth (ages 7–14, 61.9% male, 83.6% White) who fulfilled Diagnostic and Statistical Manual of Mental Disorders (4th ed.) criteria for ODD were randomized to each of the three conditions. Assessments were completed pre-treatment, immediately after treatment and 6 months following treatment. Both treatment conditions were superior to the WLC condition.

Approximately 50% of youth in both active treatments were diagnosis free and up to 66% were judged to be much, or very much, improved at posttreatment and at follow-up, compared to 0% in the waitlist condition. In other words, although improvement was noted, approximately 50% of youth still had a diagnosis of ODD following both treatments.

Furthermore, gains made following PMT are not necessarily maintained over time. In a meta-analysis by Lundahl and colleagues (2006), which evaluated whether positive child behaviour outcomes resulting from behavioural parent training programs (compared to a control group) are maintained over time, parent training was found to produce a small effect size (d = 0.21) up to 1 year following the completion of parent training. This was in contrast to the medium effect size (d = .42) found immediately following treatment. The authors concluded that parent training effects are not sustained over time for many families. Such findings may be associated with problems in generalisation of behavioural programs.

Additionally, the high attrition rates for PMT (Nock & Ferriter, 2005) have also been a focus of research. In a review of PMT programs for conduct problems, that included 262 studies and 29,452 participants, attrition rates varied from no attrition (in 4% of studies) to a dropout rate greater than 50% in 13% of the studies. The average attrition rate was 26% (*SD* = 18%, range = 0-87%), with families from lower socio-economic status (SES) backgrounds having a higher rate of attrition (32 %). Among participants who attended at least one session of BPT, the mean attendance rate was approximately 73 %, but the variability was high with attendance rates across studies ranging from 37 to 98 %. This suggests that while some studies had virtually no attrition, others had more than half of the participants drop out after starting BPT. Based on the average rates of attrition, the findings suggest that up to less than half of those who need treatment are receiving its full benefits. Similarly, in the previously described Ollendick et al. (2016) study, 19.4% of families receiving PMT did not complete treatment, which was lower than what other studies have reported (Kazdin & Whitely, 2006).

In sum, while PMT has shown significant empirical support for treating ODD, limitations such as high attrition rates and challenges in maintaining treatment effects over time underscore the need for further research and refinement of treatment approaches to improve outcomes for children with ODD.

Collaborative and Proactive Solutions (CPS)

Collaborative and Proactive Solutions (CPS; previously referred to as Collaborative Problem Solving, Greene, 1998) is a more recent therapy that has shown promise and was developed, in part, in response to these limitations. CPS falls under the broad umbrella of cognitive-behavioural therapy (CBT) and fits within what has been referred to as the "third wave" of CBT (Greene, 2023; Hayes, 2004; 2017). CPS draws upon several other theoretical models, including social learning theory - particularly theories on delayed gratification, frustration tolerance (Mischel, 1989) and transactional models of development (Belsky, 1984; Cicchetti & Lynch 1993, 1995; Gottlieb, 1992) - that emphasize the 'goodness of fit' or 'match' between characteristics of an individual and characteristics of his or her environment (Greene, 2010, 2023). In contrast to PMT's assumption that challenging behaviour occurs largely as a result of ineffective parenting practices, CPS posits a child's cognitive deficits (or 'lagging skills') —particularly in the domains of flexibility/adaptability, frustration tolerance, and problem-solving—as a major factor contributing to the development of oppositional behaviour in youth (Greene, 2010). These lagging skills create a psychological vulnerability, which sets the scene for behavioural challenges.

According to CPS, problems arise when a young person is placed in situations where the demands of the situation (e.g., adult expectations) exceed their skill levels. For example, consider a child with executive function deficits and a parent who insists their child complete their homework independently each afternoon. There may be a mismatch between the child's skills and the parental demands, which may then lead to oppositional behaviours. Such

behaviours are subsequently viewed as the means by which a child is communicating that there is incompatibility between expectations and a child's capacity to meet them. These unmet expectations are referred to as "unsolved problems". The assessment phase in this model is, therefore, not focused on identifying overt behaviours so as to modify them. Instead, the focus is on identifying the specific problems/unmet expectations that the child is having difficulty meeting (Greene, 2010). In the CPS model, some typical unsolved problems identified by families include: "*Difficulty brushing teeth before bedtime"; "Difficulty ending iPad time to go to the dinner table"; "Difficulty completing Math homework"; "Difficulty getting out of car to go to school in the morning"; "Difficulty staying in the school grounds during school time"; and "Difficulty keeping hands to self when playing with sister".* The intervention involves helping caregivers and youth engage in collaborative and proactive efforts to solve such problems, thereby reducing or eliminating the concerning behaviours that are prompted by those problems (Greene, 2023). This problem-solving process is broken up into three distinct parts: the Empathy step, in which caregivers gather information from the child about the factors that make it difficult for them to meet a particular expectation; the Define Adult Concerns step, in which caregivers articulate that they understand why the child is having problems and why they feel it's important that the expectation be met; and the Invitation step, in which child and caregivers collaboratively agree upon a solution that is both realistic and addresses the concerns of both parties (see Greene, 2023 for more details).

Promising results have been demonstrated for CPS across outpatient centres, specialist mental health services, educational and juvenile justice settings and inpatient units (Greene et al., 2004, 2006; Greene & Winkler, 2019; Mulraney et al., 2022; Murrihy et al., 2023; Ollendick et al., 2016). To date, three randomized comparison/control trials conducted in the United States and Australia have compared CPS to PMT for the treatment of ODD in

youth, with all three yielding similar results (Greene et al., 2004; Murrihy et al., 2023; Ollendick et al., 2016).

In an early study conducted by Greene et al. in 2004, a total of 50 clinically referred families with a child aged 4-12 years, who met the criteria for Oppositional Defiant Disorder (ODD) along with subclinical bipolar or major depressive disorder, were randomly assigned to either a CPS or PMT outpatient treatment program. Both treatment conditions yielded significant positive results and large effect sizes (CPS 1.19; PMT 0.8). There were no significant differences observed between the PMT and CPS groups in terms of improvement on ODD symptoms from pre- to post-treatment (as measured by the parent-rated DSM checklist for ODD symptoms). Interestingly, results at the 4-month follow-up, indicated that 60% of the children in the CPS condition showed clinically significant improvement, whereas only 37% of those in the PMT condition demonstrated the same level of improvement.

In the previously mentioned landmark study, Ollendick et al. (2016) compared PMT to CPS and a waitlist control group (WLC). One hundred and thirty-four youth, aged 7–14-years with ODD, were randomized to the three conditions. Results showed CPS to be as effective as PMT, with close to 50% of youth in both active treatment groups having no diagnosis of ODD at post-treatment or 6-month follow-up and up to 66% showing considerable improvement. No significant difference was found between CPS and PMT groups at post-treatment or follow-up. In a recent Australian RCT extension of the Ollendick et al. study, in which Study 2 and Study 3 of this thesis are based, Murrihy et al. (2023) aimed to establish whether the findings from the Ollendick et al. efficacy trial (2016), namely whether CPS treatment outcomes are equivalent with PMT, could be replicated in a community-based setting in Australia. One hundred and sixty youth with ODD (age 7-14; 72% male) were randomized to CPS (n = 81) or PMT (n = 79) for up to 16 weekly sessions. Similar to the Ollendick et al's (2016) findings, both treatments yielded equivalent outcomes,

with 45-50% of youth in the non-clinical range after treatment and 67% considered much improved. No differences were found between groups and gains were maintained at the 6-months follow-up.

Preliminary findings have also demonstrated the effectiveness of CPS to manage severe irritability, a diagnostic marker of ODD, in children and adolescents. In a recent pilot RCT (n = 12), children (9–14 years; 42% male) with severe irritability were randomised to receive six sessions of either CPS or usual clinical care delivered within a Child and Adolescent Mental Health Service (CAMHS) - a tertiary mental health service in Melbourne, Australia (Mulraney et al., 2022). Compared to usual care, the CPS group had improvements in child irritability (*ES*: -0.4), as well as quality of life (*ES*: 0.4), executive functioning (*ES*: −0.4), and family functioning (*ES*: −0.7). While these findings are preliminary, they tentatively suggest that CPS may reduce irritability, as well as having additional beneficial effects on child quality of life, executive functioning, and family functioning.

These studies collectively indicate that CPS is comparably effective to the well-established treatment, PMT, for youth with ODD. Indeed, in a recent review examining behavioural treatment programs for ODD, Kaur et al. (2022) concluded that "CPS is an evidence-based alternative for families that might not benefit from PMT" (p. 51). However, similar to PMT outcomes, a significant portion of youth did not respond to a satisfactory level to CPS. More specifically, in the earlier Greene et al. 2004 study, just over 50% of youth did not reach clinically significant improvement at post-treatment, and 40% at 4-month follow-up. Similarly, up to 50% of youth still had a diagnosis of ODD in both the CPS and PMT conditions at post-treatment and 6-month follow-up in the Ollendick et al. (2016) and Murrihy et al. (2023) studies. Comparable dropout rates were also observed for both CPS and PMT in each of the three studies.

Clearly, there is room for improvement in treatment outcomes of ODD for both CPS and PMT. Although both have been shown to be effective for up to 50% of the samples studied, an important next step is exploring whether the two treatments work for the same group of youth or whether certain characteristics make one treatment more effective than the other. By exploring these differences, we can identify which treatment may be more appropriate for certain individuals, leading to more targeted, personalised and effective treatment approaches. There are two significant ways to potentially improve treatment outcomes. First, it will be important to identify predictors and moderators of treatment outcome. This would allow specific treatments to be determined for specific subgroups of children under select treatment contexts so that treatment will have its maximum potential impact. Second, examining potential mediators of treatment outcome may provide insights into the specific mechanisms by which treatments operate. As such, we can refine treatment components and enhance outcomes (Kraemer et al., 2002; Prins et al., 2015).

Predictors, Moderators and mediators of treatment outcome for CPS and PMT

Moderators and predictors of treatment outcome

In the context of intervention research, variables that specify for whom or under what conditions a treatment is effective are either predictors or moderators of treatment outcome (Hinhaw et al., 2000; Kraemer et al., 2002). Moderators are variables that interact with treatment conditions. They can provide information about whether two or more treatments differ from one another due to the characteristics of the sample or the contexts under which the treatments are delivered (Prins et al., 2015).

In general, in relation to psychological treatments for children, moderators can be classified into three main categories: child characteristics (e.g., child age, gender), family/parent characteristics (e.g., parental stress, single parents), and program characteristics

(e.g., group versus individual therapy). The first two categories address the question “for whom does this treatment work?” whereas the last category deals with the question “under what circumstances does this treatment work?” (Decovic & Stoltz, 2015). In their seminal study, Kraemer and colleagues (2002) specified that candidate moderator variables are baseline or pre-randomized characteristics measured prior to assigning participants to an intervention condition within an RCT. For example, a parent experiencing high levels of depression symptomatology at pre-treatment may be found to have better outcomes participating in one treatment programme over another. Since moderator variables are assessed before random assignment, they are independent of treatment assignment, thereby eliminating any potential bias in interpreting the observed interaction effect (Kraemer et al., 2002). Testing for moderation not only determines if two treatments differ due to sample characteristics, or delivery context, but also reveals whether the treatments have similar effects across these dimensions (Prins et al., 2015). Having knowledge of moderators before treatment allows clinicians to choose the most beneficial intervention for particular subpopulations and also informs clinicians on how to adjust and individualize it whenever possible (Prins et al., 2015).

Predictor variables also inform us *for whom* treatments work and are associated with treatment outcomes irrespective of treatment assignment (Kraemer et al., 2002). Generally, predictor variables are associated with the main effects of the candidate variables. That is, such variables predict response not only to the treatment of interest but also to comparison conditions (Kraemer et al., 2002). For example, a parent participating in treatment for their child’s disruptive behaviour may experience poor outcomes if they have high levels of depression at pre-treatment, regardless of what treatment they receive. In contrast, a moderator variable must interact with treatment assignment to specify for whom a specific treatment works. This distinction is important because while variables can serve as both

predictors and moderators of treatment outcome, not all predictor variables are moderators of treatment outcomes (Ollendick et al., 2008). The identification of predictors is clinically important as it assists in identifying potential risk factors for poor outcomes (Reyno & McGrath, 2006).

Overview of Moderator and predictor research

Unfortunately, relatively few studies have examined predictors and moderators of treatment outcomes for disruptive behaviours; as a result, Prins et al. (2015) described this movement as a "work in progress." While studies in this field have expanded since this depiction by Prins and colleagues in 2015, there is still a need for further investigations (McMahon et al., 2021). I will provide a brief overview of the current research into moderators and predictors of disruptive behaviours. This will be explored in further detail in Chapter 2. With respect to PMT, I primarily make use of two meta-analyses (Lundahl et al., 2006; Reyno & McGrath, 2006) and a recent brief report (McMahon et al., 2021). The two meta-analyses combined findings on predictors and moderators of outcomes of a large number of trials examining the effectiveness of PMT (61 versus 31 trials, respectively). I discuss the findings of some individual studies as well.

In an early meta-analysis, Reyno and McGrath (2006) examined the predictors of treatment outcomes following parent training for conduct problems. Thirty-four articles that included prevention and treatment studies were evaluated. Four main clusters of predictors were reviewed: demographic variables (single parent status, family size, low income, education/occupation, maternal age, minority status); child variables (source of referral – referred by school or social agency rather than self-referred-, severity of child behaviour); participation variables (treatment attendance, perceived barriers to treatment participation); and parent variables (maternal psychopathology/depression and negative life events/stressors). They found a low to moderate standardised effect size for low

education/occupation (*d* =.27), more severe child behaviour problems pre-treatment (*d* =.40), maternal psychopathology (*d* =.39), and barriers to treatment participation (*d* =.33), such that each of these variables predicted poorer treatment outcomes. Referral by a school or social agency, as opposed to self-referral, also predicted poorer parent training outcomes (*d* =.44).

Only low family income resulted in a large, standardised effect size (*d* =.52), with parent training proving less effective for economically disadvantaged families than their less disadvantaged counterparts. Low family income was also a predictor of poor outcomes in a meta-analysis of 71 studies examining the differential effectiveness of SES on parent training programs targeting disruptive child behaviour up to 12 years of age (Leijten et al., 2013). However, its influence on outcomes was not straightforward. They found that disadvantaged families benefited less from parent training at posttreatment, but only when they had low levels of initial problem severity. When the severity of initial child conduct problems was deemed severe (i.e., reached clinical norms), parent training programs were equally effective for disadvantaged and non-disadvantaged families at posttreatment (Leijten et al., 2013).

Preceding this, a meta-analysis by Lundahl et al. (2006) examined moderators of treatment outcomes for parent training programs targeting disruptive behaviours in children. Of the 63 studies examined, the following potential moderators were identified: child age; socioeconomic status (i.e., disadvantaged versus non-disadvantaged); child's symptom level at pre-treatment (i.e., clinical, non-clinical or mixed); single parent status (as a percentage), treatment recipient (i.e., parent only, parent and child, multisystem) and treatment delivery (i.e., group versus individual, group and individual, self-directed, self-directed and individual). Lundahl and colleagues found that parent training was the least effective for economically disadvantaged families and that such families benefited significantly more from individually delivered parent training than group delivery. Similar to Reyno et al.'s (2006) aforementioned meta-analysis, financial disadvantage was the most salient moderator of

treatment outcomes. Also, children with clinically significant levels of disruptive behaviours prior to treatment showed more improvements than those without clinically elevated symptoms or mixed groups, respectively. This concurs with other more recent reviews, whereby higher levels of problematic child behaviour at pre-treatment are associated with greater benefit from parent training for conduct problems (e.g., McMahon et al., 2021; Shelleby & Shaw, 2014). However, overall, findings have been mixed. Some trials have found children with more severe behaviour problems predicted reduced responsiveness to standard parent training protocols (Dittman et al., 2014; Drugli, Fossum et al., 2010), whereas others have found no significant effect (Shelleby & Shaw, 2014).

In addition, Lundahl et al. (2006) found that children of single parents did not improve as much as those who were not from single-parent households. Interestingly, child age did not significantly influence improvement in child behaviour. Similarly, the recipient of parent training treatment—be it the parent alone, both the child and parent or a multi-system approach—did not exert a significant influence on child outcomes; however, the mode by which treatment was delivered did influence outcomes - parents who participated in individually delivered parent training changed significantly more than those who participated in group-delivered parent training. In contrast, no significant differences were found between self-directed parent training and those participating in face-to-face interventions. The self-directed parent training involved activities such as individual parents reading a training manual, watching a parent-training video, or participating in computer-based programs. While this meta-analysis yielded valuable insights into moderators warranting consideration, its scope of investigation regarding potential moderators was limited.

Furthermore, in a recent brief narrative report (McMahon et al., 2021), variables that demonstrated evidence of positive moderation included higher initial severity of conduct problems, father engagement, elevated levels of maternal depressive symptoms, individual

administration (vs. group), and treatment/targeted prevention approaches (compared to universal prevention). Evidence of moderation by child comorbid emotional problems and sociodemographic disadvantage in PMT was mixed. Interestingly, variables such as child diagnostic status and family risk (i.e., parental age, psychopathology, antisocial behaviour, substance use, family/marital conflict, relational quality, social support, and life stress) in PMT exhibited no moderation effects, indicating their generalisability across these variables (McMahon et al., 2021). Other studies have found no evidence of moderation for child age, child gender, comorbidity, single-parent status, teen parenthood, low education, joblessness, low income or ethnic minority status, thus also indicating their generalizability across PMT programs (Gardner, Leijten, Harris et al., 2019; Gardner, Leijten, Melendez-Torres et al.,2019; Florean et al., 2020; Leijten et al., 2018; Leijten et al., 2020; McCart et al., 2006). While overall these findings are promising, the range of potential moderators examined in PMT interventions has been somewhat limited, particularly in establishing moderation of treatment outcomes at a longer-term follow-up (McMahon et al., 2021; Shelleby & Shaw, 2014).

In contrast, there has been no examination of moderators of treatment outcomes for CPS, and very little examination of predictors. Chronological age, gender, SES, and comorbid attention deficit-hyperactivity and anxiety disorders were examined as predictors of treatment outcomes for CPS and PMT in one study (Ollendick et al., 2016). They found that the presence of an anxiety disorder and chronological age predicted outcomes but gender, race/ethnicity, SES, and presence of ADHD did not. More specifically, the presence of an anxiety disorder led to better treatment outcomes for both PMT and CPS, and older children did not improve as much as younger children for both CPS and PMT. However, this is the only study examining predictors of CPS outcomes to our knowledge. Considering these identified gaps in the literature, it is imperative that we continue to systematically identify

and examine variables that are both conceptually and empirically associated with response to treatments such as CPS and PMT (Dedousis-Wallace et al., 2021; Maric et al., 2015). This thesis will move towards addressing these gaps in Study 1 and Study 2.

Mediators of treatment outcome

Understanding the mechanisms of therapeutic change is also an important consideration in the optimization of treatment outcomes (Kazdin & Nock, 2003), and identifying mediators represents the first step in delineating mechanisms of change (Prins et al., 2015). Specifically, treatment mediators identify possible mechanisms through which a treatment achieves its effects (Kazdin & Nock, 2003). While all mechanisms are mediators, not all mediators are mechanisms (Kraemer et al., 2002).

Selection of candidate mediators are usually based on treatment theory or empirical findings (Kazdin & Nock, 2003), and a range of variables can serve as potential mediators of treatment outcomes. These may include variables related to the child (e.g., emotion regulation), parent (e.g., parent's own anxiety or depression), family (e.g., cohesion, conflict), school (e.g., relationship with teacher), and/or therapy processes (e.g., therapeutic alliance). For example, the underlying theoretical assumption of PMT is that ineffective parenting processes cause and maintain disruptive behaviours. Consequently, PMT attempts to change parenting processes, assuming that changes in parenting (potential mediating variable) will lead to improvements in child behaviour. Similar to moderation, mediation involves detecting statistical interactions, however, the interactive processes for mediation are typically more complex (Hinshaw, 2007). Unlike moderators, mediators are assessed after the random assignment to treatment conditions and during the period of intervention (Hinshaw, 2007). Thus, the mediation model is a longitudinal model in which treatment effects a mediator, that then changes an outcome (Kazdin & Nock, 2003). Indeed, precedence is a primary assumption of mediation analysis and vital in order to infer causality (Kazdin & Nock, 2003).

Basically, change in the mediator (e.g., parenting skills) is demonstrated prior to change in the outcome (e.g., child behaviour; Kraemer et al., 2008). Furthermore, as noted by Kazdin (2007), multiple, repeated assessments of the mediators and outcomes over the course of treatment are needed to effectively evaluate time sequence (i.e., whether change in the mediator precedes change in the outcome or whether change in the outcome precedes change in the mediator). This would necessitate assessment points beyond the pre, post and follow-up schedule typically implemented in clinical trials. As Kazdin (2007) has pointed out, this has been "the Achilles heel of treatment studies" (p. 5). Accordingly, establishing mediators of an intervention is a worthy goal that can prompt researchers either to strengthen, add, or remove certain treatment components to make the intervention either more efficacious or more cost-effective (Kraemer et al., 2002).

As previously mentioned, PMT is based on behavioural principles, including operant conditioning, which involves shaping child behaviour through parental responses that either reinforce or discourage maladaptive or adaptive behaviours. PMT operates within a social learning model, recognising that child behaviour is shaped, maintained and exacerbated within the context of the parent-child relationship (Kaehler et al., 2016). Ineffective parenting practices, such as harsh or inconsistent discipline, contribute to the emergence and exacerbation of oppositional behaviours (Patterson et al., 1998). To counter these effects, PMT focuses on altering these problematic patterns, addressing coercive family interactions and emphasising the use of positive and consistent parenting strategies. Indeed, the underlying assumption of PMT is that replacing ineffective parenting methods with more effective ones leads to observable improvements in the child's behaviour. In this way, parenting practices are considered mediators and mechanisms of change in the effectiveness of PMT (Forehand et al., 2014).

In contrast, the CPS model emphasises the importance of "goodness of fit" or alignment between a child's characteristics and their environment (Greene, 2010, 2023). As opposed to PMT, which views challenging behaviours as largely stemming from ineffective parenting, CPS attributes oppositional behaviours to the child's cognitive deficits, or "lagging skills," particularly in areas like flexibility, frustration tolerance, and problem-solving (Greene, 2010). According to the CPS model, when children lack the skills needed to cope with certain demands or expectations, they may react with challenging behaviours because they are unable to respond in more adaptive ways. Lagging skills are thus seen as the core mechanism driving change in CPS (Greene & Winkler, 2019). CPS proposes two pathways through which lagging skills may influence treatment outcomes. The first involves shifting parents' understanding of their child's behaviour—from perceiving it as intentional and controllable to recognizing it as arising from lagging skills. This perspective shift encourages parents to empathize with their child's challenges, leading to improvements in oppositional behaviour (Greene & Winkler, 2019). The second pathway suggests that, through the collaborative problem-solving process in CPS, children gradually build their lagging skills. By engaging in each step of problem-solving, children can indirectly strengthen these skills over time (for further details, see Greene, 2010).

Overview of mediator research

Similar to the moderation research, investigations into mediators of treatment outcomes for disruptive behaviours have been limited (Forehand et al., 2014; Mestre et al., 2022). Indeed, at present, there are no studies that have investigated potential mediators of CPS. Within PMT trials, the focus of potential mediating variables has been in regard to parenting practices. This is not surprising, considering parenting strategies have been identified as potential mechanisms of change in PMT for many years (e.g., Forehand et al., 2014).

In a review investigating parenting as a mediator of change in PMT (Forehand et al., 2014), and in studies subsequent to that review (Rimestad et al., 2020; Seabra-Santos et al., 2016), results tentatively support parenting practices as a mediator. These studies found that changes in oppositional symptoms following PMT were mediated by increases in appropriate and consistent discipline, reductions in negative parenting (e.g., harshness, criticism), and increases in positive parenting (e.g., praise, effective communication, attention). Despite these promising findings, it is noteworthy that Forehand et al. (2014) reported support for parenting practices as mediators in less than half (45%) of the studies included in their review. Furthermore, mediation effects were more evident in younger children (under 10 years) and those deemed at-risk (prevention studies) compared to clinic-referred children (treatment studies).

A more recent narrative review by Mestre et al. (2022) focused on mediation studies across various treatments for conduct problems in adolescents. Parenting styles were again the most examined mediator and ranged from being operationalised as ineffective or negative parental styles (e.g., “inept discipline”) to positive or more effective ones (e.g., “positive discipline”). Effective parenting (e.g., parental supervision, fair discipline practices, and appropriate use of positive reinforcement) was found to mediate improvements in conduct problems. However, this finding was not consistently observed across studies.

Several methodological limitations were evident in the studies reviewed. For example, only one-third of studies included temporal precedence of the mediator. The lack of temporal precedence makes it challenging to ascertain the direction of the causality between the proposed mediator and outcome. That is, it is unclear what changes first, the outcome, or the mediator. Another potential limitation in the current state of mediational research is the lack of specificity in the examination of parenting variables. In the majority of studies examining mediators thus far, parenting has typically been operationalised in global

dimensions/composite scores, such as “ineffective parenting” or “positive parenting”, rather than specific parenting behaviours that have been taught in PMT programs, such as, praising the child, ignoring negative behaviours, and use of inconsistent discipline (Forehand et al., 2014; Maric et al., 2015; Rimestad et al., 2020). Moreover, meta-analytic evidence from Kaminski et al. (2008) further supports investigating specific components of parenting practices. Their component analysis of parent training programs for children with behaviour problems revealed that parenting consistency was associated with the most substantial effects. This finding underscores the importance of identifying and understanding the unique contributions of distinct parenting behaviours, such as the use of consistent discipline, to inform the potential mechanisms underlying the effectiveness of PMT interventions. Therefore, while promising, the mediator findings to date should be regarded with caution, pending further research on psychotherapeutic and mediator efficacy (Mestre et al., 2022).

Beyond parenting practices, others have examined changes in: parental attributions (Sawrikar et al., 2020), emotion recognition and empathy (Dadds et al., 2012), parental self-efficacy (Gardner et al., 2006; Rimstead et al., 2020; Seabra-Santos et al., 2016), therapeutic alliance (Rimstead et al., 2020), and changes in parental mood and family cohesion (Hagen et al., 2011). However, most of the findings remain preliminary and there is a need for future studies to confirm these findings and to extend the existing knowledge by investigating other plausible mediators (e.g., cognitive mediators; Mestre et al., 2022).

Summary of rationale and aims of this thesis.

Within this chapter, I have highlighted the prevalence and significant burden of ODD, underscoring the imperative to enhance existing psychological treatment options for this disorder. I have identified PMT as an evidence-based treatment of choice for ODD, while

also delineating its limitations. Additionally, I have introduced CPS as a more recent evidence-based treatment approach that may serve as a potential alternative to PMT.

I have also emphasized the necessity for improving these treatment interventions by attaining a comprehensive understanding for "whom", "how", "why" and "under what conditions" these treatments yield the most favourable outcomes: in essence, the identification of predictors, moderators, and mediators of treatment outcomes for ODD. In this regard, I have provided a succinct overview of existing research that identifies moderators, predictors, and mediators of ODD outcomes for PMT, while concurrently highlighting the dearth of research in these areas concerning CPS. Finally, I have outlined the importance of identifying theoretically and empirically driven predictors, moderators, and mediators of treatment outcomes for both CPS and PMT, as this knowledge may hold the key to enhancing ODD treatment outcomes and progressing towards an individualised treatment approach that improves the outcomes associated with both treatments. As such, the overarching aim of this thesis was to investigate potential predictors, moderators and mediators for both PMT and CPS for youth. Examining predictors, moderators and mediators of treatment response may be critical in improving the outcomes associated with both treatments.

Introduction to the present investigation

The aims of this thesis will be achieved across three studies. Study 1, presented in Chapter 3, will involve a systematic review investigating parental and familial predictors and moderators of improvement in PMT for conduct problems. The aim of this review was to identify and systematically review the literature from the past 15 years (from mid-2004 to mid-2019), that left off from the previous two major reviews in this field (Reyno & McGrath, 2006; Lundahl et al., 2006). Study 1 was published in *Clinical Child and Family Psychology*

Review (Dedousis-Wallace et al., 2021). The findings of Study 1 were partially used to inform the selection of predictors and moderators to investigate in Study 2.

Study 2, published in *Journal of Clinical and Child and Adolescent Psychology* (Dedousis Wallace et al., 2022), and is presented in Chapter 4. It examined predictors and moderators of behavioural improvement in children who met criteria for ODD following treatment with PMT and CPS. Initial problem severity, inconsistent discipline, parental attributions of child misbehaviour, and child lagging cognitive skills were examined - variables that are conceptually and empirically associated with CPS and PMT. This was the first study examining these variables as moderators of treatment outcome for either treatment. I undertook a secondary analysis of data from a randomised control trial (Murrihy at al., 2023) in which children aged 7-14 years of age were treated for ODD with either PMT or CPS. Subsequently, the results from the moderator analysis were used to identify potential mediators to investigate in Study 3.

Study 3, presented in Chapter 5, aims to contribute to our understanding of how treatments for ODD work by extending our previous findings (Dedousis-Wallace et al., 2022). Lagging skills, inconsistent discipline, and parental attributions were examined as possible mediators of behavioural improvement in children in an Australian sample of families who received PMT or CPS treatment. This study is again a secondary analysis of data from our original randomized control trial (see: Murrihy et al., 2023) in which children aged 7-14 were treated for ODD with either PMT or CPS. I used a longitudinal mediation analysis framework, with five time-points, to address issues associated with a lack of temporal precedence in previous mediation studies. To our knowledge, this is the first study to construct and assess a longitudinal mediation model with the variables of interest. Finally, Chapter 6 discusses the limitations and strengths, implications of the findings of the current research and considers suggestions for future research in this area.

CHAPTER 2

Rationale and overview of studies

The preceding chapter highlighted the significant impairments and burden associated with ODD if left untreated. It is evident from the literature reviewed in Chapter 1 that existing treatments for ODD, although effective, still have considerable scope for improvement, with predictors, moderators, and mediators of treatment outcomes a potential avenue to offer insight into optimizing these outcomes. The goal of this chapter is to provide an overview of each of the studies contained in this thesis and to demonstrate how each study is linked to one another and progressively contributes to addressing the overarching goal of identifying how to optimise treatment outcomes for children with ODD (see Figure 2.1).

Overview of Study 1

Study 1 results are reported in Chapter 3 and consist of a systematic review investigating parental and familial predictors and moderators of improvement in PMT for conduct problems. The aim of this study was to gain an understanding of the state of the research as it pertains to predictors and moderators of treatment outcomes for ODD, and to identify gaps I may potentially address as part of this thesis. More specifically, Study 1 systematically reviewed the literature from the past 15 years (from mid-2004 to mid-2019), building on the findings from the previous two major reviews in this field (Reyno & McGrath, 2006; Lundahl et al., 2006). I chose to focus on parental and familial characteristics as parents have been identified as the primary agents of change (Forgatch & Gewirtz, 2018) in PMT. Therefore, understanding what pre-treatment parental and familial factors impact parents' ability to successfully engage and implement PMT strategies in order to achieve optimal treatment outcomes was deemed critical. I did not investigate predictors or moderators of treatment outcomes for CPS due to a lack of research in this area at the time of

our review. I examined all familial and parental predictors and moderators in treatments identified as PMT programs for youth between 3- and 16-years of age. It included prevention studies - children with conduct problem symptoms- and intervention studies: children with clinical diagnoses. A total of 21 studies met the inclusion criteria. Of these, only five studies examined moderators of treatment outcomes. It was noted that while a significant amount of research had been conducted to date, which specifically examining predictors of treatment outcomes, the majority of this research had not explored parental and family processes. In addition, very few studies examined moderators of treatment outcomes.

Our findings from Study 1 highlighted a significant gap in the existing literature, particularly concerning moderators of treatment outcomes. I suggested that those conducting RCTs routinely explore both moderators and predictors of treatment success. Our findings also highlighted the importance of examining variables that extend beyond commonly collected data (e.g., age and SES) and risk factors (Maric et al., 2015). The selection of these moderators and predictors should instead be guided by theory, clinical experience, and prior empirical research (Arean & Kraemer, 2013; Kramer et al., 2006). For example, effective disciplinary practices, such as clear and consistent discipline, is a core component of many PMT programs (e.g., Barkley, 2013). However, only one study directly examined parenting practices, specifically, “ineffective discipline” as a predictor of treatment outcomes (Dittman et al., 2014). Similarly, maladaptive parental attributions regarding children's behaviour, which involve attributing such behaviour to internal, stable characteristics, have been theorized to impact how parents perceive, engage with, and benefit from parent training (Mah & Johnston, 2008). However, this relationship has only been investigated in one study (Dittman et al., 2014). Such gaps have been used to inform the selection of variables for Study 2. Furthermore, I suggested that alternative methods of interventions be explored that address variables, such as parent-child relationships that were shown to predict better

treatment outcomes. Collaborative and Proactive Solutions (CPS; Greene, 1998) is one such possible approach. This model is based on previously mentioned research that conceptualises parent-child incompatibility as a result of situations where parental expectations exceed a child's adaptive response abilities (due to cognitive lagging skills), leading to disruptive behaviours (Greene & Winkler, 2019).

Overview of Study 2 and Study 3

Study 2 and Study 3 (Chapter 4 and Chapter 5, respectively) are secondary analyses drawn from the same sample of a randomised controlled trial (RCT) that investigated the effectiveness of CPS and PMT for youth with ODD in an Australian community setting (Murrihy et al., 2023). This RCT spanned over a 5-year period and involved families being randomised to PMT or CPS for up to 16 weeks of individual treatment. The chief investigator was Dr Rachael Murrihy, and I (Anna Dedousis-Wallace) was a co-investigator. I therefore had an integral role in the design and implementation of the RCT in which my thesis is based. The data for Study 2 and 3 was collected approximately 3-months after this trial began, as it was awaiting university ethics approval.

Overview of sample for Study 2 and Study 3

The sample used for both Study 2 and 3 were 145 children and adolescents aged between 7-14 years of age (103 male, *M*= 8.88 years, *SD*= 2.04) that had a clinical diagnosis of ODD based on the DSM-IV-TR criteria (American Psychiatric Association, 2000). Participants were excluded if they met diagnostic criteria for conduct disorder, autism spectrum disorder or developmental delay, or were at high risk of suicide. All participants assigned to treatment were included in an intent-to-treat analysis (ITT, N = 145), irrespective of program attendance. Of the families included in the sample, 117 (81%) families completed post-treatment assessments and 100 (70%) families completed 6-month follow-up

assessments. Most children came from two-parent families (78%) identifying their ethnicity as Australian (56%). The remaining distribution included European (21%), Asian (6%), African (5%), Central American (4%), New Zealand (2%), and North American (1%) backgrounds. A considerable portion of participants were from relatively high socioeconomic backgrounds, with approximately three-quarters of the parents having completed undergraduate university degrees. Nearly the entire sample (96%) exhibited at least one comorbid disorder, with 55% presenting three or more comorbid disorders. Internalising disorders were the most common comorbid disorder (71%), followed by ADHD (67%).

Overview of the procedures

All procedures used for both empirical studies were approved by the institution's research ethics committee (HREC 2014000159). Participants were recruited via clinical (55%) and community referral pathways. Clinical referrals came from health practitioners and school personnel and the community referrals were families that self-referred in response to media advertisements. A total of 232 participants were initially screened for eligibility through a phone interview. Subsequently, 145 families (consisting of parents and children) completed a comprehensive assessment to confirm their eligibility for the study. The diagnosis of ODD was assessed using two distinct semi-structured diagnostic interviews: The Anxiety Disorders Interview Schedule for DSM-IV, Child and Parent Versions (ADIS-IV-C/P; Silverman & Albano, 1996). A battery of assessments was administered with families at three time points: (1) prior to commencing treatment (pre-treatment); (2) at treatment completion (post-treatment); and (3) 6-months after treatment completion (follow-up). The three assessment time points consisted of the ADIS-IV-C/P (Silverman & Albano, 1996) and parent and child self-report questionnaires (see measures section in Chapters 4 and Chapters 5, for more details). In addition to these assessment points, Study 3 administered parent-reported questionnaires at two time points during the treatment phase. Therefore, assessment

timepoints for Study 3 were: prior to commencing treatment (pre-treatment); once treatment strategies were introduced for both CPS and PMT (seventh treatment session), and tenth treatment session; at treatment completion (post-treatment) and at 6-months following treatment completion (follow-up). Following the pre-treatment assessment stage, families were randomly assigned (using block randomisation to ensure equivalent group sizes) to either PMT (*n* = 72*)* or CPS (*n* = 73). Treatment was administered by a combination of experienced clinical psychologists (36%) and Master of Psychology interns (64%).

Study 2

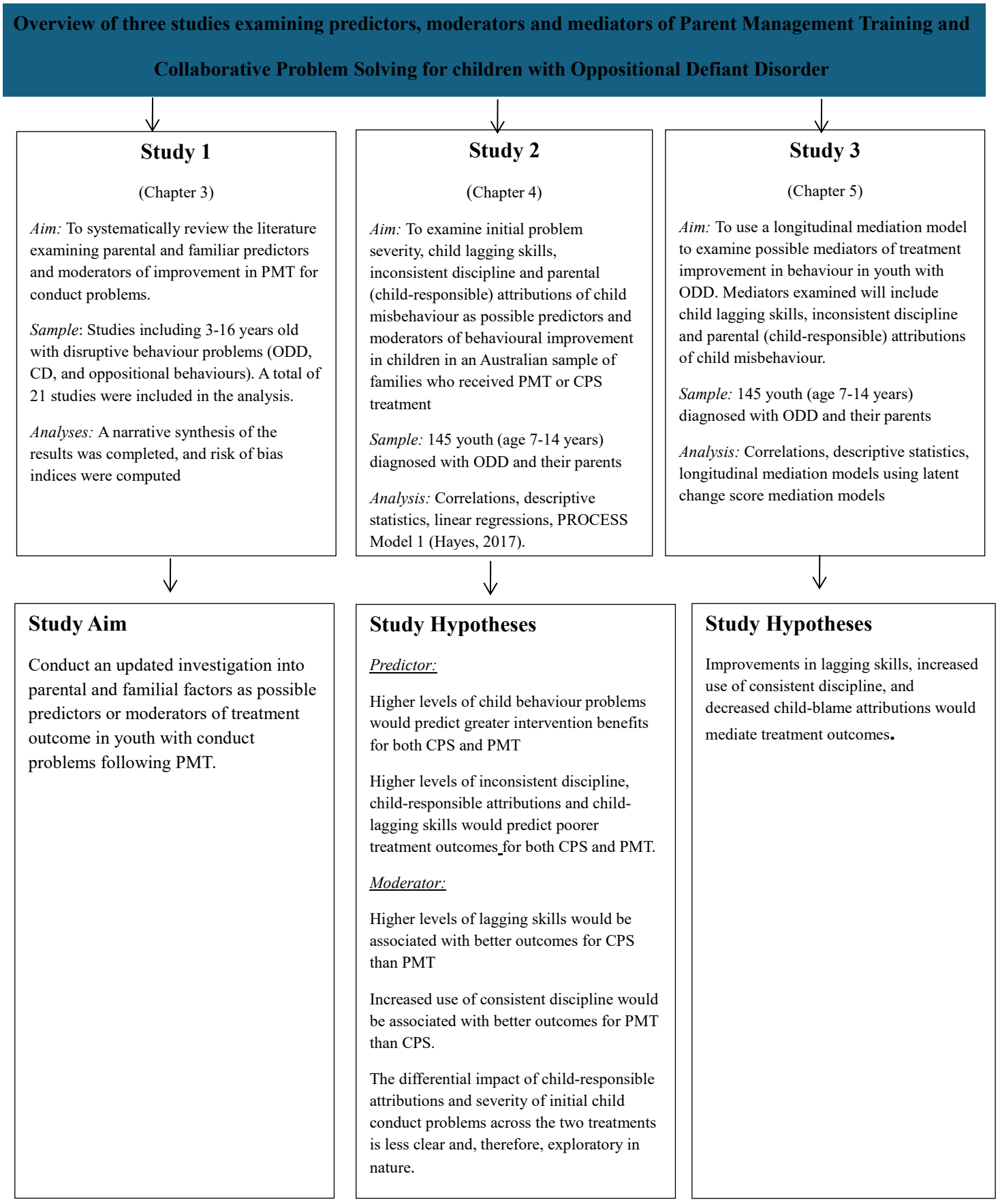
In Chapter 4 I describe our findings from Study 2 where I assessed potential predictors and moderators of PMT and CPS in children with ODD. In the absence of robust empirical support for intervention moderators, I explored variables that I believed were either theoretically or empirically linked to treatment outcomes for CPS and PMT. As a result, I investigated child cognitive lagging skills, inconsistent discipline, parental attributions of child misbehaviour- specifically factors within the child, or "child-responsible" attributions (e.g., genetic predisposition or negative intent; Snarr et al., 2009), and initial problem severity—areas of empirical interest drawn from earlier studies (Shelleby & Shaw, 2014). At the time Study 2 was published, no previous research had examined moderators of treatment outcome for CPS. In addition, to the best of our knowledge, Study 2 was also the first to examine these variables as moderators of treatment outcome for PMT. Linear regressions were conducted to identify significant predictors of treatment outcome. Initial symptom severity, child age and child sex were controlled for when examining lagging skills, child-responsible attributions and the use of inconsistent discipline. The PROCESS macro version 3.0 (Hayes, 2017) in SPSS 26 was then used to test the moderating effects of treatment on the predictor and outcome variables, using PROCESS Model 1.

Study 3

In Chapter 5 I describe our findings from Study 3 in which I examined potential mediators of behavioural improvement in children with ODD following treatment with CPS or PMT. I extended upon our findings from Study 2 and explored the use of inconsistent discipline, lagging child cognitive skills and child-responsible attributions as possible mediators of behavioural improvement following CPS or PMT. The selection of these variables was informed by our moderator findings in Study 2, as well as the hypothesised mechanisms of change in CPS and PMT. Study 3 also attempted to address limitations in previous mediation studies, whereby the essential temporal precedence criteria for mediation in treatment outcome studies have often been overlooked (see Kazdin & Nock, 2003), by examining the variables of interest within a longitudinal mediation model. Study 3 represents the first study to construct and assess a longitudinal mediation model with such variables.

In summary, in order to advance the field in understanding how to optimise treatment outcomes for children with ODD following CPS and PMT, this thesis examined predictors, moderators and mediators of treatment outcomes for these two treatments.

Figure 2.1 *Overview of the three studies for the research programme*



CHAPTER 3:

Parental and Familial Predictors and Moderators of Parent Management Treatment Programs for Conduct Problems in Youth

Published as:

Dedousis-Wallace, A., Drysdale, S. A., McAloon, J., & Ollendick, T. H. (2021). Parental and familial predictors and moderators of parent management treatment programs for conduct problems in youth. *Clinical child and family psychology review*, *24*(1), 92-119. https://doi.org/10.1007/s10567-020-00330-4

NOTE: The content of Study 1, Chapter 3 is identical to the published version

Preamble

Chapter 3 is a narrative review of parental and familial predictors and moderators of PMT improvement for conduct problems, aimed at examining the current state of the field and directions for future research. The review included studies that reported treatment outcomes in various PMT programs for children and adolescents (3-16 years) with disruptive behaviour problems (ODD, CD, and oppositional behaviours), and reported whether parental and familial characteristics were associated with (moderated or predicted) treatment outcomes. The review provided a summary of parental and familial characteristics that were associated with poor treatment outcomes as well as identifying gaps in the research.

Dedousis-Wallace, A., Drysdale, S. A., McAloon, J., & Ollendick, T. H. (2021). Parental and familial predictors and moderators of parent management treatment programs for conduct problems in youth. *Clinical child and family psychology review*, *24*(1), 92-119. https://doi.org/10.1007/s10567-020-00330-4

Author contributions

Conceptualisation and methodology: ADW, THO, JM. Synthesis and analysis: ADW, THO, SD. Writing – original draft: ADW. Writing – review & editing: ADW, SD, JM, THO.

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Abstract

Despite the established efficacy of Parent Management Training (PMT) for conduct problems in youth, evidence suggests that up to half of all treated youth still display clinical levels of disruptive behavior post-treatment. The reasons for these unsatisfactory outcomes are poorly understood. The aim of the present review was to provide an updated analysis of studies from the past 15 years that examined parental and familial predictors and moderators of improvement in PMT for conduct problems. A systematic literature review of indicated prevention (children with conduct problem symptoms) and intervention (children with clinical diagnoses) studies published between 2004 and 2019 was conducted. This 15-year time period was examined since the last systematic reviews were reported in 2006 and summarized studies completed through mid-2004 (see Lundahl et al., 2006, and Reyno & McGrath, 2006). Risk of bias indices was also computed (see Higgins et al., 2016) in our review. A total of 21 studies met inclusion criteria. Results indicated that a positive parent-child relationship was most strongly associated with better outcomes; however, little additional consistency in findings was evident. Future PMT research should routinely examine predictors and moderators that are both conceptually and empirically associated with treatment outcomes. This would further our understanding of factors that are associated with poorer treatment outcome and inform the development of treatment components or modes of delivery that might likely enhance evidence-based treatments and our clinical science. Protocol Registration Number: PROSPERO CRD42017058996.

Keywords: Parent Management Training, predictors, moderators, child conduct problems

Persistent conduct problems (CP) in childhood have been associated with a variety of negative outcomes in adolescence and adulthood, including poor academic achievement, school dropout during adolescence, drug abuse, juvenile delinquency and depression (Colder et al., 2013; Jerrell et al., 2015; Kim-Cohen et al., 2003; Moffitt & Caspi, 2001; Merikangas et al., 2009; Murrihy et al., 2010; Stringaris et al., 2014; Tanner-Smith et al., 2013). The impairments associated with CPs represent the most common reason that families seek help in primary care and hospital settings (see Merikangas et al., 2009, for a review). Left untreated, these symptoms account for a significant cost at both the personal, societal, and economic level (Beecham, 2014; Christenson et al., 2016; Kim-Cohen et al., 2003; Merikangas et al., 2009).

Conduct problems consist of disruptive behaviours that can range from relatively mild behaviours, such as temper tantrums and minor defiance, to more severe behaviours that violate societal rules, such as stealing, destruction of property, and physical aggression (Murrihy et al., 2010). Children with persistent CPs typically meet the Diagnostic and Statistical Manual (DSM-IV, DSM-5; American Psychiatric Association 1994, 2013) criteria for oppositional defiant disorder (ODD) or conduct disorder (CD). Oppositional defiant disorder refers to a recurrent pattern of angry/irritable mood and inappropriate levels of defiance, aggression and vindictiveness toward authority figures. Conduct disorder includes more severe antisocial and aggressive behaviors that involve serious violations of others' rights or their property. Hereafter, the range of conduct problems present in ODD and CD will be referred to as CPs. Due to the high costs of CPs at an individual, family, and societal level, investigating ways to effectively intervene has received much attention.

Parent Management Training (PMT) in its various forms and formats is based on operant conditioning principles and social learning theory (Brainerd & Kazdin, 2005) and is

one of the most widely used interventions for CPs (Eyberg et al., 2008; Murrihy et al., 2010). In essence, these models describe how behavior is learned and modified by reinforcement and punishment processes and that child behavior problems develop, are maintained by, and/or exacerbated in the context of the parent-child relationship (Kaehler et al., 2016). Furthermore, it is hypothesized that teaching parents the principles of behavioral management will result in effective, sustainable changes in child behavior (Danforth, 1998). A major premise of PMT is that ineffective parenting practices, such as harsh and inconsistent discipline, contribute to the origins and course of oppositional behavior in youth and, therefore, changing problematic parenting practices is the primary focus of intervention. In practice, PMT typically includes strategies aimed at helping parents be more consistent and contingent in their responses by using clear and direct commands, differential attention, contingent reinforcement, response cost, and time-out from reinforcement. Another focus of treatment is improving the parent-child relationship and encouraging positive involvement and communication between the parent and the child. Representative PMT programs include: the COMET program (Kling et al., 2010); The Defiant Child (Barkley, 2013); Helping the Non-Compliant Child (HNC; McMahon & Forehand, 2003); the Incredible Years (IY-PT; Webster-Stratton & Reid, 2003); Parent–Child Interaction Therapy (PCIT; Brinkmeyer & Eyberg, 2003); Parent Management Training Oregon Model (PMTO: Patterson et al., 1975); Integrated Family Intervention for Child Conduct Problems (Dadds & Hawes, 2006), and finally, Triple P-Positive Parenting Program (Triple P: Sanders, 1999);

PMT is among the most extensively studied and validated treatment for CPs (e.g., Deković & Stoltz, 2015; Eyberg et al., 2008; Michelson et al., 2013). These interventions have been shown to produce positive outcomes in both efficacy and effectiveness trials in "real-world" clinical settings, across different cultures, languages and populations (Menting et al., 2013; Michelson et al., 2013; Webster-Stratton et al., 2012). Limitations are, however,

evident in research findings associated with PMT treatment trials. For example, despite the substantial empirical support for PMT treatments of CPs, relatively little is known about factors related to poor treatment response, which is typically seen in one third to one half of treated cases (Murrihy et al., 2010; Reyno & McGrath, 2006; Ollendick et al., 2018). More specifically, some studies have shown that while improvements in disruptive behaviors are evident, up to half of treated cases still display clinical levels of disruptive behaviors post treatment (Ollendick et al., 2016). The attrition rate for this population is also relatively high (approaching 50%, see Nock & Ferriter, 2005) and the benefits that are obtained following treatment are not always maintained over time (Lundahl et al., 2006). It is, therefore, important to understand the conditions under which PMT is most effective so that we can tailor interventions to ensure maximum benefits for these youth and their families. To this end, examining moderators and predictors of treatment outcome is vital as they assist in addressing these questions.

Treatment moderators inform "for whom" or under "what conditions" the treatments work (Kraemer et al., 2002). According to Kraemer and colleagues, moderator variables must be pre-randomization characteristics in randomized clinical trials that can be shown to differentially predict treatment outcome. Generally, moderator variables are associated with the interaction effect between the proposed moderator variables and the different treatment conditions (Prins et al., 2015). These pre-treatment moderator variables have been referred to as "prescriptive indicators" (MacKinnon et al., 2013) because they can provide information about whether two treatments differ from one another due to characteristics of the sample or the contexts under which the treatments are delivered. For example, a child of a parent with high levels of depression at pre-treatment may make more gains in an individualised versus group delivered PMT program. Pre-treatment knowledge of moderators enables the clinician

to choose the most suitable treatment and to adjust and individualise it whenever possible (Prins et al., 2015).

Predictors also inform us *for whom* treatments work. Kraemer and colleagues (2002) specify that predictors are generally pre-treatment variables, but can also consist of post-treatment variables (e.g., treatment compliance) that are associated with treatment outcomes irrespective of treatment assignment. These predictor variables have been referred to as "prognostic indicators" (MacKinnon et al., 2013). Generally, predictor variables are associated with the main effects of the candidate variables. For example, a parent participating in treatment for their child's disruptive behavior may experience poor outcomes if they have high levels of depression at pre-treatment, regardless of what treatment they receive. In contrast, a moderator variable must interact with treatment assignment to specify for whom a specific treatment works. Importantly, not all predictor variables are moderators of treatment outcome (Kraemer et al., 2002; Ollendick et al., 2008).

Parental and familial characteristics may have a significant impact on treatment outcomes of PMT interventions (e.g., Lundahl et al., 2006; Shelleby & Shaw, 2014. Parents play a crucial role in PMT interventions; they are the primary agents of change (Forgatch & Gewirtz, 2018), as they shape the child's behaviour through the effective implementation of behavior management principles. More specifically, parents are taught skills in how to interact with their child and how to implement the techniques provided to them in treatment with the goal of altering specific child-rearing practices that will lead to decreases in disruptive behaviors (Brainerd & Kazdin, 2005). It is therefore of utmost importance that we understand what pre-treatment parental and familial factors impact parents' ability to successfully engage and implement PMT strategies, in order to achieve optimal treatment outcomes.

Unfortunately, to date, relatively few studies have examined parental and familial predictors and moderators of treatment outcome for disruptive behaviors; as a result, Prins and colleagues (2015) recently described this movement as a "work in progress." Parental and familial characteristics that have most frequently been investigated include maternal depression, maternal stress, socioeconomic status (SES), and marital status (Brainerd & Kazdin, 2005; Menting et al., 2013). Less commonly examined characteristics include paternal indices of stress and depression, parental attributions for child misbehaviour, parental age, and substance use (Reyno & McGrath, 2006; Webster-Stratton, 1990; Sawrikar et al., 2018). To date, results have been mixed, with few studies finding significant predictors of treatment outcome (e.g., Baruch et al., 2011; Hartman et al., 2003; Reyno & McGrath, 2006), and even fewer reporting significant moderators of treatment outcome (e.g., Lundahl et al., 2006; Shelleby & Shaw, 2014). Here, we provide a brief overview of some of the early findings associated with family and parent characteristics, and then examine more recent findings.

Family characteristics

One of the strongest familial predictors found to influence treatment outcome for CPs in earlier studies was family income (e.g., Dumas, 1984; Kazdin, 1990; Lundahl et al., 2006; Reyno & McGrath, 2006). In a 2006 meta-analysis examining the predictors of treatment outcome for CPs, Reyno and McGrath (2006) found parent training to be less effective for economically disadvantaged families compared to their less disadvantaged counterparts. Similarly, in another early meta-analysis investigating the moderators of treatment outcome for CPs, Lundahl and colleagues (2006) found parent training was least effective for economically disadvantaged families and that such families benefited significantly more from individually delivered parent training compared to group delivery.

Parental characteristics

Maternal psychopathology is a commonly researched parental predictor of parent training outcomes (e.g., Hartman et al., 2003; Kazdin & Wassell, 2000; Shaw et al., 2006), with studies once again yielding mixed findings. Children of parents who have higher levels of depressive symptoms have been found not to benefit as much from parent training when compared to children of parents with low levels of depression (Kazdin & Wassell, 2000; Reyno & McGrath, 2006). However, other studies have found the opposite effect, wherein higher levels of maternal depression have been shown to predict greater improvements in CPs (Shaw et al. 2006).

Mother-child relationship quality as a predictor of treatment outcome has also yielded mixed results in these earlier studies. Some have found the greatest benefits for children whose mothers reported lower mother–child relationship quality (Tein et al., 2004), while others have found no significant effects for mother-child relationship on treatment outcome (Gardner et al., 2009).

With respect to other parental characteristics, some studies have found the greatest benefits for children whose mothers reported low social support, and for children of mothers who reported greater marital discord and daily hassles (Van Zeijl et al., 2006). While others have found parental characteristics including life stress parental age, income/SES, or cumulative risk to either result in poor treatment response or have no impact on treatment outcome (Webster-Stratton, 1990).

Collectively, these studies suggest that the effect of familial and parental characteristics across treatments is not clear, with several moderation and predictor studies reporting non-significant results (see Shelleby & Shaw, 2014). The lack of consensus in the literature may be attributed to relatively few studies examining these variables. Others have

suggested that variation in these results could be attributed to the different types and delivery modes of parenting programs examined. For example, the collaborative approach of some group programs, such as Incredible Years, may result in the tailoring of strategies to meet the specific characteristics and needs of the families (Leijten et al., 2017). Others argue that for those most disadvantaged, an individualised therapy approach may be of most benefit (Lundahl et al., 2006).

Given the status of these earlier studies, the aim of the current review was to conduct an updated investigation into parental and familial factors as possible predictors or moderators of treatment outcome in youth with CPs. The outcome measures examined were changes in conduct problems in children and adolescents following PMT interventions. The earlier reviews by Lundahl and colleagues (2006) and Reyno and McGrath (2006) examined studies through 2003 to mid-2004, respectively, and were limited in their examination of moderators of treatment outcome (Lundahl et al., 2006). A more recent review examined a range of moderators through 2013 but was limited to young children between 1 and 10 years of age (Shelleby & Shaw, 2014). We set out to identify and systematically review the literature from the past 15 years (from mid-2004 to mid-2019). The current review examines all familial and parental predictors and moderators in treatments identified as PMT programs for youth between 3 and 16 years of age.

Method

This review was conducted in accordance with the PRISMA guidelines (Moher et al. 2009, 2015), and the review protocol was registered with PROSPERO [CRD42017058996].

Inclusion and exclusion criteria

The review included studies that reported treatment outcomes in parent management training for children and adolescents (3-16 years) with disruptive behavior problems (ODD,

CD, and oppositional behaviors), and reported whether parental and familial characteristics were associated with (moderated or predicted) treatment outcomes. Children and adolescents with comorbid Attention Deficit-Hyperactivity Disorder (ADHD) or with other comorbid concerns, such as internalizing disorders, were included in the review provided the primary target for the intervention was externalizing conduct behavior problems. Intermittent Explosive Disorder was not included due to its more recent recognition as a disruptive behavior disorder in the Diagnostic Statistical Manual (DSM-5; American Psychiatric Association, 2013). In addition, the following specific inclusion criteria were employed: 1. Sample drawn from a randomised clinical trial (RCT); 2. Studies with a primary outcome measure of conduct behavior problems; 3. Studies reported a quantifiable measure of the association between predictor and/or moderator variables and treatment outcome measures; 4. The parent management training program was an identifiable program with the core components of parent management training being enlisted (e.g., praise, special time and cost contingency) to parents; 5. The sample contained at least 5 participants. Studies were excluded if the intervention was limited to teachers in school settings or for children with autism spectrum disorder or other developmental disabilities**.**

Search strategy

The primary search strategy involved searching four databases: PsychINFO, MEDLINE, SCOPUS and Cochrane Central Register of Controlled Trials (CENTRAL). The search terms were: externali*ing OR conduct OR behavio*r problems OR Oppositional OR antisocial OR disruptive OR non-compliance AND parent training OR parent* intervention OR parent management training OR treatment intervention AND predict* OR factors OR response OR outcome OR treatment outcome. Only peer-reviewed studies published between October 2004 and July 2019 were included. Retrieved studies were then filtered for age groups (only children and adolescents between 3 and 16 were included) and English

language, followed by additional exclusion criteria (listed below). Our secondary search strategy included article search on Google Scholar as well as searching through the main online PMT libraries (Triple P, Incredible Years, PMTO and PCIT). Finally, reference lists from included studies and previous literature reviews in the field were hand searched. Figure 3.1 represents a PRISMA flow diagram illustrating the selection process that followed.

Study selection

Following the initial search, abstracts and titles were screened to determine their relevance to this review. Studies that could be immediately excluded on the basis of title were discarded. For the remaining references, the first author (ADW) reviewed abstracts to assess compliance of studies with eligibility criteria. Full text manuscripts were then retrieved and evaluated against the inclusion criteria. The second author (SAD) reviewed a random subset of the full text manuscripts (20%). There was 86% agreement between ADW and SAD; disagreements were discussed and resolved. Two studies required further discussion with the last author (THO) and were resolved. The first author (ADW) coded and extracted all the data. The second author (SAD) checked a subset to ensure that all the extracted data were recorded and reported accurately. Information extracted from each study included: authors, year of study, original study from which the sample was drawn, age, gender and ethnicity of participants, intervention used, format (group or individual), sample size, measures used, criteria required for inclusion, follow up length, and risk of bias (shown in Table 3.1, Table 3.2 and Figure 3.2). The predictor/moderator variables examined and main findings were also extracted (shown in Table 3.3).

Risk of bias in Individual Studies

Risk of bias for the included studies was assessed using the Revised 'Risk of Bias' tool (RoB 2.0) developed by the Cochrane Collaboration (Higgins et al., 2016). This tool

allowed assessment of potential sources of bias in each study, including (1) randomization process; (2) deviations from intended interventions; (3) missing outcome data (4) measurement of outcome; (5) selection of reported results and (6) reporting bias. Each category was coded as low, high or possessing some concerns as suggested by Higgins et al., 2016). The assessment of study quality was undertaken independently by ADW, with 20% of the analyses checked by SAD. Inter-rater reliability was estimated with Cronbach's alpha, with an overall bias level agreement of 1 and a Cronbach's alpha of .904 for agreement across the different types of biases. Disagreements were resolved though discussion.

Data extraction

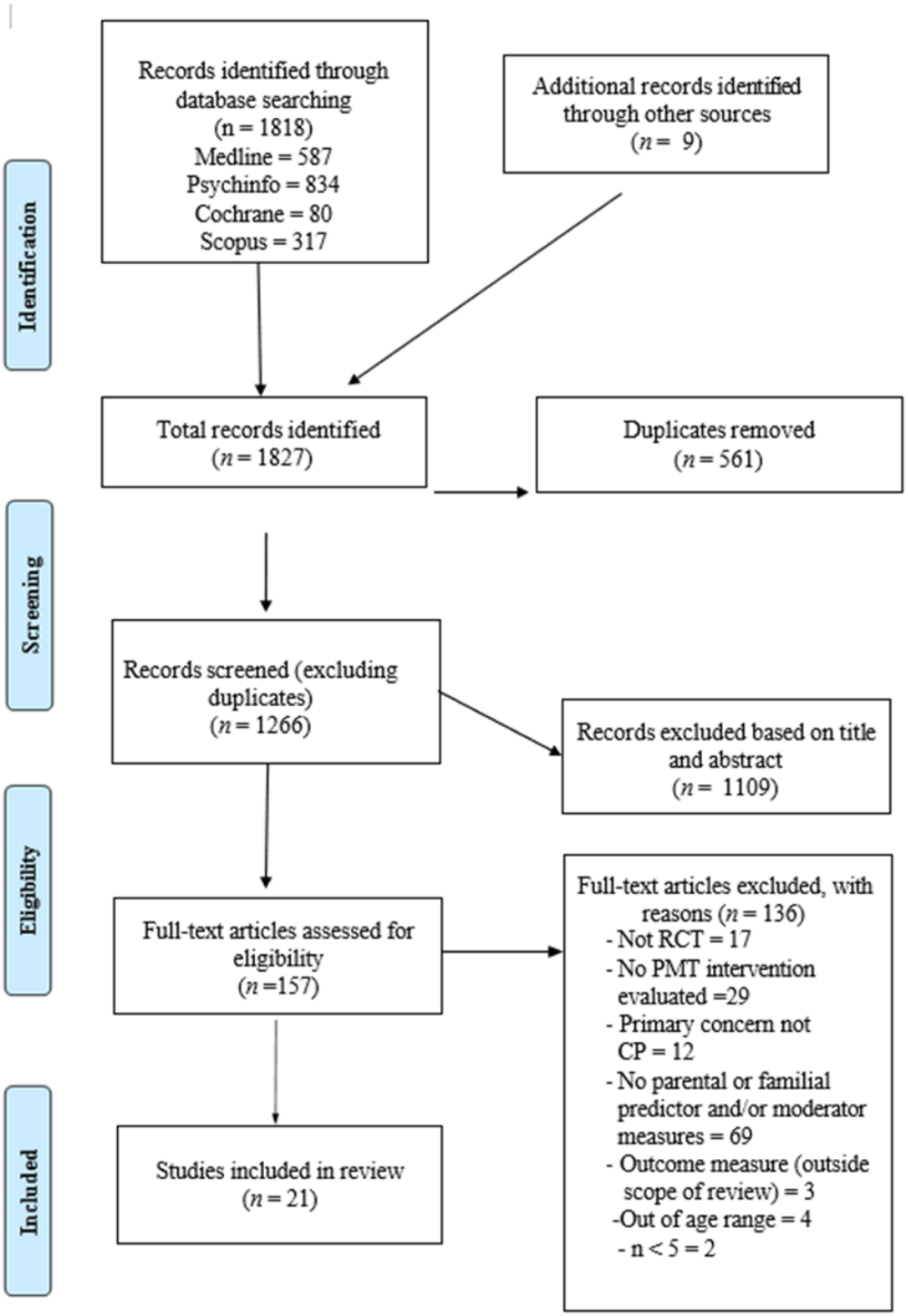
Data extracted from included studies were recorded using a data extraction form designed for this review. Data included study details, study setting, sample characteristics, measures used, intervention format, inclusion criteria, follow up length, risk of bias and predictors and moderators examined (see Table 3.1, Table 3.2 and Table 3.3).

Data synthesis

A narrative synthesis of the results was undertaken. Unfortunately, a meta-analysis was not feasible for this review due to the limited number of studies (n = 21) and the considerable heterogeneity of methods evident across studies. For example, there was great variability in the outcome variables used and statistical analyses employed, with some studies examining categorical end diagnostic state and others analysing dimensional levels of symptomatology. Further, considerable variability was evident in the type of PMT program implemented and whether it was delivered in group or individual format.

Results

Figure 3.1 *Overall flow chart of articles screened*



Study Selection

A total of 1827 records were examined. Five hundred and sixty-one records were removed as duplicates and a further 1109 were removed at title and abstract screening stage. This left 157 records that were examined as full text records, 136 of which were excluded leaving 21 studies for inclusion in the review. Figure 3.1 provides an account of the study selection process.

Study characteristics

Characteristics of the included studies, grouped by type of PMT intervention, are presented in Table 3.1**.** Of the 21 studies examining predictors and moderators of change, 10 reported on the Incredible Years intervention (Webster-Stratton & Reid, 2003). The remaining 11 interventions included other variations of parent management training including: Helping the Non-Compliant Child (McMahon & Forehand, 2003, *n = 2),* Communication Method (Kling et al., 2010, *n = 3),* Brief Parent Training (Askeland, Berg, Christiansen, Flock, & Launes, 2006, *n = 1)*, Defiant Child (Barkley, 2013, *n = 3),* Triple P (Sanders, 1999, *n = 1)*, and Parent Child Interaction Therapy (Brinkmeyer & Eyberg, 2003, *n = 1)*. Of the 21 studies included, 14 interventions were delivered in a group format and 7 were delivered individually. The majority of the studies were conducted in the United States *(n = 8),* followed by Norway *(n=4)*, Sweden (n=3), The Netherlands *(n=2)*, UK *(n=2)*, Portugal *(n=1)*, and New Zealand *(n=1)*.

Research Design

All 21 studies were RCTs, with 14 of the 21 studies comparing an intervention to an active control and the remaining seven to a waitlist control. Predictors were examined in 19 of the 21 studies, while moderators were examined in only 5 studies (with three of these studies examining the variables as both predictors and moderators). Within the 19 studies

investigating predictors, an additional four studies indicated they had undertaken moderation analyses but in line with Kraemer and colleagues' (2002) definitions, they were more accurately predictor analyses and were subsequently analyzed as predictors only (Gardner et al., 2010; Leijten et al., 2017; Seabra-Santos et al., 2016; Weeland et al., 2017).

Risk of Bias within Studies

Risk of bias ratings are shown in Table 3.2 and Figure 3.2. The methodological quality of the studies varied greatly, with the majority of studies yielding acceptable levels of risk within the six bias indices. Ten studies (47%) reported adequate randomisation methods with nine studies (43%) presenting some limitations, mostly due to inadequate reporting of the specific randomisation method employed. The remaining two (10%) studies presented high levels of concern. The majority of the studies were classified as low risk of bias for deviations from intended interventions (76%), missing outcome data (90%), measurement of outcome (57%), and selection of reported results (90%). Overall, six studies were classified by reviewers as low risk on all six indices, four as low risk on four indices, seven studies as low risk on three measures and the remaining four studies as low risk on two bias measures. The overall risk of bias rating was categorised as low for six studies, some concerns for six studies and high potential risk of bias for nine of the 21 studies.

Sample Characteristics

Sample sizes per study ranged from 22 to 908. Children included in the studies ranged in age from 3 years to 14 years - none of the studies investigated children from 14 to 16 years. The majority of interventions were delivered to children whose average ages were between 3 and 8 years, with only six of the 21 studies including children above the age of 10 years. In 19 studies, the majority of the children were male. In terms of presentation criteria, a diagnosis of ODD was required for inclusion in six of the studies, four studies required children to display elevated levels of disruptive behaviors, and six required the child to reach a clinical cut off for disruptive behaviors on a parent-report measure such as the Eyberg Child Behavior Inventory (ECBI; Robinson, Eyberg, & Ross, 1980) or the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997). A further two required both an ODD or CD diagnosis, as well as clinically significant levels on the ECBI. Finally, two studies required an ODD diagnosis or for the younger children to display elevated levels of disruptive behaviors, while for the remaining study children received treatment as part of usual services provided and did not require a listed diagnosis.

Child behavior outcome measures varied across studies. The majority of studies (16) used parent-report measures, most commonly the ECBI or the Child Behavior Checklist (CBCL; Achenbach, 1991a; Achenbach, 1991b). Thirteen of these studies relied solely on parent report measures for measuring treatment outcome. The presence of diagnosis was the primary outcome in five studies. Semi-structured interviews, such as the Anxiety Disorders Interview Schedule – child and parent version and (ADIS-C/P; Silverman & Albano, 1996) and the Diagnostic Interview Schedule for Children (Kiddie-SADS; Shaffer et al., 2000) were used in seven studies, however two of these studies used them to determine inclusion of participants rather than as an outcome measure. Only three used observational methods. More than one criterion variable was used in 16 (76%) of the 21 studies.

Table 3.1. *Study Characteristics.*

Study	Age, Gender and Ethnicity	Intervention, format and N	Measures	Criteria required for inclusion	Follow-up Length
Incredible Years (IY; Webster-Stratton, 1981; 1982; 2008)					
Scott (2005) Sample from Scott et al. (2001) (UK)	Age range: 3-8yrs. (M=7, SD 1.66). 71% male Ethnicity: 10% ethnic minority, specific not reported.	Group. N=59	Demographic information; PACS; SDQ; PDPQ; BDI.	Referred for antisocial behaviour.	1yr
Beauchaine et al. (2005) Combined sample from 6 RCTs by Webster-Stratton (1982, 1984, 1994), Webster-Stratton & Hammond (1997), Webster-Stratton et al. (1989) and Webster-Stratton et al. (1999). (USA)	Age range: 3-8.5yrs. (M=5.4, SD=1.3). 78% male Ethnicity: 4.8% African American, 88.5% Caucasian, 3.9% Latino, 2.8% other.	Group. N=514 PT=317 CT=60 PT+ CT=38 PT + TT=24 CT + TT=23 PT+CT+TT= 25 WLC=27.	CBCL; DDI; PSI; ECBI; DPICS-R; DAS; BDI; PSAAQ; Hollingshead two factor index.	Diagnosis of ODD and/or CD according to DSM-III-R or DSM-IV. Clinically significant levels on the ECBI.	1yr
Fossum et al. (2008) Sample from Larsson et al. (2009) (Norway)	Age range: 4-8yrs. (M=6.6, SD=1.3). Boys: PT 80.9%, PT + CT 78.8 %, WLC 78.6% Ethnicity: 98% native- speaking Norwegians, other 2% ethnicity not reported.	Group. N=127 PT=47 PT+C=52 WLC=28.	ECBI; DPICS-R; PBQ-TRF; KSADS; PSI; BDI.	Diagnosis of ODD and/or CD according to DSM-IV. Clinically significant levels on the ECBI.	None

Table 3.1. *Continued.*

Study	Age, Gender and Ethnicity	Intervention, format and N	Measures	Criteria required for inclusion	Follow-up Length
Lavigne et al. (2008) Sample from Lavigne et al. (2007) (USA)	Age range: 3-6yrs. (M=4.6, SD=1.0). 53% male Ethnicity: 75% White, 25% not white.	Group. N=117 Nurse-led=49, Psychologist-led=37, Minimal Intervention =31.	Family Background Questionnaire; BDI; RABI; ECBI; CBCL; Videotaped Parent-child Interaction; PSI-SF; C-GAS.	Met diagnostic criteria DSM-IV for ODD based on clinical consensus diagnoses.	12 months
Gardner et al. (2010) (UK)	Age range: 36-59 months. IY:(M=46.4, SD=6.6); WLC: (M=46.2, SD=4.2). Gender: IY: 57% male; WLC: 66% male Ethnicity: Not specified.	Group. Total N=133 IY=86 WLC=47.	PDHQ; ECBI Problem Scale score; BDI.	At risk of developing CD-scored above clinical cut off on the ECBI problem or intensity scale.	6 months
Drugli, Fossum et al. (2010) Sample from Larsson et al. (2009) (Norway)	Age range: 4-8yrs. (M=6.6, SD=1.3). 80% male Ethnicity: Not specified.	Group. Total N=99 PT= 47 CT+PT = 52.	Parent interview; Demographics; ECBI; CBCL; Kiddie-SADS; PPI; PBI-TRF; PSI.	Sub-threshold or diagnosis of ODD and/or CD determined by Kiddie-SADs.	1yr
Drugli, Larsson et al. (2010) Sample from Larsson et al. (2009) (Norway)	Age range: 4-8 yrs. (M=12.1, SD=1.3). 83% male Ethnicity: Not specified.	Group. Total N=54 PT=20 PT+CT=34.	Demographics; Kiddie-SADS, ECBI, CBCL; PPI, BDI, PSI.	Sub-threshold or diagnosis of ODD and/or CD determined by Kiddie-SADs.	5-6yrs

Table 3.1. *Continued.*

Study	Age, Gender and Ethnicity	Intervention, format and N	Measures	Criteria required for inclusion	Follow-up Length
Seabra-Santos et al. (2016) (Portugal)	Age range: 3-6yrs. (M=55.86 months, SD=11.20). 73% male Ethnicity: Portuguese.	Group. Total N=124 IY=68 WLC=56.	Demographics; SDQ; PKBS-2; BDI.	A score above 80th percentile on the SDQ to determine if at risk for disruptive behaviours.	12 and 18 months
Weeland et al. (2017) (Netherlands)	Age range: 4-8yrs. (M=6.21, SD=1.33). 30% male Ethnicity: 97.4% born in The Netherlands, other 2.6% specifics not reported.	Group. Total N=387 IY=197 Control=190.	Demographics; PPI; ECBI; DPICS.	A score at or above the 75th percentile on ECBI.	4 months
Leijten et al. (2017) (Netherlands)	Age range: 3-8 yrs. (M=5.6, SD=1.35). 62% male Ethnicity: Recruited (n=110) 26% Caucasian, 39% Moroccan, 18% Turkish, 17% other. Referred (n=46) 84% Caucasian, 11% Moroccan, 5% other.	Group. N=154 IY=107 WLC=47.	ECBI; PPI; PSI-SF; SDQ; K-DBDS; DISC-IV; Parent Rating of Aggression instrument.	Recruited: Identified parenting difficulties due to disruptive child behaviour. Referred: Diagnosis of ODD, CD, ADHD or parent–child relational problems.	3 months
Defiant Child (DC: Barkley, 2013)					
Ollendick et al. (2016) (USA)	Age range: 7-14yrs. (M=9.52, SD=1.80). Gender: CPS 67% male, DC 57% male, WLC 64% male	Individual. Total N=134 CPS=60 DC=63 WLC=11.	Demographic form; ADIS-C/P; CGI-S; CGI-I; DBDRS; BASC-2.	Diagnosis of ODD based on the ADIS-C/P.	6 months

Table 3.1. *Continued.*

Study	Age, Gender and Ethnicity	Intervention, format and N	Measures	Criteria required for inclusion	Follow-up Length
Ollendick et al. cont.	Ethnicity: 84% Caucasian, 16% non-Caucasian.				
Miller-Slough et al. (2016) Sample from Ollendick et al. (2016) (USA)	Age range: 7-12yrs. (M=9.66, SD=1.75) 61% male Ethnicity: 88.45 % Caucasian, 4.75 % African American, 4.3 % Asian American, 2.65 % Hispanic/ Latino, 0.25 % Native American, 1.8 % Biracial.	Individual. Total N=75 (ie DC+CPS) – specific group n's not specified.	ADIS-C/P; Emotion Talk Task; BASC-2.	Diagnosis of ODD according to diagnostic criteria.	None
Eckshtain et al. (2019) Sample from Weisz et al. (2012) (USA)	*Age range: 7-13yrs (M=10.11, SD=1.69) Gender: 67.6% male Ethnicity: 46.5% White/Caucasian, 9.9% African, American/Black, 5.6% Hispanic/Latino, 1.4% Asian, 32.4% multi-racial, 4.2% other.	Individual. DC= 63.	CBCL; YSR; BPC; BSI.	DSM–IV diagnosis or clinically elevated problem levels in the areas of anxiety, depression, and/or disruptive conduct.	None
Communication Method (COMET: Kling, Forster, Sundell & Melin, 2010).					
Kling et al. (2010) (Sweden)	Age range: 3-10 yrs. (M=6, SD=2.3) 60% male	Group. Total N=148 PMT-nurse group=56 PMT-self led=52 WLC=40.	Demographic questionnaire and composite score of: PDR, ECBI-IS, ECBI-PS; PPI.	A score above the 90th percentile on the impact and burden scale from SDQ.	6 months

Table 3.1. *Continued.*

Study	Age, Gender and Ethnicity	Intervention, format and N	Measures	Criteria required for inclusion	Follow-up Length
Kling et al. cont.	Ethnicity: 78% born in Sweden, 22% immigrants.				
Högström et al. (2014) Sample from Enebrink et al. (2012) (Sweden)	Age range: 3-11 yrs. (M= 6.71, SD = 2.31) 53.4% male Ethnicity: 98.3 % born in Sweden, remaining % NR.	Group. Total N=104 iCOMET=58 WLC=46.	ECBI; PPI; SDQ; Homework Assignments: Total number of homework tasks completed; <u>Prompting positive behaviour:</u> Responsive playtime; prepare and prompt; tasks and rewards. <u>Homework intended to reduce negative behaviors:</u> Ignoring misbehaviour; time out.	One SD above the mean on the ECBI in relation to the age of the child.	18 months
Stattin at al. (2015) (Sweden)	Age range: 3-12 yrs. Mean (SD): Connect 7.32 (2.41), Cope 7.07 (2.54), IYP 6.93 (2.15), Connect 9.8 (1.35), WLC 6.71 (2.35) Male: Comet 64.90% Cope 61.10% IYP 67.10% Connect 60.40% WLC 60.40%. Ethnicity: 89% born in Scandinavian countries.	Group. Total N=908 COMET=207 IYP=122 Cope =202 Connect=218 WLC=159.	Demographics questionnaire; ECBI; SNAP-IV (ODD subscale).	All children seeking usual services, without an autism spectrum disorder diagnosis.	None

Table 3.1. *Continued*.

Study	Age, Gender and Ethnicity	Intervention, format and N	Measures	Criteria required for inclusion	Follow-up Length
Parent Child Interaction Therapy (PCIT; Eyberg, & Robinson, 1982)					
Werba et al. (2006) (USA)	Age Range: 3-6 yrs. (M=58.1mth, SD=13). 80% male Ethnicity: 78% White, 14% Black, 8% Hispanic/Asian/biracial.	Individual. Total N=99 WLC=47 PCIT=52.	Treatment success was defined as meeting highly specific treatment completion criteria for PCIT. ECBI; PSI; BDI, PPVT-R, WPT, DAS, PLOC, DPICS-II and demographic information, Hollingshead's four-factor index, Maternal distress = composite of BDI and PSI.	ODD diagnosis determined by DSM-III-R Structured Interview.	None
Helping the Non- compliant Child (HNC; Forehand & McMahon,1981; McMahon & Forehand, 2003)					
Parent et al. (2011) (USA)	Age range: 3-6yrs. (M= 4.50, SD= NR). 51% Male Ethnicity: 92.3% European American, 7.7% other.	Group. N=39 GC=NR WLC=NR.	ECBI; BSI; PCS (conflict subscale); demographics.	Parents expressed an interest in improving their child's behaviour.	2 months
Zachary et al. (2017) Secondary analysis of data from Jones et al. (2014) (USA)	Age range: 3-8 yrs. (M=5.69, SD=1.58) 47% male Ethnicity: 16% Hispanic/Latino, 31% African-American, 47% Caucasian, 6% other.	Individual. N=22. HNC=11 TE-HNC=11.	ECBI; CCNES; DERS; Efficiency of services.	Clinical range of disruptive behaviours on the ECBI.	None

Table 3.1. *Continued.*

Study	Age, Gender and Ethnicity	Intervention, format and N	Measures	Criteria required for inclusion	Follow-up Length
Brief Parent Training (BPT: Askeland, Berg, Christiansen, Flock & Launes, 2006)					
Kjøbli et al. (2014) (Norway)	Age range: 3-12 yrs. (M=7.28, SD=2.61) 68.1% male Ethnicity: 93.5% Norwegian background, 1.9% other Western European Countries, 4.6% 'other'.	Individual. Total N=187 BPT=95 TAU=92.	Parent: ECBI; CBCL; HCSBS. Teacher: SSBS. Maternal mental distress: SCL-5.	Exhibit problem behaviour, based on clinical judgements at first contact.	None
Triple P (Sanders, 1999)					
Dittman et al. (2014) Sample from Sanders et al. (2014) (New Zealand)	Age range: 3-8yrs. (M=5.63, SD=1.65) 71% male Ethnicity: 92% New Zealand European background, 4% Maori, 4% Pacific Islanders.	Individual. Total N=89 TPOL=89.	Demographics; ECBI; PS; PTC; Brief-CAP; DASS; PAI; PPC; Parent child relationship quality; Parental attributions regarding child misbehaviour.	Elevated levels of disruptive behaviour problems.	None

Note. *Demographics are based on a combined sample of internalizing (n = 79) and externalizing disorders (n = 63). Results for the externalizing disorders are presented.

ADHD: Attention Deficit Hyperactivity Disorder; ADIS-C/P: Anxiety Disorders Interview Schedule for DSM–IV, Child and Parent Versions; BASC-2: Behaviour Assessment System for Children, Second Edition; BDI: Beck Depression Inventory; BPC: The Brief Problem Checklist; Brief-CAP: Brief version of Child Maltreatment Risk; BSI: Brief Symptom Inventory; CBCL: Child Behaviour Check List; CCNES: Coping With Children's Negative Emotions Scale; CD: Conduct Disorder; C-GAS: Children's Global Adjustment Scale; CGI-I: Clinical Global Impression–Improvement; CGI-S: Clinical Global Impression–Severity; CPS: Collaborative & Proactive Solutions; CT: Child Training; DAS: Dyadic Adjustment Scale; DASS: Depression Anxiety Stress Scales; DBDRS: Disruptive Behaviour Disorders Rating Scale; DDI: Daily Discipline Inventory; DERS: Difficulties in Emotion Regulation Scale; DISC-IV: Diagnostic Interview Schedule for Children Version IV; DPICS: Dyadic Parent–Child Interaction Coding System; DPICS-II: Dyadic Parent-Child Interaction Coding System II; DPICS-R: Dyadic Parent-Child Interaction Coding System-Revised; DSM-III-R: Diagnostic and Statistical Manual of Mental Disorders -Third Edition–Revised; DSM-IV: Diagnostic and Statistical Manual of Mental Disorders - Fourth Edition; ECBI: Eyberg Child Behaviour Inventory; ECBI-IS: Eyberg Child Behaviour Inventory - Intensity Scale; ECBI-PS: Eyberg Child Behaviour Inventory - Problem Scale; GC: Group Curriculum; HCSBS: Home and Community Social Behaviour Scales; IQ: Intelligence Quotient; K-DBDS: Kiddie-Disruptive Behaviour Disorder Schedule; K-SADS: Kiddie Schedule for Affective Disorders and Schizophrenia; NR: Not Reported; NS: Not Significant; ODD: Oppositional Defiant Disorder; PACS: Parent Account of Child Symptoms; PAI: Parental Anger Inventory; PBQ-TRF: Preschool Behaviour Questionnaire - Teacher Report Form; PCS: Parenting Convergence Scale; PDHQ: Personal Data and Health Questionnaire; PDPQ: Parent Defined Problems Questionnaire; PDR: Parent Daily Report; PKBS-2: Preschool and Kindergarten Behaviour Scales — Second Edition; PLOC: Parental Locus of Control Scale; PPC: Parent Problem Checklist; PPI: Parent Practices Interview; PPVT-R: Peabody Picture Vocabulary Test–

Revised; PS: Parenting Scale; PSAAQ: Parental Substance and Alcohol Abuse Questionnaire; PSI: Parenting Stress Index; PSI- SF: Parenting Stress Index - Short Form; PT: Parent Training; PTC: Parenting Task Index; RABI: Rochester Adaptive Behaviour Inventory; RCTs: Random-Controlled Trials; SCL-5: Symptom Check List-5; SDQ: Strengths and Difficulties Questionnaire; SES: Socio-economic Status; SNAP-IV: Swanson, Nolan, and Pelham Rating Scale; SSBS: School Social Behaviour Scales; TAU: Treatment as usual; TE-HNC: Technology-Enhanced Helping the Noncompliant Child; TRF: Teacher Report Form; TT: Teacher Training; VPCI: Videotaped Parent-Child Interaction; WLC: Wait list control; WPT: Wonderlic Personnel Test; YSR: The Youth Self-Report.

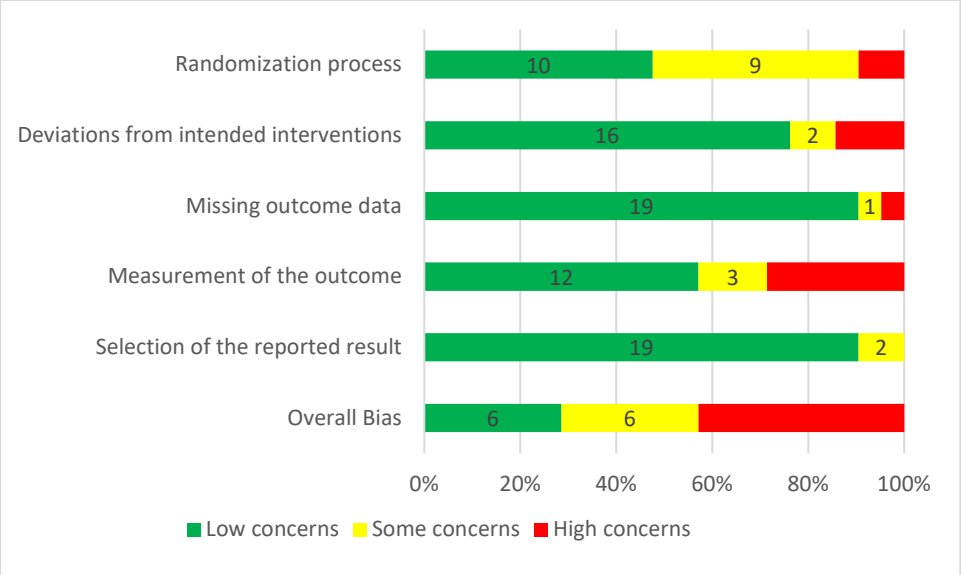
- indicates not applicable.

Table 3.2 *Risk of bias summary for included studies.*

Authors	Randomization process	Deviations from intended interventions	Missing outcome data	Measurement of outcome	Selection of reported results	Overall bias
Scott (2005)	?	+	?	+	+	-
Beauchaine et al. (2005)	+	-	+	?	+	?
Fossum et al. (2008)	-	+	+	+	+	-
Lavigne et al. (2008)	?	?	+	+	+	?
Gardner et al. (2010)	+	+	+	+	+	+
Drugli, Fossum et al. (2010)	?	+	+	-	+	-
Drugli, Larsson et al. (2010)	-	+	-	+	+	-
Seabra-Santos et al. (2016)	+	+	+	+	+	+
Weeland et al. (2017)	+	+	+	+	+	+
Leijten et al. (2017)	+	-	+	-	+	-
Ollendick et al. (2016)	+	+	+	+	+	+
Miller-Slough et al. (2016)	+	+	+	+	+	+
Eckshtain et al. (2019)	+	+	+	+	+	+
Kling et al. (2010)	?	+	+	+	+	?
Högström et al. (2014)	+	+	+	-	+	-
Stattin at al. (2015)	?	+	+	+	+	?
Werba et al. (2006)	?	+	+	-	?	-
Parent et al. (2011)	?	+	+	-	+	-
Zachary et al. (2017)	?	?	+	?	+	?
Kjøbli et al. (2014)	+	+	+	?	?	?
Dittman et al. (2014)	?	-	+	-	+	-

Note. +: low concern; -: high concern; ?: some concern.

Figure 3.2. *Risk of bias graph, summarising authors ratings of included studies on risk of bias dimensions, presented as percentages across all included studies*.



Predictor and Moderator Main Findings

A synthesis of the moderator and predictor main findings is presented in Table 3.3.

Do familial characteristics predict or moderate treatment outcomes?

A variety of demographic and familial variables were examined as predictors of treatment outcome including SES, parental education, parental age, marital status and family composition. These results are reported in detail below.

Predictors:

Demographics. Ten studies examined whether SES predicted treatment outcome. Nine of these studies found that SES did *not* significantly predict outcomes following PMT treatment (Beauchaine, Webster-Stratton, & Reid, 2005; Dittman et al., 2014; Gardner et al., 2010; Lavigne et al.,2008; Ollendick et al., 2016; Scott, 2005; Seabra-Santos et al., 2016; Stattin, Enebrink et al., 2015; Werba et al., 2006). One study found that in the control condition, higher SES predicted lower levels of externalizing behavior over time; however, after controlling for multiple testing, SES did not significantly predict treatment outcome in that study (Weeland et al., 2017).

Parents' age was examined as a predictor in three studies with variable findings (Beauchaine et al., 2005; Fossum et al., 2008; Werba et al., 2006). Of these studies, one found poorer outcome for children of younger mothers at post therapy (Werba et al., 2006), one found better outcomes for children of younger mothers at one year follow up (Beauchaine et al., 2005), while one did not report significant age-related differences (Fossum et al., 2008).

Parental education was not found to be a significant predictor of treatment outcome. Non-significant results were found in seven studies examining parent education (Beauchaine et al., 2005; Dittman et al., 2014; Drugli, Fossum et al., 2010; Fossum et al., 2008; Lavigne et

al., 2008; Leijten et al., 2017; Scott, 2005). An additional study looking at maternal IQ (Werba et al., 2006) also failed to show significant findings.

Marital status was assessed in eight studies (Beauchaine et al., 2005; Drugli, Fossum et al., 2010; Drugli, Larsson et al., 2010; Fossum et al., 2008; Gardner et al., 2010; Lavigne et al., 2008; Scott, 2005; Werba et al., 2006). Only one of these studies found it to be a significant predictor - living with mother alone predicted ODD/CD diagnosis at 5-6 year follow up only (Drugli, Larsson et al., 2010). Family composition, including the number of children in the family, was investigated in two studies. No significant results were found in either study (Weeland et al., 2017; Werba et al., 2006). Four studies examined race/ethnicity as a predictor of treatment outcome with no significant findings (Lavigne et al., 2008; Leijten et al., 2017; Ollendick et al., 2016; Scott, 2005).

Other family characteristics. Shorter pregnancy and having contact (versus no contact) with child protection services were examined as predictors in one study each. While there were no significant findings for shorter pregnancy (Scott, 2005), having contact with child protection services was found to predict treatment nonresponse at 1-year follow-up in one study (Drugli, Fossum et al., 2010). Marital adjustment and satisfaction revealed no significant findings in the two studies in which they were examined (Beauchaine et al., 2005; Werba et al., 2006).

Moderators:

Demographics. SES was investigated as moderator of treatment outcome in three studies (Beauchaine et al., 2005; Lavigne et al., 2008; Stattin et al., 2015). These studies included a waitlist control or minimal intervention bibliotherapy group and other active treatments. Lavigne and colleagues (2008) compared a minimal intervention bibliotherapy group to a nurse led versus psychologist led IY intervention, while others examined whether SES was differentially influenced by four active treatments (IY, Cope, COMET, Connect)

and a wait list control (Stattin et al., 2015). Beauchaine and colleagues (2005) used a combined analysis of 6 RCTS with a wait list control group and a comparison of three different IY programs (parent training, child training and teacher training). These programs were delivered as either separate interventions or were combined (e.g., child training and teacher training). In behavior observation models it was found that children who were below the sample median on social class, fared best at one year follow up when the parent training (PT) and child training (CT) component were both included in the IY intervention (Beauchaine et al., 2005). There were no significant moderation effects found in the other study (Stattin et al., 2015). Of the three studies examining parental age, no significant moderation effects were found (Beauchaine et al., 2005; Kling et al., 2010; Stattin et al., 2015). Parental education also yielded no significant results in the three studies in which it was examined (Beauchaine et al., 2005; Kling et al., 2010; Lavigne et al., 2008). However, one of these studies initially yielded a statistically significant interaction for maternal education, but the cell sizes were too small, and the results were not interpreted further (Lavigne et al., 2008). Three studies examined race/ethnicity as a moderator, with no significant findings (Kling et al., 2010; Lavigne et al., 2008; Stattin et al., 2015).

Overall, marital status was not a moderator of treatment outcome (Kling et al., 2010; Lavigne et al., 2008; Stattin et al., 2015). Of the four studies examining marital status, only one study found a significant result - children of unpartnered mothers showed better outcomes at one year follow up when the PT or CT components of the IY intervention were included in treatment than when they were not (Beauchaine et al., 2005). Marital adjustment was also examined in one study (Beauchaine et al., 2005). This study found that interventions including the parent training component of IY resulted in better one-year outcomes than when parent training was not included for children of mothers reporting low marital adjustment (Beauchaine et al., 2005). In sum, there is currently little to no evidence to

suggest that family demographics such as SES, parental education, parental age, race/ethnicity, marital status and marital satisfaction moderate treatment outcomes.

Do parental characteristics predict or moderate treatment outcomes?

Overall, the results on the association between parental characteristics and treatment outcome are similarly inconsistent and/or inconclusive. There were no significant findings for maternal locus of control, parenting confidence, parent attributions of child misbehavior, child maltreatment risk, tolerance for misbehavior, father participation, or mother receiving treatment for a psychiatric disorder. Some support was found for parenting behaviors, parental substance abuse, emotion dysregulation and socialization, with significant findings only present in single studies. Strong support was, however, found for a positive parent-child relationship and interactions, which predicted better treatment outcomes. Specifically, fewer behavioral problems, less aggression and emotional lability were reported following treatment (Dittman et al., 2014; Lavigne et al., 2008; Miller-Slough et al., 2016). There was also some evidence to support an association between treatment outcome and maternal stress and depression, however, these findings were inconsistent (Drugli, Larsson et al. 2010; Fossum et al., 2008; Gardner et al., 2010; Werba et al., 2006). Robust support was found for high maternal distress predicting poor treatment outcome. Finally, some support was also found for maternal stress moderating treatment outcome (Kjøbli et al., 2014). These findings are examined in more detail below.

Predictors:

Maternal stress. Six studies investigated whether maternal stress predicted treatment outcome. This included measures of life stress and parenting stress. Two studies found high levels of maternal stress to significantly predict worse treatment outcome at post-therapy (Fossum et al., 2008; Werba et al., 2006), as well as dropout rates (Werba et al., 2006). At 12

months follow up, one study found lower maternal stress to have better treatment outcomes (Lavigne et al., 2008), while high initial levels of stress predicted greater gains following treatment. (Lavigne et al., 2008). Specifically, mothers reporting higher levels of pre-treatment life stress had children who displayed more ODD-related symptoms at pre-treatment and at follow up compared to mothers with lower levels of initial life stress. However, children of mothers with high levels of initial life stress made greater improvements on the ECBI following treatment. Another study examining outcomes 5-6 years after treatment found high levels of maternal stress at post-treatment to predict a worse outcome, although this did not remain significant after controlling for other baseline characteristics (Drugli, Larsson et al. 2010). Parental stress was subsequently identified as a risk factor, whereby parental stress may increase the risk for maintaining an ODD/CD diagnosis as opposed to significantly predicting a child maintaining a diagnosis of ODD/CD 5–6 years after treatment (Drugli, Larsson et al. 2010).

Maternal distress was found to significantly predict treatment outcome in each of the two studies in which it was examined (Kjøbli et al., 2014; Lavigne et al., 2008). High maternal distress significantly predicted poorer treatment outcomes from teacher (Kjøbli et al., 2014) and parent ratings (Kjøbli et al., 2014; Lavigne et al., 2008). These significant findings were reported at post-therapy (Kjøbli et al., 2014; Lavigne et al., 2008) and 12 months following treatment (Lavigne et al., 2008). In terms of treatment gain, Lavigne and colleagues (2008) found higher levels of parental distress predicted greater gains at 12 months follow up than parents reporting less parental distress. That is, children of parents experiencing lower levels of pre-treatment distress made less improvements, but they displayed fewer behavior problems at 12 month follow up than children of parents who were more distressed.

Maternal depression. Ten studies investigated maternal depression as a predictor of treatment outcome (Beauchaine et al., 2005; Dittman et al., 2014; Drugli, Larsson et al., 2010; Fossum et al., 2008; Gardner et al., 2010; Lavigne et al., 2008; Parent et al., 2011; Scott, 2005; Seabra-Santos et al., 2016; Werba et al., 2006) and one study examined both maternal and paternal depression (Eckshtain et al., 2019. In terms of maternal depression, three of these studies found maternal depression to be a significant predictor of treatment outcome. More specifically, two studies found that maternal depression predicted better outcomes following PMT intervention, relative to the control group who experienced poorer outcomes (Gardner et al., 2010) and at two month follow up (Parent et al., 2011). Interestingly, while Eckshtain and colleagues (2019) found no significant association between levels of initial parental depression and treatment outcome at post therapy, children of parents with elevated levels of depression improved at a significantly faster rate than children of parents with lower initial levels of depression.

Other parental characteristics. A number of other parental predictors have been examined; however, these have been reported only in single studies and, overall, yielded no significant results. These non-significant parental predictors included: mother receiving treatment for a psychiatric disorder (Drugli, Fossum et al., 2010); maternal locus of control (Werba et al., 2006); parenting confidence (Dittman et al., 2014); parental attribution of child misbehaviour (Dittman et al., 2014); child maltreatment risk and tolerance for child misbehavior (Dittman et al., 2014; Werba et al., 2006), and father participation (Dittman et al., 2010). The exceptions to this include parental substance abuse which was found to significantly predict more positive treatment responses (Beauchaine et al., 2005) and to caregiver emotion dysregulation and socialisation practices; high levels of emotion dysregulation and socialisation significantly predicted poorer outcomes and longer treatment duration. (Zachary et al., 2017).

Parent-child interactions/relationship. Parent-child interactions, including relationship quality, was investigated as a predictor in three studies, each yielding significant findings: A more positive parent-child relationship predicted less behavior problems at post treatment (Dittman et al., 2014; Lavigne et al., 2008), as well as at 12 month follow up (Lavigne et al., 2008). Parent-child interactions, in the form of "parent-child synchrony," was examined by Miller-Slough and colleagues (2016). Parent–child synchrony, defined as the ability of a parent–child dyad to share meaning and perspective on events, is characterized by active engagement, shared understanding, and willingness to listen to each other (Laible & Song, 2006). Parent-Child synchrony at pre-treatment was associated with lower emotional lability and less aggression at the end of treatment (Miller-Slough et al., 2016).

Parenting behaviors. The association between parenting behaviors and treatment outcome also yielded few significant findings. Of the three studies investigating parenting style (Drugli, Fossum et al., 2010) and behaviors (Dittman et al., 2014; Werba et al., 2006), only one study found that parenting behavior, specifically, criticism and sarcasm observed during parent-child interactions, predicted treatment drop out and poorer treatment outcome (Werba et al., 2006). No other associations were reported. Related to parenting behavior, a parent's willingness to complete homework tasks given during treatment was examined in a single study (Högström et al., 2014). More specifically, completion of homework promoting positive behaviors and homework intended to reduce negative behaviors was examined as a predictor of treatment success (Högström et al., 2014). Pre to post improvement was predicted by parents' implementation of homework assignments intended to reduce negative behavior.

Moderators:

Maternal stress/distress. Two studies investigated maternal stress as a moderator of treatment outcome with no significant findings reported (Beauchaine et al., 2005; Lavigne et

al., 2008). In addition, mental distress was assessed in two studies (Kjøbli et al., 2014; Lavigne et al., 2008). One of these studies found a significant moderation - lower levels of maternal distress and high levels of CPs differentially predicted treatment outcomes for the intervention group versus the treatment as usual group, specifically lower levels of distress predicted better outcomes for the intervention group (Kjøbli et al., 2014).

Maternal depression. Maternal depression was assessed in two studies, with one study finding it to significantly differentiate between two different interventions (Beauchaine et al., 2005; Lavigne et al., 2008). Children of mothers scoring above the sample median of 8 on the BDI fared better at one year follow up in conditions that included PT or CT, than in conditions that did not include PT or CT (Beauchaine et al., 2005).

Other parental characteristics. Parent-child interactions were examined in a single study, with no significant findings (Lavigne et al., 2008). Parental substance abuse was also examined in single study and was found to significantly moderate treatment outcome, whereby children who had fathers with a history of substance abuse had better outcomes at one year follow up when PT or CT was included in their treatment than when it was not included.

Table 3.3. *Main Findings.*

Study	Predictors	Moderators	Main Findings	
			Predictors	Moderators
Incredible Years (IY; Webster-Stratton, 1981; 1982; 2008)				
Scott (2005)	Mother in ethnic minority; SES; single parent; maternal depression, maternal education level, shorter pregnancy.	None.	All NS.	-
Beauchaine et al. (2005)	*All variables tested as moderators and predictors* Life stress, marital adjustment and satisfaction, maternal depression, parental substance and alcohol abuse, maternal education, maternal age, maternal relationship status, social class.	See previous column.	More positive treatment responses were observed at 1 year in children of (a) younger mothers and (b) parents with substance abuse histories.	Children of mothers reporting low marital adjustment had better 1yr outcomes when the interventions included PT. *In mother-reported and behaviour observation models*: Children who (a) were below the sample median on social class, (b) had fathers with a history of substance abuse, (c) were parented by single mothers, or (d) had mothers with higher symptoms of depression, each fared best at 1 year outcome when PT or CT was included in their treatment.
Fossum et al. (2008)	Maternal factors: age, marital status, education, stress and depression.	None.	High levels of maternal stress predicted a worse treatment outcome in maternal reports on the ECBI for both treatment groups at post therapy.	-
Lavigne et al. (2008)	*All variables tested as moderators and predictors* <u>Demographic characteristics:</u> parental education, minority status, marital status, SES. <u>Parent characteristics:</u> maternal life stress, maternal depression, distress <u>Parent-child interactions:</u> initial levels of maternal warmth, respect for autonomy, maternal structure, assistance	See previous column.	Higher levels of initial life stress, parenting distress and parent-child dysfunction, predicted greater gains following treatment at follow up. Lower initial levels of parenting distress, life stress and parent-child dysfunction, predicted less behaviour problems following treatment at post and follow up.	All NS (Statistically significant interaction for maternal education but cells too small so results not interpreted).

Table 3.3. *Continued.*

Study	Predictors	Moderators	Main Findings	
			Predictors	Moderators
Lavigne et al. cont.	synchrony/quality, or overall competence; parent–child dysfunction interaction; specific interaction variable including: use of a-commands (specifically stated maternal commands), questions, rewards, attends.			
Gardner et al. (2010)	*Single or teen parenthood, very low income, maternal depression.	None.	Children of more depressed mothers had better outcomes following intervention, relative to children in the control group who experienced poorer outcomes.	-
Drugli, Fossum et al. (2010)	Family processes: lone parenthood, contact with child protection service. Maternal factors: educational level, psychiatric treatment, parenting style (positive and harsh parenting), parenting stress.	None.	Having contact with child protection services (vs. no contact) was found to predict treatment nonresponse at the 1-year follow-up.	-
Drugli, Larsson et al. (2010)	Living with mother only, maternal depressive symptoms and maternal parenting stress.	None.	At pre-treatment, living with mother only predicted ODD/CD diagnosis at 5-6yr follow up. High levels of maternal depressive symptoms and stress at post-treatment predicted a diagnosis of ODD/CD at 5-6yr follow up. No longer significant when controlling for other variables	-
Seabra-Santos et al. (2016)	*Maternal depressive symptoms, SES.	None.	All NS.	-

Table 3.3. *Continued.*

Study	Predictors	Moderators	Main Findings	
			Predictors	Moderators
Weeland et al. (2017)	*SES, family composition.	None.	All NS.	-
Leijten et al. (2017)	*Education level, ethnic background.	None.	All NS.	-
Defiant Child (DC: Barkley, 2013)				
Ollendick et al. (2016)	Socioeconomic status and race/ethnicity.	None.	All NS.	-
Miller-Slough et al. (2016)	Parent child synchrony.	None.	Parent child synchrony at pre-treatment was associated with lower emotional lability and less aggression at the end of treatment.	-
Eckshtain et al. (2019)	Parental depressive symptoms.	None.	NS for post treatment outcome. However, children of parents with elevated levels of depressive symptoms showed significantly faster levels of improvement during treatment.	-
Communication Method (COMET: Kling, Sundell & Melin, 2010)				
Kling et al. (2010)	None.	Single parent homes, mother's age, father's age, immigrant parents, mothers with higher education, fathers with higher education.	-	All NS.
Högström et al. (2014)	Homework promoting positive behaviors; homework intended to reduce negative behaviors.	None.	Pre- to post-improvement was predicted by parents' implementation of Homework assignments intended to reduce negative behavior.	-
Stattin et al. (2015)	None.	Parent age, family income, economic		All NS.

Table 3.3. *Continued.*

Study	Predictors	Moderators	Main Findings	
			Predictors	Moderators
Stattin et al. cont.		(personal financial) strain, marital status, immigrant origin and parents' receipt of therapeutic services.		
Parent Child Interaction Therapy (PCIT; Eyberg, & Robinson, 1982)				
Werba et al. (2006)	Demographic characteristics: SES, maternal age, single-parent status, number of children in family. Maternal characteristics: IQ, depressive symptoms, marital adjustment, parenting stress related to parent characteristics, maternal parenting stress related to child characteristics, total maternal parenting stress, parenting locus of control, tolerance for child misbehaviour. Maternal behaviour management skills: total commands, inappropriate behaviour, prosocial behaviour, direct command ratio.	None.	For mothers: high stress and inappropriate behaviour (criticism and sarcasm observed during parent-child interactions) predicted treatment drop out and poorer treatment outcome. Younger mothers were significantly more likely to drop out of WLC and PCIT groups.	-
Helping the Non- compliant Child (HNC; Forehand & McMahon,1981; McMahon & Forehand, 2003)				
Parent et al. (2011)	Parental depression, marital status; co-parent conflict.	None.	Higher levels of parent depressive symptoms predicted lower levels of child disruptive behavior at 2 month follow-up.	-
Zachary et al. (2017)	Caregiver emotion dysregulation and socialisation practices.	None.	Baseline caregiver emotion regulation predicted treatment duration and outcomes (more dysregulation was associated with poorer outcomes and longer treatment duration).	-

Table 3.3. *Continued.*

Study	Predictors	Moderators	Main Findings	
			Predictors	Moderators
Zachary et al. cont.			For emotion socialization, higher, rather than lower, coaching of children's emotions was moderately associated with higher (rather than lower) caregiver ratings of child behaviour as problematic at post treatment.	
Brief Parent Training (BPT: Askeland, Berg, Christiansen, Flock & Launes, 2006)				
Kjøbli et al. (2014)	*Variable examined as moderator and predictor* maternal mental distress (anxiety and depression).	See previous column.	High maternal distress predicted poor treatment outcome for parent and teacher reported conduct problems. For the BPT group, low maternal distress predicted positive (teacher reported) outcomes and high maternal distress reported poorer (teacher reported) outcomes.	Low levels of maternal distress and high levels of parent reported conduct problems predicted better treatment outcomes for the BPT versus comparison group.
Triple P (Sanders, 1999)				
Dittman et al. (2014)	Family processes: parental education and low SES. Parent variables: depression, ineffective discipline, parenting confidence, parent-child relationship quality, child maltreatment risk, and parental attributions regarding child misbehaviour. Father participation in the intervention*.	None.	For mothers: A more negative parent– child relationship at T1 predicted poorer child behaviour at T2.	-

Note. *studies indicated moderation but are prediction analyses (Kraemer et al. 2002)
CD: Conduct Disorder; CT: Child Training; ECBI: Eyberg Child Behaviour Inventory; IQ: Intelligence Quotient; NS: Not Significant; ODD: Oppositional Defiant Disorder; PT: Parent Training; SES: Socio-economic Status; WLC: Wait list control; - indicates not applicable.

Discussion

The aim of the current review was to update Lundahl and colleagues' (2006) and Reyno and McGrath's (2006) earlier reviews in this area of inquiry. These early reviews examined a range of parenting interventions that included various PMT interventions. In addition, the more recent review by Shelleby and Shaw (2014) examined parenting interventions in a restricted age range (e.g., 1 - 10 years). To address these shortcomings and to update the findings, studies from the past 15 years on parental and familial predictors, as well as moderators, of treatment outcome were examined in the current review.

Main findings:

Even though demographic characteristics were examined in 10 of the 21 studies, very few significant findings were reported. For example, SES was most commonly examined, however, none of the 10 studies in which it was included found it to significantly predict treatment outcome. Only one study examined SES as a moderator, whereby children of lower SES demonstrated greater treatment benefit at 1 year follow up if they were given both the parent training and child training components of the IY intervention (Beauchaine, Webster-Stratton, & Reid, 2005). Overall, studies published in the last 15 years have not found financial disadvantage to be associated with treatment response as previously suggested (e.g., Gardner et al., 2010; Ollendick et al., 2016). These findings are in contrast to Lundahl and colleagues' (2006) and Reyno and McGrath's (2006) earlier conclusions which indicated parent training was less effective for economically disadvantaged families. Perhaps this difference in findings over time can be accounted for by the differing levels of problem severity examined across studies. However, in the current review, initial problem severity varied across studies as indicated by the different inclusion criteria used. For example, some required a diagnosis of ODD for study inclusion, while others required a demonstration of

elevated levels of disruptive behavior, most commonly determined by a clinical cut-off score on a parent-report measure. Others were identified as "at risk" of developing conduct problems. Interestingly, recent studies have found that when controlling for initial problem severity, financial disadvantage does not influence treatment outcomes even when initial problem behaviors are severe. That is, disadvantaged SES and non-disadvantaged SES participants benefited equally from parent training. However, disadvantaged SES participants benefited less from parent training when the initial problem behaviors were mild and less severe (Leijten et al., 2013; Shelleby & Shaw, 2014). Although speculative, this finding may be explained by less motivation to change in these families with less room for improvement. It also suggests that initial problem severity may be especially meaningful to assess in disadvantaged families.

Similarly, while Reyno and McGrath (2006) found low education/occupation to predict treatment outcome, parental education yielded no significant results in the three studies in which it was examined for the current review. When maternal age was investigated, the findings showed greater variability. Paradoxically studies reported both poorer and better outcomes for children of younger mothers (Beauchaine et al., 2005; Werba et al., 2006), while others found maternal age not to impact treatment outcome (Fossum et al., 2008).

Results regarding parental psychopathology were also at odds with previous meta-analyses (Reyno & McGrath, 2006). Examination of parental psychopathology varied across studies, with most only examining maternal (not paternal) psychopathology. Maternal stress, depression, and distress each differed in reported findings. There was some evidence to suggest that higher levels of maternal stress predicted poorer outcomes post-treatment and at 12 months follow up (Fossum et al., 2008; Werba et al., 2006). However, despite these findings, the number of studies examining maternal stress was small with most studies

examining maternal stress finding that it did not predict treatment outcome (Beauchaine et al., 2005; Drugli, Larsson et al., 2010).

Overall, no association between maternal depression and treatment outcome was found, despite it being the most consistently examined variable within the reviewed studies (12 of 21 studies). Surprisingly, and again in contrast to the previous meta-analyses, more recent studies suggest that interventions are equally effective for parents reporting a high level of stress and symptoms of depression compared to those experiencing lower levels of stress and depression (e.g., Beauchaine et al., 2005; Dittman et al., 2014; Fossum et al., 2008; Drugli, Fossum et al., 2010; Lavigne et al., 2008; Scott, 2005; Seabra-Santos et al., 2016; Werba et al., 2006). However, when high maternal stress and depression were examined in combination, some support was found for their ability to predict poor treatment outcome (Kjøbli et al., 2014; Lavigne et al., 2008). This may be explained within a cumulative risk model framework (e.g., Rutter, 1979). For example, it may be that depression and stress have a cumulative effect on the parent's ability to cope with demands and, therefore, successfully engage and implement the parent training. That is, the combined effect of depression and stress may increase the likelihood of finding an effect when compared to assessing the effects of these risk factors (i.e., depression and anxiety) separately (Rutter, 1979). While this is a potentially promising avenue in terms of further improving our understanding of treatment predictors, the studies are limited and, in the absence of further research, conclusions are tentative rather than definitive.

Support for parent child-interactions are arguably the clearest finding in the current review. All three of the studies examining parent-child relationships and parent-child interactions found that better treatment outcomes were predicted by a positive parent-child relationship and parent-child interactions (Dittman et al., 2014; Lavigne et al., 2008; Miller-Slough et al., 2016). These findings support previous research that oppositional behavior may

be viewed within a transactional or reciprocal model, whereby problematic behaviors occur when there is a mismatch, or incompatibility, between child characteristics and parental expectations of the child (Greene, Ablon, & Goring, 2003). Moreover, closing the gap between child characteristics and parental expectations has been found to lead to fewer problematic behaviors (Greene, 1999; see also Greene & Winkler, 2019). It follows that a more positive parent-child relationship, with fewer incompatibilities before commencing treatment, would lead to better outcomes. This was found in the studies examined in this review (Dittman et al., 2014; Lavigne et al., 2008; Miller-Slough et al., 2016), as well as being well documented in the wider literature (e.g., Booker et al., Greene, 2016). Despite this, further replication is needed before definitive conclusions can be reached.

In sum, only tentative conclusions can be drawn regarding specific parental and familial characteristics, as well as processes that predict or moderate treatment outcome for parent management training. This was somewhat surprising considering previous reviews that were able to identify such characteristics more definitively (Lundahl et al., 2006; Reyno & McGrath, 2006). The difference in findings may, at least partially, be accounted for by the smaller number of studies identified in the current review (21) versus those examined by Lundahl and colleagues (2006) and Reyno and McGrath (2006) (63 and 31, respectively). Importantly, few of these earlier reviews included familial and parental variables. Lundahl and colleagues (2006), for example, only examined two familial/parental moderator variables- SES and single parenthood - meaning that while the number of studies examined was greater, the variables analyzed were limited. Interestingly, our findings for moderators was similar to the more recent review with younger children that also found little consistent evidence for differential effectiveness for treatments across sociodemographic and family processes (Shelleby & Shaw, 2014). Nevertheless, the smaller pool of studies in the current review may have reduced the capacity to find consistent patterns of results, and, therefore, to

make definitive conclusions. Further research into parental and familial predictors and moderators is greatly needed.

While a significant amount of research has been conducted since the 2006 reviews (see Figure 3.1), the majority of this research has not explored parental and family processes. For example, and surprisingly so, Triple P and PCIT only examined such variables in one of the reviewed studies each (Dittman et al., 2014; Werba et al., 2006). Interestingly, previous reviews also identified very few PCIT and Triple P studies examining parental and familial predictors and moderators; specifically, only three Triple P and five PCIT studies were identified in the earlier reviews (Bor et al., 2002; Brestan et al., 1997; Capage et al., 2001; Eyberg, Boggs, & Algina, 1995; Hoath & Sanders, 2002; Hood & Eyberg, 2003; Lundahl, Risser, & Lovejoy, 2006; McTaggart & Sanders, 2007; Reyno & McGrath, 2006; Schuhmann et al., 1998; Shelleby & Shaw, 2014). In addition, similar to the current review, parental and familial predictors and moderators were most typically examined by IY studies, with ten being identified (Gross et al., 1995; Tucker et al., 1998; Webster-Stratton, 1982a; Webster-Stratton;1982b; Webster-Stratton, 1984; Webster-Stratton, 1990; Webster-Stratton, 1992; Webster-Stratton, 1998; Webster-Stratton & Hammond, 1997; Webster-Stratton, 1998).

As previously mentioned, parents play a crucial role in PMT interventions - they are the primary agents of change - therefore, identifying pre-treatment characteristics that may impact their ability to successfully engage, participate in, and implement treatment is vital to increasing our understanding of the mechanisms of change and how to improve treatment outcomes. Thus, it is imperative that future research continue to systematically identify variables that both are conceptually and empirically associated with treatment outcomes (Prins et al., 2015) and that this examination is conducted across all types of PMT.

Limitations

Methodological features may be important in accounting for our differential findings (Wilson & Lipsey, 2001). In the current review, child conduct outcomes were examined, utilizing different methods across different studies to measure similar behaviors. For example, some studies looked at categorical outcomes, such as the presence of a diagnosis using clinician-rated semi-structured interview measures, while others used observational measures and parent-report measures. Dimensional ratings from parents or teachers were the most frequently employed in the majority (62%) of the studies in the current review. This may have resulted in a treatment bias effect, whereby participants may have overestimated rates of improvement due to demand characteristics and the desire to demonstrate improvement (Loerinc et al., 2015; Reyno & McGrath, 2006). Furthermore, specific parent-rated dimensional scales, such as the ECBI, are usually more precise and sensitive to change and, therefore, more likely to identify predictors of treatment outcome (Steketee & Chambless, 1992). This was reflected in the current review with 73% of studies that employed the ECBI as an outcome measure, yielding significant findings. This included studies that used more than one outcome measure but only attained a significant finding on the ECBI (e.g., Fossum et al., 2008). In addition, while only a small number of studies employed direct behavioral observations as an outcome measure, it has been suggested that such measures may be more sensitive to intervention effects in comparison to parent reports of child behaviour (Scott, 2001). Quite obviously, use of different outcome measures across studies can be problematic, making it difficult to meaningfully synthesise and interpret data.

A further limitation is that over a third of the studies included in the present review may have been underpowered ($n < 100$), making it difficult to ascertain whether the results reflect effects associated with true prediction or moderation. Further, compounding this, most papers did not report effect sizes, again making it difficult to interpret the magnitude of

findings. Additionally, relatively few predictors were examined, with even fewer moderators. An early study by Lavigne and colleagues (2008) may be considered exemplary as a predictor and moderator study. In this study, participants received either a minimal intervention bibliotherapy treatment or the Incredible Years program led by a nurse or psychologist. More than one outcome measure was used, with data collected from different informants, including a semi-structured interview, parent self -report measures and videotaped observations of parent-child interactions. In addition, a range of predictors and moderators were explored. They included previously identified risk factors such as SES and maternal depression (Burke et al., 2004; Murrihy et al., 2010), as well as variables such as parental commands and parent-child interactions, which are specifically targeted during these interventions. Unfortunately, their sample size was moderate (n = 117), making it more difficult to detect moderation.

In another exemplary effort, Beauchaine and colleagues (2005) aggregated six Incredible Years studies which resulted in a large sample size (n = 514). They also examined a range of parental and familial characteristics as predictors and moderators and were able to detect significant findings for both. That is, (younger) age and parental substance abuse history predicted better outcomes one-year post treatment. In addition, SES, maternal depression, single parent status, history of parental substance abuse and low marital adjustment, moderated treatment outcome. Collectively, these studies may provide a sound methodological framework for the examination of predictors and moderators to maximize the likelihood of attaining valuable findings.

It should be noted that the over-representation of IY studies may also influence findings in the current review. For example, different components of parent training, such as the use of time-out and increasing positive parent-child interactions, have been found to be more effective than others (Kaminski et al., 2008). It is possible that treatment characteristics

that are specific to the intervention may account for some of the variability in the findings of the current review because PMT interventions vary in their program content and delivery.

The results of this review need to be interpreted in the context of additional limitations. First, for practical reasons, only studies that were published in English were included. Second, our search was restricted to a limited set of databases (PsychINFO, MEDLINE, SCOPUS and CENTRAL). Although we attempted to address this by examining the reference lists of previous reviews, as well as searching online PMT libraries and Google Scholar, we may have inadvertently omitted articles that met our inclusion criteria because of our restricted search. The exclusion of Intermittent Explosive Disorder may have also resulted in the identification of fewer potentially relevant studies. A related limitation is that there were relatively few studies that met the inclusion criteria. This made it difficult to interpret and integrate the data. Furthermore, due to the characteristics of the studies, it was not possible to conduct a meta-analysis, which is the preferable method of data synthesis taking account of effect sizes and sample sizes of the individual studies. Also, the quality of the studies varied, with 18 of the studies rated as having low risk of bias on three or more individual categories (see Figure 3.2). However, for the overall risk of bias ratings, nine of the studies were assessed as having high concerns for risk of bias and six studies were assessed as having some concerns. The main potential source of bias was contained in the measurement of the outcome domain. This was largely attributed to outcome assessors not being blinded to intervention assignments. For example, the majority of the studies used parent self-report measures, and in some studies, the assessor was either aware of the intervention status or it was not clear if the assessors were aware of the intervention status. Findings must therefore be interpreted within the context of these potential limitations. However, a strength was that a risk of bias analysis was conducted. In addition, adding to previous research and in contrast to previous reviews (i.e., Lundahl et al., 2006; Reyno &

McGrath, 2006), the examination of parental and familial variables in relation to child outcomes of PMT, was unrestricted. This review clearly identifies an important gap in the literature and highlights the need for future studies to examine both predictors and moderators that include parental and familial characteristics.

Future directions

Further research into the impact of parental factors in the treatment of CPs would be of benefit to advance the field and improve interventions to better serve the needs of families of children with CPs. In order to advance our understanding of how we improve the rates of treatment response, we need to routinely examine predictors and moderators in all future RCTs. Although it is encouraging that a number of risk factors explored in the current review did not differentially impact PMT effectiveness, it does not further our understanding as to why some families respond and other families fail to respond following treatment. Perhaps, the literature has yet to identify the most salient predictors and moderators, or those that show promising results require further investigation and replication (e.g., parent-child interactions). For example, father and mother involvement in parent training has been identified as resulting in significantly more positive change in child behavior and desirable parenting practices, compared with mother-only programs (Lundahl et al., 2008). Yet, research exploring parenting interventions has typically focused solely on mothers, with many relying on maternal reported outcome measures (e.g., Kjøbli et al., 2014; Scott, 2005; Seabra-Santos et al., 2016; Werba et al., 2006). Father participation may be critical for determining intervention effectiveness, especially so for parenting interventions for child conduct problems, and further research to clarify this would be beneficial (Tully et al., 2017). On the other hand, it should not be overlooked that parenting/familial variables are not the only predictors of parenting interventions - child characteristics (e.g., initial problem severity, comorbidity) or process related factors (e.g., lack of engagement in intervention or poor

therapeutic alliance) may also account for why many participants do not respond to parenting interventions.

Future studies should also consider the need for consistency in measurement across studies. As previously mentioned, outcome measures used in the studies in this review varied greatly, making it difficult to synthesize the findings. In addition, future research would benefit from standardized inclusion criteria. For example, child conduct problems at pre-treatment have been shown to predict parent training effectiveness (e.g., Leijten et al., 2013; Weisz et al., 2005), with studies requiring a diagnosis likely containing participants with more severe initial conduct problems compared to those relying on parent reported questionnaires of behavior. Statistically, individuals with more severe problems before beginning treatment have a larger scope for improvement and, thus, increase the likelihood of obtaining larger effects (Shelleby & Shaw, 2014). Clinically, families that are troubled the most by their child's behaviors are also more likely to see the importance of engaging in the parent training and may be more motivated to get the most out of the experience (Leijten et al., 2013), as reflected through higher attendance rates and treatment adherence (Baydar et al., 2003). Future studies may therefore aid the development of our understanding of treatment predictors and moderators by using similar populations across studies, specifically, with similar initial levels of conduct problem severity.

Finally, it would be useful to explore alternative methods of parent training that address variables, such as parent-child relations, that have been shown by this review as the most reliable predictors of treatment outcomes (Dittman et al., 2014; Lavigne et al., 2008; Miller-Slough et al., 2016). Emanating from the belief that ODD-related behaviors stem from parent–child incompatibility, Collaborative and Proactive Solutions (CPS; previously referred to as Collaborative Problem Solving, Greene 2011; Greene & Winkler, 2019) may be a viable treatment option for oppositional children and their families (Greene & Winkler, 2019;

Ollendick et al., 2016). Within this model, parent-child incompatibility refers to instances where parental expectations being placed upon a child outstrip the child's skills to respond adaptively, resulting in disruptive behaviors (Greene & Winkler, 2019). Parent-child incompatibility is directly addressed by CPS through a process of collaborative problem solving. Examination of predictor and moderator variables are desperately needed in comparing this approach to standard PMT approaches.

In sum, future research may benefit from routinely examining a range of predictors and moderators, including parental and familial characteristics. Also, standardization of research methodology (e.g., outcome measures) would assist in the synthesis of findings across studies, thereby increasing our understanding of predictors and moderators of treatment outcome in children presenting with CPs. Finally, alternative interventions to PMT that specifically address factors that have been identified as impacting treatment outcome should be considered.

CHAPTER 4

Predictors and moderators in two treatments of oppositional defiant disorder in children

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NOTE: The content of Study 2, Chapter 4, is identical to the published version

Preamble

In Chapter 3, the systematic review found limited consistent evidence regarding specific parental and familial characteristics that predict or moderate treatment outcomes for PMT. The review also highlighted a significant gap in research on PMT for conduct problems, emphasising the need for future RCTs to routinely investigate predictors and moderators that are empirically and/or conceptually related to treatment outcomes. The review suggested exploring alternative interventions to PMT, such as CPS, which addresses disruptive behaviours through a collaborative problem-solving approach. In Chapter 4, I address these gaps by examining predictors and moderators of behavioural improvement in children with ODD following CPS and PMT treatments. This is the first study, to my knowledge, to examine moderators of behavioural improvement for children with ODD following CPS treatment.

Dedousis-Wallace, A., Drysdale, S. A., McAloon, J., Murrihy, R. C., Greene, R. W., & Ollendick, T. H. (2022). Predictors and moderators two treatments of oppositional defiant disorder in children. *Journal of Clinical Child & Adolescent Psychology*, 1-16. https://doi.org/10.1080/15374416.2022.2127102

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Abstract

Objective: The aim of this study was to examine predictors and moderators of behavioral improvement in children with Oppositional Defiant Disorder (ODD) following treatment with Parent Management Training (PMT) and Collaborative and Proactive Solutions (CPS). Initial problem severity, inconsistent discipline, parental attributions of child misbehavior, and child lagging cognitive skills were examined. Method: One hundred and forty-five children aged between 7-14 (103 male, *M* = 8.88 years, ethnicity representative of the wider Australian population) were randomly assigned to PMT and CPS. Assessment was conducted at baseline, post-intervention, and at 6-month follow-up, using independently-rated semi-structured diagnostic interviews and parent-ratings of ODD symptoms. Using an intent-to-treat sample in this secondary analysis (see masked for review), linear regressions and PROCESS (Hayes, 2017) were used to examine these predictors and possible moderators of treatment. Results: Higher pre-treatment levels of conduct problems, lagging skills and inconsistent discipline predicted poorer behavioral outcomes following both treatments. The only characteristic that moderated treatment outcome was child-responsible attributions - mothers who were more likely to attribute their child's problematic behaviors to factors in the child had significantly poorer outcomes in PMT than CPS at 6-month follow up. Conclusions: CPS may be a more beneficial treatment than PMT for families who have been identified as having higher levels of child-responsible attributions before commencing treatment for ODD. While tentative, this provides promising insights as to how treatment outcomes for children with ODD may be improved.

Keywords: oppositional defiant disorder; children; parent training; Collaborative and Proactive Solutions; predictor; moderator.

Oppositional Defiant Disorder (ODD) is one of the most common childhood psychiatric disorders, with 12-month prevalence rates up to 12.3% in the general population (Demmer et al., 2017; Lawrence et al., 2015). Moreover, the impairments associated with disruptive behaviors represent the most common reason families seek professional intervention (see Merikangas et al.,2009, for a review) and investigating ways to effectively intervene has received considerable attention (Kaminski & Claussen, 2017; Murrihy et al., 2010).

Parent Management Training (PMT) is among the most extensively studied and validated treatments for ODD and Conduct Disorder (CD; e.g., Dedousis-Wallace et al., 2021; Deković & Stoltz, 2015; Eyberg et al., 2008). A major premise of PMT is that ineffective parenting practices, such as harsh and inconsistent discipline, contribute to the origins and course of oppositional behavior in youth and that, therefore, addressing these problematic parenting practices should be the primary focus of intervention. Another promising evidence-based treatment is Collaborative & Proactive Solutions (CPS; see Greene & Winkler, 2019 for a recent review). In contrast to PMT's assumption that challenging behavior occurs largely as a result of ineffective parenting practices, CPS views a child's cognitive deficits (or 'lagging skills') —particularly in the domains of flexibility/adaptability, frustration tolerance, and problem-solving—as a major factor contributing to the development of oppositional behavior in youth (Greene, 2010). More specifically, challenging behaviors are said to occur due to "incompatibility episodes", which are conditions where the expectations being placed upon a child outstrip their skills to respond adaptively to the situation. (Greene, 2010). For example, consider a child with executive function impairments and a parent who insists their child prepare for school independently in the morning. There may be a mismatch between the child's skills and the environmental demands, which may then lead to oppositional behaviors. Treatment focuses primarily on

providing the parent and young person training in a collaborative and proactive problem-solving approach that seeks to reduce child-environment incompatibility, develop these lagging skills and encourage parents to shift their "lenses" (attributions for their child's behavior; Greene, 2010; Greene & Winkler, 2019).

While both treatments have shown significant reductions in disruptive behaviors (e.g., Greene & Winkler, 2019; Ollendick et al., 2016), there is considerable room for improvement inasmuch as only about 50% of youth and their families respond positively to each of these treatments (Colalillo & Johnston, 2016; Greene et al., 2004; Ollendick et al., 2016). Examining predictors and moderators of treatment response may be key in furthering our understanding and improving the outcomes associated with both treatments.

Although predictors for externalizing disorders have received substantial examination, moderators of treatment outcome have only recently emerged. For example, in two recent reviews examining predictors and moderators of psychosocial interventions for conduct problems, one review only identified five potential moderators of treatment outcome (McMahon et al., 2021): initial severity of conduct problems, father engagement, maternal depressive symptoms, individual administration (vs. group), and treatment/targeted prevention approaches (vs. universal prevention). The second review which examined familial and parental characteristics as predictors and moderators of PMT for conduct problems found very few familial and parental characteristics that predicted PMT treatment outcomes. Only five of the 21 RCT studies examined moderators of treatment outcome and, of these, little consistency was found (Dedousis-Wallace et al., 2021). Both reviews highlighted that moderator analyses have focused on immediate post-intervention outcomes, with only three studies examining response at follow-up, making it difficult to determine whether moderation effects are sustained. Overall, while these findings are promising, the

range of potential moderators examined has up until now been limited, particularly in the domains of child and parent characteristics, as well as in establishing moderation of treatment outcomes at a longer term follow up (Dedousis-Wallace et al., 2021; McMahon et al., 2021; Shelleby & Shaw, 2014).

To date, there has been no examination of moderators of treatment outcome for CPS. Considering this gap in the literature, it is imperative that we continue to systematically identify and examine variables that are both conceptually and empirically associated with response to treatments such as CPS and PMT (Dedousis-Wallace et al., 2021; Maric et al., 2015). The present study's goal is to address this gap by examining pre-treatment characteristics that are conceptually related to CPS and PMT- lagging skills, inconsistent discipline, and parental attributions of child-misbehavior - as well as initial problem severity, which is of empirical interest based on earlier studies (see Shelleby & Shaw, 2014); although, its impact on treatment is not consistent and warrants further attention. These variables will be examined as both predictors and moderators of treatment outcome in the current study at post-intervention and at 6-month follow-up.

Initial problem severity

Severity of conduct problems at pretreatment as a predictor and moderator of treatment outcome has been extensively researched (Shelleby & Shaw, 2014). A relatively robust finding is that children with more severe initial conduct problems benefit the most from PMT interventions (Leijten et al., 2018; McMahon et al., 2021); children with more severe problems have a larger range for improvement and their parents may be more motivated to change. In some trials however, children with more severe behavior problems predicted reduced responsiveness to standard parent training protocols (Dittman et al., 2014; Drugli, Larsson et al., 2010), and others have found no significant effect (see Shelleby &

Shaw, 2014). While these discrepancies, may, in part, be explained by the different study approaches (ie., prevention versus treatment) and limited variability of initial problem severity (Leijten et al., 2018), it fails to explain the entire variability in these findings (Shelleby & Shaw, 2014). Given that child conduct problems are directly targeted in PMT interventions, and indirectly targeted in CPS, understanding their impact on treatment (versus prevention) was considered to be important in this study.

Inconsistent discipline

Modifying parenting behavior so that parents are more consistent with their disciplinary practices, such as time-out and response cost, is a primary focus in many PMT programs (e.g., McMahon & Forehand, 2003). This is due to poor parenting practices, such as the use of inconsistent discipline, being strongly associated with conduct problems in children and adolescence (e.g., Patterson, Reid, & Dishion, 1992; Pederson & Fite, 2014). While some studies have examined parenting behaviors as predictors of treatment outcome, parenting has generally been operationalized in terms of global positive/negative dimensions, such as "ineffective parenting" or " positive parenting" (Dittman et al., 2014; Drugli, Fossum et al., 2010). Few studies have looked explicitly at the potential impact of inconsistent discipline on conduct problems following PMT intervention (see Dedousis -Wallace et al., 2021). One study examined the predictive effects of inconsistent discipline in a sample of 64 Italian children treated with the Coping Power Program (Muratori et al., 2015). Here, it was found that a decrease in inconsistent discipline was associated with a better outcome in children. However, this was a preventative study and intervention effects have been found to differ for prevention versus treatment studies (McMahon et al., 2021). While the association between inconsistent discipline and conduct problems is strong, the empirical research

examining the impact of inconsistent discipline on treatment outcomes, either as a predictor or moderator, is sparse.

Parental attributions of child misbehavior

Maladaptive attributions of children's behavior (i.e., attributing child behavior to internal, stable, and global causes) are hypothesized to influence how parents accept, engage, and benefit from parent training (Mah & Johnston, 2008; Sawrikar & Dadds, 2018). Parental causal attributions of child misbehavior typically fall into two categories: factors under the parent's control or "parental causal" attributions (e.g., parenting practices and competence), and factors within the child, or "child responsible" attributions (e.g., genetic predisposition or negative intent; Snarr et al., 2009).

Research to date suggests that parental causal attributions of child misbehavior are a known predictor of problematic parenting and ongoing child problems (Johnston et al., 2006; Snarr et al., 2009). In contrast, although "child responsible" attributions have been suggested to influence parent training outcomes (Mah & Johnston, 2008), the potential impact on parent training outcomes for children with ODD is unclear as research is limited (Dedousis-Wallace et al. 2021; Sawrikar & Dadds, 2018). For example, child responsible attributions in children with behavior problems have been shown to predict poor treatment outcomes in some studies (Hoza et al., 2000; Mattek at al., 2016; Sawrikar et al., 2018), while other studies have found no significant impact of parental attributions on treatment outcome (Dittman et al., 2014; Whittingham et al., 2009). No studies, to our knowledge, have examined child responsible attributions as a moderator of treatment outcome in children with behavior problems. However, the conceptual associations between child responsible attributions and both CPS and PMT suggest this would warrant further exploration. One of the hypothesized mechanisms of change in CPS is a paradigm shift in how parents view the cause of their

child's challenging behavior. More specifically, CPS posits that by viewing their child's challenging behaviors through the prism of lagging skills, parents typically shift the perception of their child as intentionally misbehaving to their child lacking the skills to respond adaptively in a given situation (Greene, 2010; Greene & Winkler, 2019).

Lagging Skills

As noted above, the CPS model conceptualizes children with ODD as possessing deficits in discrete skill sets, or lagging skills -- in the general domains of flexibility/adaptability, frustration tolerance, emotion regulation, and problem solving -- that contribute to oppositional behavior (Greene, 2010). There is also significant evidence supporting the lack of these skills in youth with externalizing disorders (e.g., Burke et al., 2010; Cavanagh et al., 2017; Rhodes et al., 2012; Schoorl et al., 2018). Although several studies have explored the impact of lagging skills on various child-related outcomes (Maric et al., 2015), to our knowledge, no study has examined pre-treatment lagging skills as either a predictor or moderator of treatment outcomes for youth with ODD. Given the theoretical underpinnings of lagging skills within the CPS framework, specifically in its aetiology of challenging behaviors and as a target of intervention, it is important to examine the impact of lagging skills on treatment outcome.

The current study

The purpose of the present study was to examine initial problem severity, lagging skills, inconsistent discipline and parental (child-responsible) attributions of child misbehavior as possible predictors and moderators of behavioral improvement in children in an Australian sample of families who received PMT or CPS treatment. We undertook

secondary analyses of data from a randomised control trial with a hybrid clinical trial design[3]. (see Murrihy at al., 2022, for a more in depth discussion) in which children aged 7-14 years of age were treated for ODD with either PMT or CPS. For the predictor analyses we hypothesized that higher levels of child behavior problems would predict greater intervention benefit for both treatments, given that it is a target of both interventions. We also hypothesized that higher levels of child inconsistent discipline, child-responsible attributions and lagging skills, would predict poorer treatment outcomes for both CPS and PMT. To date, there have been no studies examining these variables as moderators of treatment outcome for CPS and PMT and, as such, these analyses are exploratory in nature. However, based on relevant theory and the targets of change in these two treatments, we predicted that higher levels of lagging skills would be associated with better outcomes for CPS than PMT and increased use of consistent discipline would be associated with better outcomes PMT than CPS. We also predicted that higher levels of child responsible attributions would be associated with better outcomes for CPS than PMT. The differential impact, and severity, of initial child conduct problems across the two treatments is less clear and therefore remains exploratory in nature.

Method

Participants

Participating families included parents, caregivers and young people (aged 7–14-years-old) who entered a larger study providing treatment for oppositional problems (see Murrihy et al., 2022, for more details). Recruitment avenues were typical for the treatment

[3] The RCT is a hybrid clinical trial in an effort to increase conclusions made about the treatment's generalisability (Michelson et al., 2013). In this study, the hybrid design has been operationally defined as containing a blend of efficacy and effectiveness trial components. Specifically, recruitment sources were from a mixture of clinics and medical settings and through media.

facility. The Center is a community clinic located in North Sydney, Australia. Clinical referrals constituted 55% of the sample, coming from health practitioners and school personnel. Forty-five percent of families self-referred in response to media advertisements. An initial 20-minute phone screen (n = 232) was conducted to deem eligibility (see below). Children who met the clinical cut-off on the ODD subscale of the Disruptive Behavior Disorder Rating Scale (DBDRS parent-report; Pelham et al., 1992) were provided with information regarding the study intent, procedures and random allocation process. Following the screening, 192 families (parent(s) and child) attended the centre for a comprehensive assessment to confirm study eligibility and to complete baseline questionnaires. ODD was assessed via clinician observation, parent and child self-report questionnaires, and a semi-structured diagnostic interview.

For inclusion in the study, the young person was required to be 7-14 years of age and to receive a clinical diagnosis of ODD based on DSM-IV-TR criteria (American Psychiatric Association, 2000). Participants were excluded if they met diagnostic criteria for CD, autism spectrum disorder or developmental delay, or were at high risk of suicide. The current use of illicit substances also rendered participants ineligible for the study. Medication use (e.g., stimulants) was permitted; however, participants were encouraged to stay on a consistent regime during the trial. Parents provided informed consent prior to research participation and data were collected as per the ethical guidelines provided by the Human Research Ethics Committee (HREC 2014000159). Figure 4.1 shows the movement of participants through each stage of the study.

The data collected for the current study included 145 young people (103 male, M= 8.88 years, SD= 2.04), and was undertaken as part of a larger outcome study where 160 young people were recruited, met full criteria for participation, and were allocated to treatment. A power analysis was conducted using G*Power 3.1.0 (Faul et al., 2007). With an

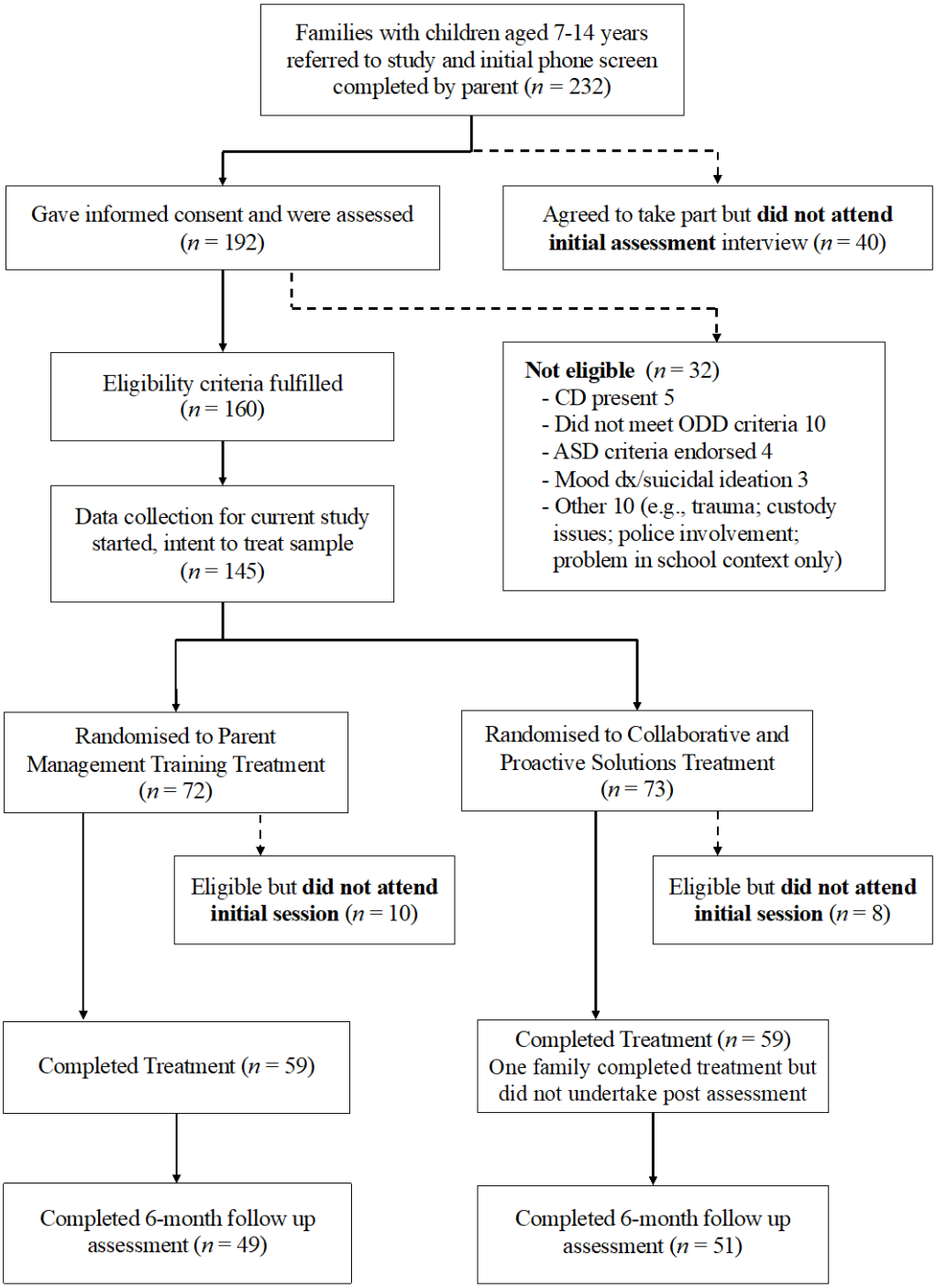
alpha set at .05, and a sample size of 145, the power was .95 to detect a medium effect size (d = .50).

All participants randomised to treatment were included in an intent-to-treat analysis (ITT, N = 145), regardless of program attendance. Young people were predominantly from two-parent families (78%) who identified their ethnicity as Australian (56%). This was followed by European (21%), Asian (6%), African (5%), Central American (4%), New Zealand (2%) and North American (1%). The majority of participants came from relatively high socioeconomic backgrounds, with 57% of families reporting earning an annual wage greater than AUD$150,000/annum, which is equivalent to USD$101,000/annum. Approximately three quarters of the parents had obtained undergraduate university degrees.

Of the families included in the current sample, 117 (81%) families completed post-treatment assessments and 100 (70%) families completed 6-month follow-up assessments. No differences were found between treatment conditions or referral source for the number of families completing treatment, not starting treatment or dropping out of treatment. There were no significant differences between conditions in the severity of behavior problems (ADIS CSR, see below) at pre-treatment for those who dropped out of treatment (both after randomisation and also before mid-treatment), and for those who completed treatment ($\chi 2$ (6, 145) = 6.12, $p = .41$). Analyses also revealed no differences ($p > .05$) between sociodemographic variables of families who completed the pre ADIS assessment only, those who completed the pre- and post-ADIS assessments only, and those who completed all assessments including the follow-up ADIS in terms of: income; mother's education; father's education; ethnicity; child's gender; child's age; mother's age; or father's age. Finally, no significant differences ($p > .05$) were observed in the severity of behavior problems (ADIS CSR) between recruitment source at pre-treatment, post-treatment or six month follow up.

A primary diagnosis of ODD was present for 82% of the participants, whilst 13% had a secondary diagnosis of ODD, and 3% had ODD as a tertiary diagnosis. Of the 18% of participants that did not present with ODD as the primary diagnosis, 58% had Attention-Deficit Hyperactivity Disorder (ADHD) as the primary diagnosis, whilst 27% had an anxiety disorder as the primary concern. Close to the entire sample (96%) had at least one comorbid disorder, with 55% having three or more comorbid disorders. Co-occurring internalising disorders were frequent with 71% of participants meeting criteria for one or more anxiety disorders. ADHD was the next most commonly co-occurring disorder with over two-thirds of the sample receiving both diagnoses (67%).

Figure 4.1. *Flow Chart of Participants Through the Study*



Procedure

Assessments were conducted with families at three time points: (1) prior to commencing treatment (pre-treatment); (2) at treatment completion (post-treatment) and (3) 6-months after treatment completion (follow-up). The three assessment time points consisted of the administration of a semi-structured diagnostic interview - The Anxiety Disorders Interview Schedule for DSM-IV, Child and Parent Versions (ADIS-IV-C/P; Silverman & Albano, 1996) - and parent and child self-report questionnaires (see Measures; note all self-report parent measures reported in this study were based on maternal report only). Diagnostic status and symptom severity were determined by the ADIS, which was administered by two separate assessors - one for the parent(s) and another for the young person. Assessors were postgraduate trained psychologists, either current Master of Clinical Psychology interns or experienced clinical psychologists. All assessors received training specific to the ADIS-C/P, which involved a one and a half-day seminar that included training in the differential diagnosis, live observations and role-plays (under the guidance of a supervisor). Lastly, trainees were required to watch two videos of structured interviews to determine the diagnostic status and clinician severity rating (CSR). An Inter-rater reliability of .90 or above on diagnostic status and CSRs was required. Both the parent and child ADIS assessor provided a report of their assessment observations and justification for suggested diagnoses and symptom severity ratings. Final diagnostic status and symptom severity rating were reached by consensus between the two assessors, under the guidance of an experienced clinical psychologist (supervisor). Before commencing treatment, and for the 6-month follow-up assessment, the full ADIS-C/P was administered. However, at the post-treatment assessment, only the ADIS-C/P modules of those disorders that were endorsed at pre-treatment were administered. Although assessors were masked to treatment condition, they were not masked to the endorsed diagnoses at post-treatment assessment. Assessors did not

assess cases in which they were involved in treatment and were not aware of the treatment condition to which the youth were randomly assigned. After completing the post-treatment assessment, and again after the follow-up assessment, families were given a gift voucher valued at AU$100. Assessments began in August 2014 and continued throughout the project until its completion in May 2019. Following pre-treatment assessment, eligible families were randomly assigned, using a block randomisation procedure (to ensure equivalent treatment group sizes), to one of the two treatment conditions: Parent Management Training (n = 72) or Collaborative & Proactive Solutions (n = 73). Each treatment condition included up to 16 weekly 60-minute sessions, with a booster session delivered two weeks after the last treatment session. The two treatment conditions are further detailed by (Murrihy et al., 2022).

After the initial assessment, 19% of participants withdrew before commencing treatment, most frequently for logistical reasons (e.g., parental work schedules and unable to attend appointment times). Once treatment began, three participants dropped out of the PMT condition (5%), and 6 dropped out of CPS (9%). Treatment dropout was defined as completing seven or fewer of the 16 treatment sessions. From treatment completion to the post-treatment assessment, no additional participants dropped out of the PMT condition and only one family from the CPS condition completed treatment but did not undertake the post-assessment. Of those who completed treatment, 10 families from the PMT condition and seven from CPS condition did not complete the follow-up assessment.

A mixture of experienced clinical psychologists (36%) and Master of Psychology interns (64%) delivered the treatment. Of the total families who received treatment, 23% received CPS and 14% received PMT from experienced clinical psychologists. Of the remaining families, 28% of CPS and 35% of PMT families were seen by intern clinical psychologists.

Treatment Response Outcome Measures

The Disruptive Behavior Disorders Rating Scale (DBDRS; Barkley, 1997; Pelham et al., 1992). The DBDRS is a parent self-report questionnaire developed to measure symptoms that reflect DSM-IV criteria for ODD, CD and ADHD. This study used a version of the DBDRS, revised by Barkley (1997), to assess a young person's behavior. Parents scored each item on a 4-point Likert scale ranging from 0 (never or rarely) to 3 (very often). For the eight ODD symptoms, ratings of a "2" (often) or "3" (very often) were treated as meeting criteria for the symptom (see Barkley, 1997). Using this criterion, total scores for the ODD inventory could range from 0 – 8, with a score of 4 or above indicating clinical levels of ODD. The ODD subscale of the DBDRS was used as an outcome measure of severity of conduct problems. Parents completed this measure at pre-, post- and follow-up assessment time points. The DBDRS has demonstrated good reliability (Ollendick et al., 2016; $\alpha = .90$). In the current study, internal consistency was acceptable at each assessment ($\alpha > .80$).

The Anxiety Disorders Interview Schedule for DSM-IV, Child and Parent Versions (ADIS-IV-C/P; Silverman & Albano, 1996). The ADIS-IV-C/P are parallel semi-structured diagnostic interviews used to assess the presence of psychological disorders, symptom severity and interference in youth aged 6-16 years. The clinician assesses symptoms and obtains frequency, intensity, and interference ratings (0-8 scale), which are then used by the clinician to identify diagnostic criteria and to develop a clinician severity rating (CSR). A CSR of 4 or above on a 0–8 scale indicates a diagnosis. The ADIS-C/P is reliable and valid for the diagnosis of both ODD and ADHD, in addition to the anxiety and affective disorders (Anderson & Ollendick, 2012; Jarrett et al., 2007; Ollendick et al., 2016). For the current study, the reliability of the structured interview diagnoses was evaluated by an independent rater who listened to, and scored, a random selection of 20% of the recorded interviews. Agreements on diagnoses were $\kappa = .65$ for both the primary and secondary ODD

diagnoses, indicating an acceptable level of agreement between raters (Cohen, 1960). The CSR of the ODD interview was used as a second outcome measure for symptom severity at post- and follow up assessments and as a predictor measure for pre-treatment symptom severity.

Predictor/Moderator Measures

Inconsistent Parenting. The Inconsistent Discipline subscale from the Alabama Parenting Questionnaire – Short Form (APQ-SF; Elgar et al., 2007*)* was used to measure inconsistent parenting (e.g., "You threaten to punish your child and then do not actually punish him/her"). This is a 3 item subscale that parents respond on a 5-point Likert scale ranging from 1 = "never" to 5 = "always", with total scores ranging from 3 to 15. Psychometric properties have been demonstrated for the APQ-SF in previous literature, including studies of parents of children with disruptive behaviors (Elgar et al. 2007; Wade & Andrade 2015). For our current sample the inter-item reliability, as indicated by Cronbach's alpha, ranged from $\alpha = .744$ to .806 across time points.

Child Responsible Attributions. The Child Responsible Attributions (CRA) 10 item subscale from the Parent Cognition Scale (PCS; Snarr et al., 2009) was used to measure child-directed causal interpretation for children's misbehavior (e.g., "My child is headstrong"). Parents indicated their agreement with each statement on a 6-point Likert scale (0 = always true; 5 = never true). All items are reverse scored, with higher scores indicating more biased attributions and a total score ranging from 0 to 50. The PCS has strong psychometric properties with community and clinical samples (Hautmann et al. 2018; Kil et al., 2020; Snarr et al. 2009). The inter-item reliability for this subscale in the current sample, as indicated by Cronbach's alpha, ranged from $\alpha = .860$ to .919 across time points.

Lagging Skills. The Assessment of Lagging Skills is a 9-item self-report measure designed to examine lagging skills in the child (Greene, 2010). The lagging skills examined

are in the domain of executive functioning (e.g., “Has difficulty considering the likely outcomes or consequences of actions”), emotion regulation (e.g., “Has difficulty managing an emotional response to frustration so as to think rationally”), and social skills (“Shows difficulty appreciating another person’s perspective or point of view”). Parents indicated their agreement with each statement on a 4-point Likert scale (0 = never; 3 = always), with higher scores indicating greater impairment and total scores ranging from 0 to 27. The Assessment of Lagging Skills is a shortened version of the Assessment of Lagging Skills and Unsolved Problems used by Greene (2014). The inter-item reliability for this subscale in the current sample, as indicated by Cronbach’s alpha, ranged from $\alpha = .895$ to .922 across time points.

Results

Statistical analysis

Data were analyzed using intent-to-treat analysis (ITT). All analyses were conducted using IBM SPSS Statistics for Windows (Version 26.0). Independent sample t-tests, one-way ANOVAs and Chi square analyses were used to compare baseline differences between treatment groups, between participants who completed treatment versus those who dropped out of treatment, as well as between those who did or did not complete post and follow-up assessments. Little's Missing Completely at Random (MCAR) test (Little, 1988) was used to assess whether data were missing completely at random and indicated that the dataset did not deviate from randomness. Data were missing because participants did not attend assessments or randomly missed completing questionnaire items. Missing data were imputed using the Estimation Maximisation (EM) method. The statistical significance level set for all analyses was $p < .05$ (one-tailed). Baseline analyses were undertaken prior to imputation of missing data. Subsequent analyses were completed using imputed data.

Predictors and moderators of treatment outcome

Severity of initial conduct problem, lagging skills, child responsible attributions and the use of inconsistent discipline were examined. Linear regressions were conducted to identify significant predictors of treatment outcome. Initial symptom severity, child age and child sex were controlled for when examining lagging skills, child responsible attributions and the use of inconsistent discipline. The PROCESS macro version 3.0 (Hayes, 2017) in SPSS 26 was then used to test the moderating effects of treatment on the predictor and outcome variables, using PROCESS Model 1, with 1000 bootstrapped samples. In this model, the independent variable was Treatment (PMT vs CPS), the moderating variable was one of the following: initial problem severity; inconsistent discipline; parental attributions of child misbehavior; and child lagging cognitive skills. The dependent variable was the outcome measure (one of the ADIS or DBDRS measures at either post or follow-up). Child's age, sex and the initial problem severity scores were added as covariates, except for the moderation analysis that examined initial problem severity, which included sex and age only as covariates. For moderation analyses where the independent variable was multicategorical, indicator coding was used. Unstandardized beta coefficients (B) and 95% confidence intervals were interpreted for significance and effect size. Finally, in the case of a significant interaction effect, further analyses were performed to investigate the effects with simple slope analyses. Interactions were probed using a simple slopes procedure with 1 SD above and below the mean (see Aiken & West, 1991; Hayes, 2017).

Baseline Comparisons

Included families did not significantly differ between the two treatment conditions on child gender ($\chi 2$ (1, N = 145) = 1.99, p = .16), child age (t (143) = .12, p = .91), maternal ethnicity ($\chi 2$ (7, N = 145) =13.36 , p = .55), income ($\chi 2$ (2, N = 145) = .151, p = .93), family structure ($\chi 2$ (2, N = 145) = 4.38 , p = .63), maternal education ($\chi 2$ (4, N = 145) = 8.817., p =

.07), paternal education ($\chi 2$ (4, N = 145) = 5.619 , p = .23) and referral source ($\chi 2$ (1, N = 64) = 2.206 , p = .14) . In addition, no significant baseline differences were found for severity of child conduct problems as measured by the ADIS- IV CSR scores (t (143) = -.735, p = .46) or the ODD scores on the DBDRS (t (143) = -.021, p = .98). Baseline analyses on demographic variables (i.e., child age, child gender, maternal ethnicity, income, maternal and paternal education and type of school) by referral source were also conducted. No significant differences were observed *($p > .05$).*

Preliminary analyses

Table 4.1 summarises the descriptive statistics for all study variables at pre-treatment and correlations for all study variables are presented in Table 4.2.

Table 4.1.
Descriptive Statistics for Pre-Treatment Study Variables and Outcome Measures by Intervention Condition.

	CPS		PMT		
	M	(S.D)	M	(S.D)	Range
Outcome measures					
ADIS CSR					
Pre-treatment	6.8	(0.9)	6.8	(1.0)	4-8
Post-treatment	4.2	(1.9)	3.7	(1.9)	0-8
Follow up	3.7	(1.8)	3.8	(1.7)	0-8
DBDRS					
Pre-treatment	5.3	(2.1)	5.1	(2.0)	0-8
Post-treatment	3.1	(2.3)	2.7	(2.1)	0-8
Follow up	2.7	(2.2)	2.4	(2.0)	0-8
Study variables at pre-treatment					
Lagging Skills	16.9	(4.3)	14.7	(3.7)	6-27
Child Responsible Attributions	36.4	(6.3)	35.4	(5.8)	22-48
Inconsistent Discipline	8.3	(1.9)	8.3	(1.8)	3-12
Initial problem severity	6.8	(0.9)	6.8	(1.0)	4-8

Note. CPS = Collaborative and Proactive Solutions; PMT = Parent Management Training; ADIS CSR = Anxiety Disorders Interview Schedule, Clinician Severity Ratings, Oppositional Defiant Disorder; DBDRS = Disruptive Behavior Disorder Rating Scale; Initial problem severity = Pre-treatment Anxiety Disorders Interview Schedule, Clinician Severity Ratings.

Table 4.2. *Correlations among Pre-Treatment Study Variables and Outcome Measures.*

		1	2	3	4	5	6	7	8	9	10	11
1.	ADIS CSR-Post	1										
2.	ADIS CSR-Follow	.54**	1									
3.	DBDRS- Pre	.32**	.015	1								
4.	DBDRS-Post	.60**	.48**	.30**	1							
5.	DBDRS-Follow	.51**	.68**	.23**	.41**	1						
6.	Age in Years (child)	.09	.04	.19*	.02	.08	1					
7.	Sex (child)	-.020	-.12	-.06	-.17	.08	.05	1				
8	Initial Prob sever	.26*	.014	.23**	.19	.22	.13	.12	1			
9.	Lagging Skills	.022	.02	.31**	.18	.017	.12	.05	.33*	1		
10.	Child Resp Attri	.36**	.40**	.36**	.29*	.33**	.08	-.20*	.355*	.23	1	
11.	Inconsistent Disc	.24*	.12	.19*	.13	.12	.10	.05	.17	-.05	.32**	1

Note. ADIS CSR = Anxiety Disorders Interview Schedule, Clinician Severity Ratings, Oppositional Defiant Disorder; DBDRS = Disruptive Behavior Disorder Rating Scale; Initial Prob sever = Pre-treatment Anxiety Disorders Interview Schedule, Clinician Severity Ratings, Oppositional Defiant Disorder; Child Resp Attri = child responsible attributions; Inconsistent Disc = Inconsistent Discipline.

*$p < 0.05$ level (2-tailed).

** $p < 0.01$ level (2-tailed).

Predictors

Of the four predictor variables examined, each yielded significant results (see Table 4.3). Higher levels of pre-treatment conduct problems as obtained on the ADIS-IV predicted poorer treatment outcomes at post treatment (CSR: $F(1, 144) = 5.96$, $\Delta R^2 = .094$, $p<.001$) and at 6-month follow up (CSR: ($F (1, 144) = 2.06$, $\Delta R^2 = .022$, $p<.05$).

Lagging skills was also a significant predictor on both outcome measures at post therapy (CSR: $F(1, 144) = 7.12$, $\Delta R^2 = .175$, $p = .001$; DBDRS: $F(1, 144) = 6.02$, $\Delta R^2 = .122$, $p<.001$). The pattern of results was similar for each measure, whereby elevated levels of lagging skills at pre-treatment were associated with poorer treatment outcomes.

Similarly, higher levels of inconsistent discipline significantly predicted poorer treatment outcomes at post therapy, but only for the CSR: $F(1, 144) = 6.06$, $\Delta R^2 = .12$, $p<.001$.

Furthermore, attributions of child misbehavior significantly predicted treatment outcomes for mothers who attributed responsibility to the child for their misbehavior. Specifically, the more mothers attributed the child's misbehavior to factors under the child's control, the poorer the treatment outcome at post-treatment on both outcome measures (CSR: $F(1, 144) = 5.87$, $\Delta R^2 = .119$, $p <.001$; DBDRS: $F (1, 144) = 3.72$, $\Delta R^2 = .07$, $p <.05$), as well as at at 6-month follow up but only on the DBRS; DBDRS: $F(1, 144) = 2.14$, $\Delta R^2 = .031$, $p<.05$.

Table 4.3.

Pre-Treatment Predictors of Child Behavior Outcomes at Post Treatment and 6-months Follow Up.

Outcome variable	Predictor variable	B	SE	β	*p*-value
Post treatment					
ADIS CSR	Initial problem sev	.615	.162	.305	.000
	Inconsistent disc	.200	.083	.194	.018
	Attributions-Child res	.058	.026	.185	.026
	Lagging skills	.116	.036	.254	.001
DBDRS	Initial problem sev	.386	.197	.163	.053
	Inconsistent disc	.069	.103	.057	.504
	Attributions-Child res	.086	.031	.235	.006
	Lagging skills	.173	.043	.323	.000
6-months follow up					
ADIS CSR	Initial problem sev	.336	.154	.182	.031
	Inconsistent disc	.030	.081	.031	.715
	Attributions-Child res	.041	.025	.145	.093
	Lagging skills	.059	.035	.141	.094
DBDRS	Initial problem sev	.284	.187	.128	.130
	Inconsistent disc	.106	.097	.093	.281
	Attributions-Child res	.063	.030	.182	.037
	Lagging skills	.072	.042	.143	.091

Note. ADIS CSR = Anxiety Disorders Interview Schedule, Clinician Severity Ratings, Oppositional Defiant Disorder; Attributions-Child resp = child responsible attributions; DBDRS = Disruptive Behavior Disorder Rating Scale; Initial problem sev = initial problem severity based on ADIS ODD CSR; Inconsistent disc = inconsistent discipline

Moderators

Of the four variables examined, only one was found to be significant and only at the 6-month follow-up. In the moderation test using ADIS CSR 6-month follow-up scores, the overall model containing child-blame attributions, therapy type, and the interaction of the two variables, PROCESS output showed the model had a significantly good fit ($R^2 = .089$, F (6, 138) = 2.251, $p < .041$. As shown in Table 4.4, the interaction was significant ($\Delta R2 = .025$), F (1, 138) = 3.91, $p < .049$, indicating a significant moderation effect of therapy type. To visualize the interaction of child responsible attributions and therapy type, we plotted the slopes for the interaction effect in Figure 4.2. Child responsible attributions significantly predicted treatment outcome on the CSR for PMT *(b* = .096, *t* =2.630, *p* = 0.0095, 95% CI [.0238, .168]) but not for CPS (*b* = .0020, t = .0649, p = .949, 95% CI [-.0608, .0649]. Figure 4.2 shows that mothers who were more likely to attribute their child's problematic behaviors to factors in the child, did significantly poorer in PMT than in CPS at 6-month follow up on the CSR.

Table 4.4.

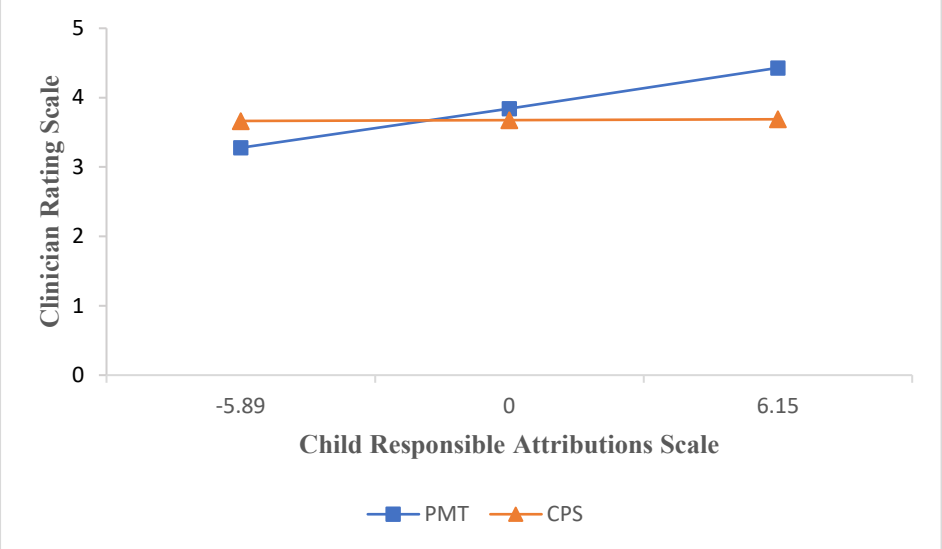
Regression Model Testing Moderation Effects of Treatment Type on the Relationship Between Child Responsible Attributions and ADIS CSR ODD Symptom Score at 6-month Follow-up.

Effect	*B*	*SE*	*t*	*p*	95% CI	
					LL	*UL*
Constant	2.766	1.245	2.219	.0281	.3010	5.231
Child resp	.0960	.0365	2.631	.0095	.0238	.1681
Therapy	-.276	.3212	-.858	.557	-.727	.394
Interaction						
Child resp x Therapy	-.0939	.0475	-1.980	.0498	-.1878	-.0001

Note. Child resp = child responsible attributions.

Figure 4.2.

Parental Child Responsible Attributions as a Moderator of Treatment Response (CPS and PMT) for the Clinician Severity Rating Outcome.



Note. PMT = Parent Management Training; CPS = Collaborative & Proactive Solutions; Clinician Severity Rating = Anxiety Disorders Interview Schedule, Oppositional Defiant Disorder.

Discussion

Although both PMT and CPS have been shown to be effective treatments for children with conduct problems and are considered to be evidence-based (Eyberg et al. 2008; Ollendick et al., 2016), only about 50% of youth improve following these treatments. As a result, the need to identify variables that might serve as predictors of change and potential moderators of change is evident. Although variables can serve as both predictors and moderators of treatment outcome (Judd et al., 2001), not all predictor variables serve as moderators of treatment outcome and indeed not all moderators serve as predictors of treatment outcome (see Maric et al., 2015 for further discussion; Ollendick et al., 2008). The current study examined the impact of four potential predictors/moderators of change: severity of initial child conduct problems, lagging skills, parental attributions of child responsibility for behavior ("child responsible attributions") and inconsistent discipline on child conduct problems in families with children with ODD. Families were randomized to either PMT or CPS and outcomes were measured post-treatment and again at 6 months following treatment. Of these four variables, all were found to be predictors of change but only child responsible attributions was shown to have a moderation effect on outcomes.

We found that mothers who were more likely to attribute their child's problematic behaviors to factors the child can ostensibly control did significantly poorer in PMT than CPS at 6-month follow-up, although not at the initial post-treatment assessment. We can only hypothesize about the factors underlying this limited moderation finding. PMT identifies and directly targets child misbehavior as a primary focus of intervention. The main focus is arguably therefore on "fixing" the child. For those parents who have high pre-treatment child responsible attributions, this may inadvertently reinforce the belief that the child is indeed to blame for their misbehavior. Also, while the variant of PMT utilized in this study does make mention of child characteristics that may contribute to problematic behavior, the primary

emphasis in this study was on inept parenting practices contributing to such behavior. By contrast, CPS places a strong emphasis on a child's lagging skills as a major contributor to children's oppositional behavior, while also emphasizing the transactional forces that combine to result in concerning behavior. As noted by Greene and Winkler (2019), this provides an opportunity to build parental empathy about how lagging skills make responding to certain situations as challenging, rather than being attributable solely to factors solely under the child's control (e.g., being intentionally defiant and headstrong). It is possible that parents who come into treatment believing that a child's problematic behaviors are attributable to characteristics of the child – and who endorse beliefs such as "My child is headstrong", "My child purposely tries to get me angry", and "My child likes to see how far he/she can push me" – may have greater difficulty being helped to appreciate the role of parenting practices in children's oppositional behavior as delineated by PMT. Furthermore, these beliefs may hinder parents from successfully engaging in the parenting strategies contained in PMT. As such, our findings suggest that parents with high levels of child responsible attributions before commencing treatment appear to benefit less from engaging in PMT interventions than CPS.

Interestingly, in addition to being a moderator, high levels of child responsible attributions were also found to predict poorer treatment outcomes across both treatments. Specifically, the more mothers attributed the child's misbehavior to factors under the child's control, the poorer the treatment outcome at 6-month follow up, although not at the initial post-treatment assessment. Mattek and colleagues (2016) showed similar findings – caregivers of low-income urban children with behavior problems, who at intake viewed their child as more responsible for their own behavior problems, were also significantly more likely to be classified as not attaining early treatment success. While both of these findings require replication, they suggest that parental attributions of child misbehaviour may play an

important role in the treatment outcome for children with conduct problems and may provide useful information for clinicians before commencing treatment. For example, considering high pre-treatment child responsible attributions predicted poorer outcomes for both treatments, it may prove to be beneficial to regularly "check in" and monitor parental beliefs regarding their attributions to the causes of their child's misbehavior and provide additional modules and/or time spent targeting attributions either directly or indirectly. Perhaps for PMT this could include extending the modules on the psycho-education on the causes of child misbehavior whilst encouraging parents to modify these beliefs using strategies such as socratic questioning or cognitive restructuring. For CPS this may include more deliberately and explicitly discussing causes of misbehavior (ie. Mismatch between the child's skill and demands of the situation) more consistently throughout the intervention. It may also prove to be beneficial to continue to provide regular 'check ins' or booster sessions once treatment has finished to further reinforce these strategies and to ensure parents continue to implement them post treatment.

Our hypothesis that higher levels of child behavior problems would predict more significant intervention benefits for both treatments was not supported. Instead, we found that higher levels of child behavior problems predicted poorer treatment outcomes at post-therapy and at 6-month follow-up for both treatments. Although inconsistent with our hypotheses, this finding is consistent with that of Drugli, Fossum and colleagues (2010) who showed that children who displayed more severe externalizing problems before treatment were more likely to exhibit conduct problems one year after treatment. In our main treatment study, many children achieved a substantial reduction in conduct problems immediately following treatment, with 45-50% of children moving into the non-clinical range after treatment, and two-thirds being considered much improved. These gains were maintained at the 6-month follow-up (Murrihy et al., 2022). However, despite these improvements, a

significant proportion of children (up to 50%) still had a diagnosis of ODD at post-therapy and 6-month follow-up. These children are likely to represent those children who are particularly difficult to treat. Perhaps children who exhibit severe conduct problems before commencing treatment require more extensive support (e.g., longer treatment time, more intensive follow-up) than what was provided in the current study.

We also found that greater use of inconsistent parental discipline at pre-treatment significantly predicted poorer treatment outcomes at post-therapy for both treatments, albeit not at 6-month follow-up across the treatments. Our findings are in contrast to a recent preventive study that found families were more likely to benefit from the Incredible Years intervention if they showed high levels of disruptive behavior combined with high levels of inconsistent parenting (van Aar et al., 2019). Thus, the role of problem severity and inconsistent discipline seems to differ depending on the context of the intervention, i.e., as treatment (in the current study) or as in prevention (van Aar et al., et al. 2019). Our results extend previous findings linking inconsistent discipline with the development of conduct problems and adds to the relatively scarce research examining this as a predictor of treatment outcome for children with conduct problems (Dedousis-Wallace et al., 2021).

Similarly, we found that both treatment conditions were less effective at post-treatment for children with higher levels of lagging skills. This pattern of results was found on both our outcome measures from the independent assessor (CSR-ADIS) as well as the parent report measure (DBDRS) at post-therapy. While our hypothesis for a differential effect between CPS and PMT was not met, these results add support to the notion that lagging skills may be present in many children and in turn may contribute to the development of disruptive behaviors and, in addition, may need to be directly assessed and addressed in future studies (Greene & Winkler, 2019).

In sum, the current study found that high pre-treatment levels of child responsible attributions, lagging skills, inconsistent discipline and the severity of initial child conduct problems all predicted poorer treatment outcomes across treatments. These predictor variables potentially serve as prognostic indicators (MacKinnon et al., 2013) of treatment outcome and, therefore, can inform treatment. For example, clinicians may be more cognizant of providing additional support (e.g., additional intervention components to target family stressors) for parents identified as inconsistent in their discipline practices before commencing treatment, especially so for children presenting with more severe behavior problems. Additionally, children with a high degree of lagging skills at pre-treatment and whose parents blame them for their misbehavior may benefit from a more extended treatment in terms of duration and/or intensity (Sanders, 1999).

Strengths, Limitations and Future Directions

This study had several strengths. Overall, this study advances the field by addressing significant gaps in the extant literature. The trial simultaneously explores both predictors and moderators of change for children with conduct problems. The importance of furthering our understanding of predictors of change, as well as increasing our understanding for whom and under what circumstances treatments have different effects by examining moderators, has long been identified as a worthy goal for improving treatments (Kraemer et al., 2002). Despite this, research exploring moderators of treatments for children with conduct problems is an understudied area of research (see Dedousis-Wallace et al., 2021 for a review). In the absence of strong empirical support for intervention moderators that have been examined in the literature to date, we examined variables that we thought were conceptually associated with treatment outcomes for CPS and PMT (see Prins et al., 2015, for this strategy). The study employed different means of assessing the children's behavior: a dimensional parent-report measure and a clinician-rated semi-structured interview measure that indicated the

presence of a diagnosis and the severity of the symptoms. Sole reliance on parent-report measures may result in a treatment bias effect whereby participants overestimate rates of improvement due to demand characteristics and the desire to demonstrate improvement (Loerinc et al. 2015). The use of a clinician-rated measure in conjunction with a parent-rated measure served to mitigate this effect.

These positive features notwithstanding, this study also had several limitations. As previously mentioned, the use of both parent report and clinician-rated measures was a strength of our study; however, the current study could be further strengthened by including a multi-informant method of measuring changes in child conduct problems. For instance, future studies may benefit from the inclusion of additional informants (such as the child's teacher or the child) or an additional mode of assessment (such as direct observation). In regard to the latter, it has been suggested that direct behavioral observations as an outcome measure may be more sensitive to intervention effects in comparison to parent reports alone of child behavior (see Scott, 2001). Also, the assessment of lagging skills used in the current study was relatively global, including both cognitive and behavioral skills. Future research may benefit from a more fine-tuned approach to the examination of specific lagging skills that targets various components of these skills (e.g., planning/organizing and working memory) as moderators and/or predictors.

An additional limitation is the drop-out rate at post-assessment (19%) and at 6-month follow-up (30%), potentially impacting our results. However, such dropout rates are not uncommon in studies addressing ODD (Chacko et al., 2016; Murrihy at al., 2010; Ollendick et al., 2016), with our drop-out rate being relatively modest compared to other multiphase intervention studies addressing externalizing problems (Chacko et al., 2016). Nevertheless, to mitigate this potential risk, rigorous statistical procedures were used to ensure that outcomes were representative of the total sample. Analyses undertaken confirmed that no differences

were found between treatment conditions for the number of families completing treatment, not starting treatment, or dropping out of treatment. The current study was also limited by the demographic homogeneity of the sample (i.e., predominantly white and middle to upper class families). However, it is noteworthy that our sample was representative in terms of income, education, and schooling levels, for a clinic in this region (Australian Bureau of Statistics, 2016). In addition, no differences were found at baseline on income level between the two treatment groups. Despite this, the sample reflects the challenges of recruiting and maintaining participation from a diverse sample of families for participation in clinical treatment studies (Booker et al., 2019).

Although our findings suggest that parents who were more likely to attribute their child's misbehavior as being within the child's control benefited more from CPS than PMT, this result requires further replication in order to make more definitive conclusions. Nonetheless, it provides promising insights as to how treatment outcomes for children with ODD may be improved. Future studies should explore the potential impact of addressing parental attributions on treatment outcomes. Additionally, it might be of benefit to explore family and therapist characteristics, such as family and therapist treatment preference, which may signal the "goodness of fit" between therapists, treatments, and families (Ollendick et al., 2016). This suggestion is particularly indicated by findings that parents are likely to selectively use strategies presented over the course of treatment depending on how well these fit with their parenting experiences and personal philosophies (Rahmqvist et al., 2014). Also, while we did not find lagging skills to moderate treatment outcome, future studies could benefit from examining the interaction between unique individual characteristics, such as lagging skills, with environmental characteristics, such as specific parenting factors (i.e., responsiveness and demandingness). Another important individual characteristic is child temperament. While specific child temperament profiles have been shown to differentially

predict child treatment outcomes in anxiety disorders (e.g., Caprioloa et al., 2017), the research exploring the potential impact of child temperament on ODD treatment outcomes is sparse. This line of investigation may be particularly pertinent in the context of recent findings whereby child temperament both predicted and moderated ODD symptoms in preschoolers following an eight-week multimodal intervention that included a behavioral modification component (Hare et al., 2021). Such findings further highlight the continued importance of examining a range of moderating factors that could lend nuance to treatment responses. An additional consideration is that the current study is obviously limited to the examination of only two treatments: CPS and PMT. It may be of future interest to also explore the impact of the variables examined, or indeed other characteristics noted, on other evidence-based treatment for conduct problems (Kaminski & Claussen, 2017). In terms of additional future directions, exploring mediators of treatment outcome would be of benefit, as the mechanisms through which gains are made will likely differ between the two treatment approaches.

CHAPTER 5

Examining Mediators of Parent Management Training and Collaborative Problem Solving for Children with Oppositional Defiant Disorder.

Manuscript prepared for publication.

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Author contributions

Conceptualisation and methodology: ADW, THO, RCM. Project implementation: ADW, RCM, SAD. Synthesis and analysis: ADW, THO, SAD, DC. Writing – original draft: ADW. Writing – review & editing: ADW, SAD, JM, THO, RWG.

Preamble

In Chapter 4, I attempted to further our understanding of how to optimise treatment outcomes for CPS and PMT for children with ODD by examining predictors and moderators of treatment outcome. I identified characteristics (child-blame attributions) for whom one treatment (CPS) may be more effective than another (PMT). In Chapter 5, I have extended these findings by examining potential mediators for CPS and PMT. Identifying mediators represents the first step in understanding the underlying mechanisms of change (Prins et al., 2015), which could offer insights into refining treatments and optimizing their outcomes. To my knowledge, this is the first study to examine potential mediators for CPS and the first study to use a longitudinal mediation model to examine possible mediators of treatment improvement in behaviour in youth with ODD.

Abstract

Objective: The aim of this study was to examine potential mediators of behavioral improvement in children with Oppositional Defiant Disorder (ODD) following treatment with Parent Management Training (PMT) or Collaborative and Proactive Solutions (CPS). To date, mediator treatment outcome research has been limited. Research has focused primarily on the examination of parenting behaviors, and studies often do not meet the temporal precedence criteria necessary for mediation in treatment outcome studies (see Kraemer et al., 2008). In the current study, potential mediators (inconsistent discipline, parental attributions of child misbehavior, and child lagging cognitive skills) were examined in a longitudinal mediation framework. Method: One hundred and forty-five children aged between 7-14 years of age (103 male, *M* = 8.88 years, ethnicity representative of the wider Australian population) were randomly assigned to PMT and CPS. Assessment, including parent-ratings of ODD symptoms, was conducted at five time points: pre-treatment, at the beginning of the seventh, and tenth treatment sessions, post-treatment, and at 6-month follow-up. Using an intent-to-treat sample in this secondary analysis (see: Murrihy et al., 2023), latent change score mediation models in M*plus* 8.8 (Muthén & Muthén, 2022) were used to analyse these possible mediators of treatment outcome. Results: Inconsistent Discipline emerged as a significant mediator of changes in disruptive behaviours whereas parental attributions and child lagging skills did not. Conclusions: The complexity inherent in understanding treatment mechanisms and the need for further nuanced investigations are discussed. Future studies may consider employing a longitudinal mediational approach in their investigations of potential mediators.

Oppositional Defiant Disorder (ODD) is one of the most common childhood disorders, with 12-month prevalence rates approximating 12.3% in the general population (Demmer et al., 2017; Kessler et al., 2012). ODD symptoms predict a variety of adverse outcomes, such as an increased risk of anxiety, depression, and impairments associated with interpersonal relationships, along with poor academic performance and compromised occupational functioning (Boylan et al., 2012; Copeland et al., 2009; Leadbeater & Ames, 2017; Rowe et al., 2010). The impairments associated with ODD represent the most common reason families seek professional intervention (see Merikangas et al., 2009).

Parent Management Training (PMT) is among the most extensively validated and widely used treatments for disruptive disorders, including ODD (e.g., Deković & Stoltz, 2015; Kaminski & Claussen, 2017). Based on operant conditioning principles and social learning theory (Brainerd & Kazdin, 2005), PMT addresses problematic parent-child interactions, especially coercive family processes. Parent Management Training focuses primarily on altering patterns of ineffective parenting practices, such as harsh and inconsistent discipline, that contribute to the development of oppositional behavior and problematic parent-child interactions (Patterson & Oregon, 1982). The suggested mechanisms of change for PMT are parenting practices, with parents learning to replace problematic interactions with more adaptive ones (Forehand et al., 2014). Skills taught include positive attending (e.g., special time), use of appropriate commands, contingent attention and reinforcement (e.g., rewards), and use of time-out procedures (Barkley, 1997; Murrihy et al., 2010).

While PMT is the dominant treatment approach for children with ODD, it does not work to a satisfactory level for up to 50% of individuals (Colalillo & Johnston, 2016; Murrihy et al., 2022; Ollendick et al., 2016) and as such, alternative treatment approaches

have been sought. Collaborative and Proactive Solutions (CPS; Greene, 2010) is one such treatment that has, thus far, been demonstrated to be as effective for children with ODD (Murrihy et al., 2022; Ollendick et al., 2016). CPS falls under the broad umbrella of cognitive-behavioral therapy (CBT) but also draws upon several other theories of change including delayed gratification and frustration tolerance (Mischel, 1989), as well as transactional models of development (Belsky, 1984; Cicchetti & Lynch 1993, 1995; Gottlieb, 1992). These models emphasize the 'goodness of fit' or 'match' between characteristics of an individual child or adolescent and characteristics of parenting practices. More specifically, CPS focuses on the role of skills deficits in the child, or 'lagging skills' (e.g., flexibility, problem-solving, and adaptability) that contribute to the development and maintenance of ODD symptoms (Greene & Winkler, 2019). Along these lines, oppositional behaviors are hypothesized to occur when the child's lagging skills interfere with their ability to meet the demands of various parental expectations and, therefore, to respond adaptively (Greene, 2010). For example, consider a child with executive function impairments such as cognitive inflexibility, and a parent who may need to change plans for the day. In this instance, there may be a mismatch between the child's skills to flexibly adapt to changes in plans, and the parent's expectation, which may lead to oppositional behaviors. A goal of the intervention is to reduce parent-child incompatibility i.e., the mismatch between the child's lagging skills and parental demands. This is achieved by proactively and collaboratively solving problems that give rise to the challenging behavior (in this instance, changes of plans) and, in doing so, indirectly improve these lagging skills.

Preliminary findings have demonstrated that CPS has a similar capacity as PMT to significantly reduce oppositional behaviors. However, it too works for only approximately 50% of families (Murrihy et al., 2022; Ollendick et al., 2016). With both treatments, there is obvious room for improvement (Colalillo & Johnston, 2016; Murrihy et al., 2022; Ollendick

et al., 2016). For this reason, understanding the mechanisms of therapeutic change is an important consideration (Kazdin & Nock, 2003), with mediators representing the first step in delineating these mechanisms of change (Maric et al., 2015). More specifically, a mediator of treatment outcome suggests *how* or *why* the treatment works and may help us identify the most effective treatment ingredients (Arean & Kraemer, 2013).

Overall, parenting strategies, such as the use of consistent disciplinary practices, have been identified as potential mechanisms of change in PMT (e.g., Forehand et al., 2014). In a review investigating parenting as a mediator of change in PMT (Forehand et al., 2014), and in studies subsequent to that review (e.g., Rimestad et al., 2020; Seabra-Santos et al., 2016), results tentatively support parenting practices as a mediator. More specifically, changes in oppositional symptoms were mediated by increases in discipline strategies (e.g., appropriate, consistent) and, to a lesser extent, reductions in negative parenting (e.g., harshness, criticism) as well as increases in positive parenting (e.g., praise, effective communication, attention; Forehand et al., 2014). While these results are promising, it is noteworthy that Forehand and colleagues (2014) found support for parenting practices as a mediator in less than half (45%) of the studies examined. Also, most of the support for mediation was found for younger children (under ten years of age) and for children who were at risk (prevention studies) rather than clinic-referred (treatment studies). In a more recent systematic review evaluating mediation studies in various treatments of conduct problems in adolescents, parenting styles were again the most examined mediator and ranged from being operationalized as ineffective or negative parental styles (e.g., “inept discipline”) to positive or more effective ones (e.g., “positive discipline”; see Mestre et al., 2022). In general, these authors found that effective parenting (e.g., parental supervision, fairness of discipline, and appropriate use of positive reinforcement) mediated improvements in conduct problems; however, this finding was not consistent across all studies.

Many of these studies reviewed exhibited significant methodological limitations, particularly regarding the temporal precedence of the mediator. For instance, in the recent review by Mestre and colleagues (2022), only one-third of the studies established the temporal precedence of the mediator. This limitation complicates the determination of the causal relationship between the proposed mediator and outcome, as it remains unclear which changes first: the outcome or the mediator.

Another potential limitation in the current state of mediational research is the lack of specificity in the examination of parenting variables. most studies examining parenting practices as a potential mediator, it is difficult to ascertain the *specific* components of parenting practices that may mediate treatment response. This may be attributed to parenting often being operationalized in terms of broad/composite measures of positive/negative dimensions, such as "ineffective parenting" or " positive parenting," rather than specific parenting behaviors that have been targeted in the parenting programs, such as limit setting, praising the child, ignoring child negative behaviors, and the use of inconsistent discipline (Forehand et al., 2014; Maric et al., 2015; Rimestad et al., 2020). Identifying specific mechanisms of change requires a tighter link between what is being assessed in mediation studies and what is being targeted in the parenting programs (Maric et al., 2015). Importantly, the handful of studies that have specifically examined inconsistent discipline have found that the increased use of consistent discipline mediates treatment outcomes showing that increased use of consistent discipline leads to better outcomes (Amlund Hagen et al., 2011; Fossum et al., 2009; Henggeler et al., 2009). The benefit of examining specific components over broad/composite measures has also been demonstrated in a meta-analytic review using component analysis to examine the effectiveness of specific components in parent training programs. In this review, Kaminski and colleagues (2008) determined which program components (i.e., content covered, delivery methods used) were reliably associated with more

successful outcomes of parent training programs for children with behavior problems. They found that parenting consistency was associated with the most significant effects. These findings suggest that examining inconsistent discipline as a standalone mediator of treatment outcome may be warranted.

Moderators of treatment outcomes can also suggest the presence of potential mediators of change (see Kazdin & Nock, 2003). In a recent study that examined moderators of behavioral improvement in children between 7 and 14 years of age with ODD following treatment with PMT and CPS, it was found that parental child-blame attributions moderated treatment outcomes (Dedousis-Wallace et al., 2022). That is, mothers who were more likely to attribute their child's problematic behaviors to factors that the child could potentially control did significantly poorer in PMT than CPS at 6-month follow-up. This finding raises the prospect that there may be different mediators at play (Kazdin & Nock, 2003) in PMT and CPS, and importantly, these processes may be related to parental child-blame attributions.

Given the demonstrated effectiveness of CPS (Greene et al., 2004; Murrihy et al., 2022; Ollendick et al., 2016), we might look to the theoretical model underlying CPS for potential mediators as there are clear hypothesized mechanisms of change (Greene & Winkler, 2019) – specifically lagging skills. There are two proposed pathways in which lagging skills might exert their influence on treatment outcome: (1) by encouraging a paradigm shift in how parents view the cause of their child's oppositional behaviors, and (2) by enhancing or indirectly developing the child's lagging skills through problem-solving processes (Greene, 2010; Greene & Winkler, 2019). In this model, it becomes important to help the parents come to view their child's oppositional behaviors through the lens of lagging skills, as opposed to their behaviors being intentional and largely within the child's control. The subsequent efforts from the parents to understand why the child is having difficulty

meeting their expectations may contribute to improvements in oppositional behaviors (Greene & Winkler, 2019). The second hypothesized pathway for how lagging skills influence treatment outcome is through indirect skills improvement during treatment. That is, the child's lagging skills are thought to develop by collaboratively engaging in each of the steps of the problem-solving actions of CPS (see Greene, 2010 for further details).

The current study attempts to contribute to our understanding of how treatments for ODD work by extending our previous findings (see Dedousis-Wallace et al., 2022) that lagging skills, inconsistent discipline, and parental attributions to predict changes in oppositional behaviours and parental attributions to moderate treatment outcomes for CPS and PMT. We therefore further explored these variables as possible mediators of behavioral improvement in children in an Australian sample of families who received PMT or CPS treatment. This study is a secondary analysis of data from a randomized control trial (see Murrihy et al., 2022) in which children aged 7-14 years of age were treated for ODD with either PMT or CPS. Both treatments yielded similar outcomes, with 45-50% of youth in the non-clinical range following treatment and 67% considered much improved albeit still meeting criteria of a diagnosis of ODD. Gains made in treatment were maintained at the 6-month follow-up.

Here, we employ a longitudinal mediation analysis framework to address issues associated with a lack of temporal precedence in previous mediation studies. To our knowledge, this is the first study to use a longitudinal mediation model to examine possible mediators of treatment improvement in behaviour in youth with ODD. Based on research examining mediation, relevant theory, and the targets of change in these two treatments, the following hypotheses were put forth: improvements in lagging kills, increased use of

consistent discipline, and decreased child-blame attributions would mediate treatment outcomes.

Method

Participants

This study involved participants who were enrolled in a randomized clinical control trial (RCT) providing treatment for the child's ODD symptoms (described in more detail in Murrihy et al., 2022). Participants included 145 young people (71% male) between the ages of 7 and 14 years (M= 8.88 years, SD= 2.04) who met DSM-IV-TR criteria for ODD (American Psychiatric Association, 2000). Exclusion criteria included a diagnosis of CD, autism spectrum disorder or developmental delay, or at high risk of suicide. The current use of illicit substances also rendered participants ineligible for the study. Medication use (e.g., stimulants) was permitted; however, participants were encouraged to stay on a consistent regimen during the trial. Although considerable comorbidity was present in our sample, with anxiety disorders being the most common co-occurring disorder (71%) followed by ADHD (67%), the behaviors associated with ODD were the primary reason for referral in all cases

All participants randomized to treatment were included in an intent-to-treat analysis (ITT, N = 145), regardless of program completion. Young people were predominantly from two-parent families (78%) who identified their ethnicity as Australian (56%), followed by European (21%), Asian (6%), African (5%), Central American (4%), New Zealand (2%) and North American (1%). Over half of the participants (57%) reported an annual income greater than AUD$150,000/annum, which is equivalent to USD$101,000/annum. Approximately three-quarters of the parents had obtained undergraduate university degrees (see Dedousis-Wallace et al., 2022, Chapter 4, for further details on demographics). No baseline differences were found between treatment conditions.

Procedure

A telephone screener was conducted to assess eligibility (*n* = 232). Following the screening, 145 families (parent(s) and child) completed a comprehensive assessment to confirm study eligibility (see Dedousis-Wallace et al., 2022). A diagnosis of ODD was assessed via two separate semi-structured diagnostic interviews - The Anxiety Disorders Interview Schedule for DSM-IV, Child and Parent Versions (ADIS-IV-C/P; Silverman & Albano, 1996). The ADIS-C/P was administered by postgraduate trained psychologists, either current Master of Clinical Psychology interns or experienced clinical psychologists. In addition, these semi-structured interviews were conducted by two separate assessors - one for the parent(s) and another for the young person. Consensus diagnoses were subsequently reached between the two assessors, under the guidance of an experienced clinical psychologist (supervisor).

Following the ADIS assessment, a battery of parent self-report questionnaires was administered at five-time points (see: Measures; note all self-report parent measures reported in this study were based on maternal report only). These time points were: prior to commencing treatment (pre-treatment); once treatment strategies were introduced for both CPS and PMT (seventh treatment session); tenth treatment session; at treatment completion (post-treatment) and at 6-months following treatment completion (follow-up).

Following the pre-treatment assessment sessions, families were randomly assigned, using a block randomisation procedure (to ensure equivalent treatment group sizes), to one of the two treatment conditions: Parent Management Training (*n* = 72) or Collaborative & Proactive Solutions (*n* = 73). Each treatment condition included up to 16 weekly 60-minute sessions, with a booster session delivered two weeks after the last treatment session. The two treatment conditions are further detailed by Murrihy et al., 2022. After completing the post-treatment assessment and again after the follow-up assessment, families were given a gift

voucher valued at AU$100. Assessments began in August 2014 and continued throughout the project until its completion in May 2019.

A mixture of experienced clinical psychologists (36%) and Master of Psychology student interns (64%) delivered the treatment. Of the total families who received treatment, 23% received CPS and 14% received PMT from experienced clinical psychologists. Of the remaining families, 28% of CPS and 35% of PMT families were seen by intern clinical psychologists.

Measures

Primary Outcome Measure

The Disruptive Behavior Disorders Rating Scale (DBDRS; Barkley, 1997; Pelham et al., 1992). The DBDRS is a parent report questionnaire developed to measure symptoms that reflect DSM-IV criteria for ODD, CD and ADHD. This study used a version of the DBDRS, revised by Barkley (1997), to assess a young person's behavior. The ODD subscale of the DBDRS was used as an outcome measure of severity of conduct problems. Parents scored each item on a 4-point Likert scale ranging from 0 (never or rarely) to 3 (very often). For the eight ODD symptoms, ratings of a "2" (often) or "3" (very often) were treated as meeting criteria for the symptom (see Barkley, 1997). Using this criterion, total scores for the ODD inventory could range from 0 – 8, with a score of 4 or above indicating clinical levels of ODD. The DBDRS has demonstrated good reliability (Ollendick et al., 2016; α = .90). In the current study, internal consistency was acceptable at each assessment point with Cronbach's alpha ranging from α = .745 to .873.

Diagnostic status measure

The Anxiety Disorders Interview Schedule for DSM-IV, Child and Parent Versions (ADIS-IV-C/P; Silverman & Albano, 1996). The ADIS-IV-C/P versions are

parallel semi-structured diagnostic interviews used to assess the presence of psychological disorders, symptom severity and interference in youth aged 6-16 years. While conducting this semi-structured interview, the clinician assesses symptoms and obtains frequency, intensity, and interference ratings (0-8 scale), which are then used by the clinician to identify diagnostic criteria and to develop a clinician severity rating (CSR). A CSR of 4 or above on a 0–8 scale indicates a diagnosis. The ADIS-C/P is reliable and valid for the diagnosis of both ODD and ADHD, in addition to the anxiety and affective disorders (Anderson & Ollendick, 2012; Jarrett et al., 2007; Ollendick et al., 2016). For the current study, the reliability of the structured interview diagnoses was evaluated by an independent rater who listened to, and scored, a random selection of 20% of the recorded interviews. Agreements on diagnoses were $\kappa = .65$ for both the primary and secondary ODD diagnoses, indicating an acceptable level of agreement between raters (Cohen, 1960). The CSR of the ODD interview was used to determine the presence of an ODD diagnosis and subsequent eligibility to enter the study.

Potential Mediator

Inconsistent Parenting. The Inconsistent Discipline (ID) subscale from the Alabama Parenting Questionnaire – Short Form (APQ-SF; Elgar et al., 2007*)* was used to measure inconsistent parenting (e.g., "You threaten to punish your child and then do not actually punish him/her", "Your child talks you out of being punished after he/she has done something wrong"). This is a 3-item subscale that parents respond on a 5-point Likert scale ranging from 1 = "never" to 5 = "always," with total scores ranging from 3 to 15, with a higher score indicating greater use of inconsistent discipline. Psychometric properties have been demonstrated for the APQ-SF in previous literature, including studies of parents of children with disruptive behaviors (Elgar et al. 2007; Wade & Andrade 2015). For our current sample, the inter-item reliability was deemed acceptable, as indicated by Cronbach's alpha that ranged from $\alpha = .744$ to .936 across time points.

Child Responsible Attributions. The Child Responsible Attributions (CRA) 10 item subscale from the Parent Cognition Scale (PCS; Snarr et al., 2009) was used to measure child-directed causal interpretation for children's misbehavior (e.g., "My child is headstrong", "My child purposely tries to get me angry"). Parents indicated their agreement with each statement on a 6-point Likert scale (0 = always true; 5 = never true). All items are reverse scored, with higher scores indicating more biased attributions and a total score ranging from 0 to 50. The PCS has strong psychometric properties with community and clinical samples (Kil et al., 2020; Snarr et al. 2009). The inter-item reliability for this subscale in the current sample, as indicated by Cronbach's alpha, ranged from $\alpha = .869$ to .930 across time points.

Lagging Skills. The Assessment of Lagging Skills (LS) is a 9-item self-report measure designed to examine lagging skills in the child (Greene, 2010). The lagging skills examined are in the domain of executive functioning (e.g., "Has difficulty considering the likely outcomes or consequences of actions"), emotion regulation (e.g., "Has difficulty managing an emotional response to frustration so as to think rationally"), and social skills ("Shows difficulty appreciating another person's perspective or point of view"). Parents indicated their agreement with each statement on a 4-point Likert scale (0 = never; 3 = always), with higher scores indicating greater impairment and total scores ranging from 0 to 27. The Assessment of Lagging Skills is a shortened version of the Assessment of Lagging Skills and Unsolved Problems used by Greene (2014). The inter-item reliability for this subscale in the current sample, as indicated by Cronbach's alpha, ranged from $\alpha = .863$ to .922 across time points.

Statistical analysis

Data were analyzed using intent-to-treat analysis (ITT). Preliminary analyses were conducted with SPSS version 27. T tests and Chi square analyses were used to compare

baseline differences between treatment groups, and between participants who completed treatment versus those who dropped out of treatment. Little's Missing Completely at Random (MCAR) test (Little, 1988) was used to assess whether data were missing completely at random and indicated that the dataset did not deviate from randomness. Data were missing because participants did not attend assessments or randomly missed completing questionnaire items. The statistical significance level set for all analyses was $p < .05$ (one-tailed). Baseline analyses were undertaken prior to imputation of missing data. Missing data were accounted for using full information maximum likelihood (FIML) during mediation analyses.

Longitudinal SEM mediation models were undertaken in M*plus* 8.8 (Muthén and Muthén, 2022). The present analysis includes a single predictor (treatment condition, dummy-coded 0 for PMT and 1 for CPS), longitudinal mediators, and longitudinal outcomes (oppositional behaviour, DBDRS score, at each time point). Longitudinal mediation effects across five-waves-pre-treatment (time 1), session 7 (time 2), session 10 (time 3), immediately post-intervention (time 4) and at 6-month post- intervention follow up (time 5) were examined separately for the three mediators: child responsible attributions, inconsistent discipline and lagging skills. Bootstrapping with 5 000 samples was used to compute standard errors.

We analysed longitudinal mediation models using latent change score mediation models (LCMMs) in M*plus* 8.8 (Muthén & Muthén, 2022). Latent change score mediation modelling allows evaluation of both constant and proportional (e.g., accelerating) change (known as *dual* change) and can examine multivariate models, estimating *coupling parameters*, which is essential for the analysis of mediation relations.

Model fit was evaluated using several indices (see: Hoyle and Panter, 1995; Quigley et al., 2018; and Hu and Bentler's (1999) criteria). Due to the sensitivity to sample size of

chi-square values (see Little, 2013), the Root Mean Square Error of Approximation (RMSEA) was used with values ≤.10 and the Comparative Fit Index (CFI) / Tucker-Lewis index (TLI) values ⩾ .90 when interpreting overall model fit. Finally, Akaike Information Criterion (AIC) was used to compare alternative models, better fit was indicated by lower values (Vrieze, 2012).

Results

Baseline Comparisons

Families did not significantly differ between the two treatment conditions on child gender ($\chi 2$ (1, N = 145) = 1.99, p = .16), child age (t (143) = -.273, p = .79), maternal ethnicity ($\chi 2$ (15, N = 145) =13.36 , p = .55), income ($\chi 2$ (2, N = 136) = .151, p = .93), family structure ($\chi 2$ (6, N = 143) = 4.38 , p = .63), maternal education ($\chi 2$ (4, N = 141) = 8.817., p = .07), and paternal education ($\chi 2$ (4, N = 140) = 5.619 , p = .23). In addition, no significant baseline differences were found for severity of child conduct problems as measured by the ADIS- IV CSR scores (t (143) = -.021, p = .98) or the ODD baseline scores on the DBDRS (t (137) = -.735, p = .46).

Descriptive Statistics and correlational analyses

Descriptive statistics are presented in Table 5.1 for the DBDRS, Lagging Skills, Child Responsible Attributions, and Inconsistent Discipline for PMT and CPS at each timepoint. Bivariate correlations for the variables examined are presented in Table 5.2. Due to the requirement that all variables must be normally distributed in order to undertake structural equation modelling, skewness and kurtosis were also obtained. The results demonstrated that all variables satisfied the criteria for normality with skewness < 3 and kurtosis < 10; (Kline, 2010; Ju & Lee, 2018).

Longitudinal models and Mediation Parameters

. *Inconsistent Discipline*

The indices for the latent change score mediation model for Inconsistent Discipline (ID) suggest a good fit for the model (see Table 5.3). For Inconsistent Discipline (ID) as the mediator, treatment significantly and positively predicted the slope of ID (a = 0.62, p = 0.010), and the coupling from ID to DBDRS (b = -1.90, p < .001) was also significant, with higher ID scores associated with lower DBDRS scores. The indirect effect was also significant (ab = -1.17, p = 0.011); however, the prediction of the slope of DBDRS by treatment (i.e., direct effect) was not significant (c' = 1.01, p = 0.077). Hence, we can conclude that there is some evidence of a mediation relationship between treatment and ODD symptoms.

Lagging Skills

For the Lagging Skills model, the latent change score mediation model fit the data adequately (see Table 5.3). Treatment group significantly predicted the slope of LS (a = 1.28, p = 0.007), and the coupling from LS to DBDRS (b = -0.33, p = 0.05) was significant for the model with Lagging Skills (LS) as the mediator. The indirect effect was not significant (ab = -0.42, p = 0.13), although the prediction of the slope of DBDRS by treatment was significant (c' = 1.28, p = 0.007). Therefore, LS was not found to mediate the relationship between treatment and ODD symptoms and the nature of the effect of treatment with relation to the purported mechanism of LS was not able to be determined.

Child Responsible Attributions

Finally, the Child Responsible Attributions model fit statistics suggested that the latent change score mediation model was acceptable, except with regard to the CFI index (see Table

5.3), which was marginally lower than the cut off score. However, this model was retained as it presented with the lowest Akaike Information Criterion (AIC) when compare alternative models, which suggests a better fit (Vrieze, 2012). Child Responsible Attributions (CRA) as mediator, treatment did not significantly predict the slope of CRA (a = 1.67, p = 0.057), the coupling from CRA to DBDRS (b = -0.12, p = .091) was not significant, and the indirect effect was also not significant (ab = -0.21, p = 0.235). For CRA the prediction of the slope of DBDRS by treatment was significant (c' = 0.77, p = 0.036). Thus, no mediation of CRA was found for the relationship between treatment and ODD symptoms and it was not possible to gain further understanding of CRA as a mechanism underlying possible treatment effects

Table 5.1. *Descriptive Statistics for study variables at each wave of measurement in PMT and CPS groups*

Variable	Time 1 (pre) *M (SD)* Range	Time 2 *M (SD)* Range	Time 3 *M (SD)* Range	Time 4 (post) *M (SD)* Range	Time 5 (follow-up) *M (SD)* Range
DBDRS					
PMT	5.10 (2.14) 0-8	2.10 (2.14) 0-8	1.24 (2.03) 0-7	2.60 (2.42) 0-8	2.34 (2.49) 0-8
CPS	5.36 (2.10) 0-8	3.00 (2.61) 0-8	2.02 (2.10) 0-7	3.12 (2.62) 0-8	2.76 (2.75) 0-8
Lagging Skills					
PMT	14.17 (4.11) 6-22	12.60 (3.75) 7-21	11.57 (3.53) 2-20	11.10 (4.77) 2-27	10.93 (4.57) 1-26
CPS	19.10 (5.10) 10-27	15.19 (4.94) 7-27	15.12 (5.30) 0-27	13.27 (5.41) 0-27	13.15 (4.23) 6-27
Child Responsible Att.					
PMT	34.10 (6.10) 21-39	30.49 (8.61) 11-50	28.72 (7.70) 11-46	28.40 (8.10) 13-46	29.39 (8.17) 12-45
CPS	36.85 (6.67) 24-45	33.89 (7.59) 17-49	34.12 (8.52) 16-50	30.78 (8.61) 12-50	30.57 (8.32) 12-48
Inconsistent Discipline					
PMT	8.00 (2.0) 3-12	6.76 (2.02) 3-12	6.54 (1.90) 3-10	6.31 (1.98) 3-12	6.78 (1.91) 3-12
CPS	8.34 (2.30) 3-14	7.53 (1.88) 3-12	7.42 (1.68) 3-10	7.52 (2.16) 3-11	7.59 (1.91) 3-11

Note. CPS = Collaborative and Proactive Solutions; PMT = Parent Management Training; DBDRS = Disruptive Behavior Disorder Rating Scale; Child Responsible Att. = Child Responsible Attributions.

Table 5.2. *Bivariate correlations for the study variables*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. DBDRS T1	1																			
2. DBDRS T2	0.18	1																		
3. DBDRS T3	0.03	.4**	1																	
4. DBDRS T4	.30**	.52**	.33**	1																
5. DBDRS T5	.23*	.57**	.44**	.61**	1															
6. LS T1	0.27	0.14	0.16	0.08	0.13	1														
7. LS T2	.27**	.58**	.35**	.46**	.45**	0.25	1													
8. LS T3	0.15	.50**	.43**	.42**	.36**	0.33	.71**	1												
9. LS T4	.31**	.43**	.26*	.62**	.47**	.48*	.44**	.52**	1											
10. LS T5	0.1	.42**	0.21	.37**	.51**	.47*	.52**	.55**	.52**	1										
11. CRA T1	.57**	.45*	0.26	0.27	.47*	0.31	0.39	0.35	0.35	0.02	1									
12. CRA T2	.27**	.60**	.40**	.51**	.42**	0.06	.63**	.39**	.29**	.22*	.68**	1								
13. CRA T3	.31**	.60**	.60**	.52**	.55**	0.29	.62**	.59**	.43**	.33**	.71**	.80**	1							
14. CRA T4	.21*	.54**	.40**	.63**	.62**	0.17	.37**	.25*	.51**	.32**	.52*	.67**	.74**	1						
15. CRA T5	0.15	.51**	.45**	.47**	.69**	-0.2	.40**	.27*	.42**	.53**	0.19	.59**	.642**	.71**	1					
16. ID T1	0.11	.26**	.24*	0.01	0.11	0.08	0.16	0.08	0.12	0.17	0.24	0.14	0.13	0.002	.24*	1				
17. ID T2	.2*	.29**	0.21	0.09	0.17	-0.04	.25**	0.11	0.06	0.04	0.17	.26**	.32**	0.11	.22*	.55**	1			
18. ID T3	0.07	.25*	.28**	0.02	0.17	0.03	0.12	0.17	0.05	0.06	0.23	0.18	.35**	0.13	.31**	.53**	.72**	1		
19. ID T4	0.16	.31**	.28**	.20*	.22*	0.04	0.11	0.13	.22*	0.19	0.04	0.2	.33**	.23*	.31**	.56**	.67**	.71**	1	
20. ID T5	0.21	.25*	.29**	.25*	.30**	-0.14	.22*	0.2	0.17	.38**	0.01	0.17	.29**	0.15	.42**	.57**	.60**	.61**	.71**	1

Note. DBDRS = Disruptive Behavior Disorder Rating Scale; LS = lagging skills; CRA = child responsible attributions; ID = Inconsistent Discipline; T1 = Time 1 (pre-treatment); T2 = Time 2; T3 = Time 3; T4 = Time 4 (post-treatment); Time 5= Time 5 (6-month follow-up).

*$p < 0.05$ level (2-tailed).

** $p < 0.01$ level (2-tailed).

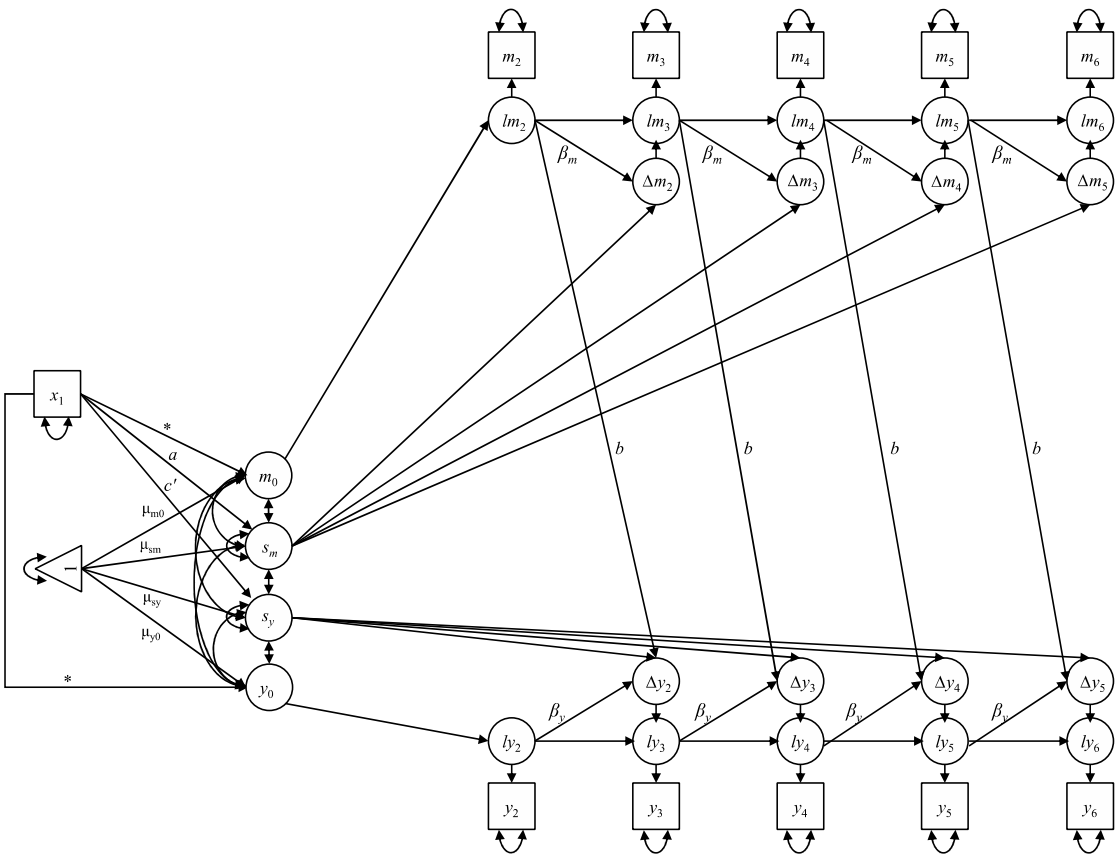
Table 5.3. *Model fit statistics for the latent change score mediation models.*

Mediator Model	χ^2 (*df*)	RMSEA	CFI	TLI
Child Responsible Attributions	199.83 (78)**	.10	.88	.90
Inconsistent Discipline	115.36 (78)*	.05	.96	.95
Lagging Skills	156.07 (78)**	.08	.90	.90

Note. All chi-square statistics were statistically significant; * $p < 0.01$; ** $p < 0.001$; *df* = degrees of freedom; RMSEA = root mean squared error of approximation; CFI = comparative fit index; TLI = Tucker-Lewis index; SRMR = standardised rood mean square residual.

Figure 5.1 presents a path diagram illustrating the latent change score mediation model's parameters. This model is based on Hilley and O'Rourke's (2022) latent change score model with a single predictor, and longitudinal mediator and outcome variable. Standardised parameter estimates and standard errors from the models are displayed in Table 5.3.

Figure 5.1. *Path Diagram for the LCSM Model taken from Hilley and O'Rourke (2022).*



Note. Paths sharing labels are constrained to be equal. Unlabelled paths are constrained to 1, except paths marked with an asterisk. Double headed arrows represent variance and covariances, those not included in this diagram are constrained to 0

.

Discussion

Although both PMT and CPS are considered evidence-based treatments that have been shown to be effective treatments for children with conduct problems (Eyberg et al. 2008; Ollendick et al., 2016), improvement is only reported in about 50% of cases (Murrihy et al., 2023). Identifying possible mechanisms of change in these two treatments can improve our understanding of effective treatment components and potentially improve these outcomes (Leitjen at al., 2021), with mediation analyses representing the first step in understanding these mechanisms of change R. The current study used a longitudinal mediation analysis framework to examine the impact of three potential mediators - lagging skills, parental attributions of child responsibility for behavior ("child responsible attributions"), and parental use of inconsistent discipline - on child conduct problems in families of children with ODD. Families were randomized to either PMT or CPS, and outcomes were measured at five-time points: before commencing treatment (pre-treatment); once treatment strategies were introduced for both treatments (at the beginning of the seventh treatment session); at the tenth treatment session; at treatment completion (post-treatment); and 6-months following treatment (follow-up). Of the three variables examined, only inconsistent discipline was found to have a mediation effect on treatment outcomes.

Our first hypothesis was not supported: lagging skills did not mediate treatment outcome. Although lagging skills predicted behavior outcomes and improved for both CPS and PMT overtime, with greater improvement evident in the CPS treatment group (see Table 5.1), there was no evidence that treatment effect was mediated by changes in lagging skills.

Whilst the significant *a* and *b* paths are suggestive of a trend, no conclusions can be drawn as there was no mediation present – the indirect path was not significant.

Thus, lagging skills may still play a role in explaining child behavior improvements following CPS but may not be the mechanism explaining how these changes occur. Alternatively, perhaps the improvement of lagging skills over time depends on the number of problems solved related to a specific skill. During treatment, a family may choose to work on any number of unsolved problems that may not reflect the same underlying skill requirement. This can be illustrated in our previous example, where the child had difficulty when the parents changed the plan for the day. In this instance, the child's lagging skill may be related to executive function impairments, particularly cognitive flexibility. In the process of collaboratively solving the problem and executing the agreed-upon solution, the child is practising the skill of cognitive flexibility. However, other unsolved problems tackled during the course of therapy may not be related to cognitive flexibility and may instead be related to other lagging skills, such as emotion regulation or social skills. In as much as skill acquisition partly relies on repetition (Taie, 2014), a more targeted approach whereby the number of specific lagging skills underlying each unsolved problem solved during therapy is quantified, evaluated and repeatedly targeted, may prove to be more nuanced and meaningful in furthering our understanding of the possible role of lagging skills in treatment outcome for CPS. This approach is in line with recent theories of executive function development whereby skills are believed to develop when used in specific situations in the service of specific goals (e.g., managing frustration when parents change plans; Dobel, 2020).

Second, contrary to our expectations, child-responsible attributions as determined by parents did not mediate treatment outcomes. This unexpected finding is consistent with Kil et al's (2021) finding of no significant mediation effect for pre-treatment parental child-blame attributions and treatment readiness for families of children with conduct problems. Despite

the non-significant results in the current study, previous research indicates that parental attributions may still play a role in understanding how treatments can lead to changes in individuals (Kil et al., 2021; Sawrikar & Dadds, 2018) and, therefore, exploring parental attributions more generally would be of benefit. In an earlier study, Sawrikar and colleagues (2019) found that following a behavioral parent training intervention, parental feelings about the child were found to mediate the association between change-resistant parental attributions and long-term child behavior outcomes. Thus, examining parental attributions as a mediator more generally may be useful. Multiple linkage studies (i.e., a chain of intervening variables between intervention and child outcome) could potentially prove to be more beneficial in understanding the role parental attributions play as possible agents of change in CPS and PMT (Forehand et al., 2014; Sandler et al., 2011). That is, parental attributions may be one of several variables that unfold in a sequenced order following treatment to lead to changes in conduct problems. For example, treatment may immediately affect parenting behaviors, leading to changes in parental attributions and subsequent conduct problems.

Third, as expected, inconsistent discipline was a significant mediator of treatment outcome, however, the direction of the finding was somewhat surprising- increased use of inconsistent discipline was found to be associated with better outcomes. We can only speculate, as follows, when interpreting these findings.

One possible explanation for this finding is that higher inconsistent discipline is present for the CPS group (see Table 5.1), which is reflected in the unexpected direction of the relationship. For CPS, parenting behaviors, such as the use of consistent and contingent disciplinary practices, are not a strategy explicitly taught in the CPS model (Greene, 2010). Instead, specific situations that predictably precede oppositional behaviors are identified and prioritised (referred to as “unsolved problems”), and these prioritised unsolved problems are actively addressed through the collaborative problem-solving process. Expectations for the

remaining unsolved problems are temporarily removed (known as “Plan C”), which is effective at reducing tension between child and adult, thus reducing the oppositionality of the child (Greene, 2010). For example, if the parents decide that completing homework every night, whilst an issue, is not a priority in terms of unsolved problems then they do not ask or expect their child to complete their homework, thus removing the tension between the parent and child that would normally result in oppositional behaviors. We can, therefore, speculate that if the parent is responding to the questions regarding inconsistent discipline that include e.g., “You let your child out of punishment early (like lift restrictions earlier than you originally said)”, they may be endorsing these items in line with the CPS Plan C strategy of temporarily dropping previously held expectations that have typically preceded oppositional behaviors. More specifically, as each specific unsolved problem arises each week to be solved, previous strategies used to manage the situations (e.g., the use of punishment) are no longer being used, and subsequently, the dropping of expectations as each unsolved problem presents, may look like the parents are being inconsistent in their approach. For example, for the unsolved problem of “Difficulty getting off iPad before dinnertime”, the parent may have previously imposed a consequence such as not letting the child have the iPad for the rest of the evening, but now allow the child to have the iPad at the dinner table. While the deliberate CPS strategy of temporarily setting aside expectations of the child that lead to disruptive behaviors is not an identified mechanism of change in CPS (see: Greene & Winkler, 2019 for a discussion), these findings suggest that perhaps it warrants further exploration. Table 5.1 suggests that the mediation result for PMT might be driven by the CPS treatment group.

Strengths and Limitations

This study had several strengths. First, it advances the field by attempting to address significant gaps in the extant literature by examining mediators of treatment outcomes for children with conduct problems within a longitudinal mediation framework. The importance

of furthering our understanding of mechanisms of change by examining mediators of treatment outcomes has long been identified as a worthy goal for improving treatments (Kraemer et al., 2002). Despite this, research exploring mediators of treatments for children with conduct problems is an understudied area of research (Forehand et al., 2014; Mestre et al., 2022). Furthermore, previous studies predominantly present methodological limitations with change not examined across time and a lack of adherence to rigorous statistical standards required for mediation analyses. For example, in a recent review of treatments for child externalizing disorders, only one-third of the studies included temporal precedence of the mediator (Mestre et al., 2022). These methodological shortcomings limit the inferences that can be made regarding *how* treatments work (i.e., what changes first, outcome, or mediator). The current study addresses these shortcomings by employing rigorous statistical procedures with multiple time points that can provide information on causal relations (Hilley & O'Rourke, 2022).

These positive features notwithstanding, some limitations should be considered when interpreting the results. First, these findings were based on parent self-reported data, which implies the possibility of bias in reporting improvements in behavior (De Los Reyes et al., 2022; Loerinc et al., 2015). The current study could be further strengthened with the use of an additional outcome measure across the five-time points (e.g., clinician-rated observational measure), the use of a multi-informant method of measuring changes in child conduct problems (e.g., parent self-report, teacher self-report and clinician ratings) or an additional mode of assessment (such as direct observation). Also, the assessment of lagging skills measure used in the current study was relatively global, including both cognitive and behavioral skills. Future research may benefit from a more fine-tuned approach to examining specific lagging skills that target various components of these skills (e.g., organization, planning, persisting on challenging or tedious tasks) or the specific skills underlying the

unsolved problems that were addressed during treatment (e.g., cognitive flexibility when plans are changed).

An additional limitation is the sample size, which, although relatively large for a treatment outcome trial, was modest for mediation analysis. A larger sample would enhance the precision and reliability of the findings, as well as the power of the study to detect small effects. Importantly, the sample size used in the current sample is in the range of previous studies that have used similar methodology (e.g., Quigley et al., 2018). It is, however, noteworthy that limited work has been conducted on power analyses for LCSM models such as those used in the current study. Therefore, additional research is needed regarding power and sample size planning for LCSM models used for mediation (Hilley & O'Rourke, 2022). Considering the association between the variables of interest in the current study and the hypothesized pathways of change, re-examination of these variables with a larger sample size may be warranted. Another limitation is that the models did not offer us information about the specific temporal effects or allowing us more detailed characterisation of the nature of the effect of the treatment models on their purported mechanism.

The current study was also limited by the demographic homogeneity of the sample (i.e., predominantly white and middle to upper-class families). Despite this, no differences were found at baseline on sociodemographic variables between the two treatment groups. Also, our sample was representative of a clinic in this region (Australian Bureau of Statistics, 2016). Overall, the limitations present with the current sample reflects the challenges of recruiting and maintaining participation from a diverse sample of families for participation in clinical treatment studies (Booker et al., 2019).

Future directions

Previous studies of mediators of change for conduct problems following PMT have examined composite scores of parenting practices (e.g., Fagan & Benedini, 2016; Hagen et al., 2011; Rimestead et al., 2020; Seabra-Santos et al., 2016). This is unsurprising, as there is an intuitive expectation that combining these effective parenting components would lead to a greater impact on a child's behavior (Forehand et al., 2014). Moreover, the possibility of synergistic effects implies that their combined influence could generate further positive changes beyond what each individual behavior might accomplish on its own (Forehand et al., 2014). However, composite measures preclude the ability to determine which parenting practices are most likely to affect outcomes (Fagan & Benedini, 2016). For example, in an earlier study, Gardner and colleagues examined whether positive (e.g., praise and positive affect) and negative (e.g., criticism and harsh commands) parenting mediated change in preschool-aged children (N=153) following the implementation of the Incredible Years parenting program (Gardner et al., 2010). They found that improvements in positive parenting, rather than reductions in harsh or negative parenting, appear to be a key factor mediating change in child problem behaviour. In order for us to further refine and improve the treatments and associated outcomes, it may be beneficial to understand the independent effects of the parenting practices taught in PMT. Future studies may therefore consider further examining these parenting practices, as outlined in PMT interventions, as standalone mediators, to elucidate their impact on conduct problems. Furthermore, this may suggest which parenting behaviors may need to be emphasised, abandoned, or revised in order to improve the effectiveness of PMT interventions (Fagan & Benedini, 2016). Also, although it would be beyond the scope of this study it may be beneficial for future research to explore possible differential effects of PMT and CPS on the inconsistent discipline mediation model.

While examining mediators of change represents the first step in delineating these mechanisms of change (Maric et al., 2015), manipulating the mediator is another way to further our understanding of the mechanisms underlying change (Kazdin, 2007). In this instance, future research may benefit from manipulating the use of inconsistent discipline in PMT trials for ODD. For example, by manipulating the dosage (e.g., varying levels of emphasis during treatment) or comparing PMT with and without the inclusion of consistent discipline as a critical strategy. Manipulating inconsistent discipline and examining its impact on child behavior outcomes would provide additional meaningful information in furthering our understanding of the active ingredients in PMT.

Considering both CPS and PMT have demonstrated similar outcomes (Greene et al., 2014; Murrihy et al., 2022; Ollendick et al., 2016), it is possible that, although different strategies are used in PMT and CPS, the same mechanisms, such as an increase in positive parent-child interactions, may mediate change. For example, in a recent review, increased positive parent-child interactions were shown to be the strongest predictor of better outcomes in PMT for children with conduct problems (Dedousis-Wallace et al., 2021). Similar results have been found for CPS (Miller-Slough et al., 2016). In addition, child-responsible attributions that are resistant to change have been found to negatively impact parent training outcomes through persistent negative parent–child communication (Andrade et al., 2022; Sawrikar et al., 2019). CPS aims to improve parent-child interactions by improving parent-child communication and reducing parent-child incompatibility within a collaborative problem-solving process. One component of this process can be illustrated in the first step of CPS (“empathy step”). Here the parent tries to understand what makes it difficult for the child to meet their specific expectation, causing the incompatibility and, thus, problematic behaviors. Importantly, in this step, the parent is instructed to listen in a curious and non-judgmental manner and to be free of their theories as to what makes it difficult for the child to

meet their expectations. In contrast, PMT aims to improve the parent-child relationship by encouraging positive involvement and communication between the parent and the child using strategies such as “quality time,” where the child chooses an activity to complete with the parent. Interestingly, Booker and colleagues (2019) found a differential effect for CPS and PMT when examining the impact of components representing the parent-child relationship on ODD symptoms and adaptive skills. Specifically, family hostility predicted more externalizing problems and poorer adaptive skills for children; however, families receiving CPS (and not PMT) were buffered against the negative influence of family hostility on adaptive skills. While this result was not extended to externalizing behaviors, it nevertheless suggests that while it may be beneficial to examine the potential role of parent-child interactions as a key ingredient underlying change in both CPS and PMT, a more nuanced approach to examining specific components of this relationship (e.g., hostility, warmth, compatibility, perceived connectedness) may be fruitful.

In conclusion, this study attempted to address a gap in the literature by examining potential mediators for CPS and PMT for children with ODD within a longitudinal mediation framework. Inconsistent Discipline, but not Lagging Skills or Child Response Attribution, was found to mediate the association between treatment and disruptive behaviour. Our study, therefore, represents a significant step in furthering our understanding of the mechanisms underlying changes in oppositional behaviors in children following treatment. The study's strengths, such as employing a longitudinal mediation framework, address certain methodological limitations prevalent in prior research. Future research may consider taking a similar longitudinal approach in the examination of mediators of treatment outcome. Moreover, examining specific components of the parent-child relationship in both PMT and CPS, such as family hostility and perceived connectedness, may offer valuable insights into the active ingredients of these treatments.

Appendix

Table 5.4. Estimates and *p*-values from the latent change score mediation models.

Parameter	ID Est. (*p*)	LS Est.(*p*)	CRA Est. (*p*)
Multivariate dual change portion Univariate information for M			
μ_{m0}	8.19 (<.001)	12.29 (<.001)	33.91(<.001)
μ_{sm}	4.52 (<.001)	3.44 (.011)	14.13 (<.001)
β_m	-0.78 (<.001)	-0.46 (.<001)	-0.56 (<.001)
σ_{m0}	2.15 (<.001)	12.29 (<.001)	30.05 (<.001)
σ_{sm}	1.54 (<.001)	3.44 (.011)	16.01 (.02)
$\sigma_{m0,sm}$	1.81 (<.001)	3.93 (.003)	18.75 (<.000)
$\sigma_{e(m)}$	1.40 (<.001)	10.39 (<.001)	19.299 (<.001)
Univariate information for Y			
μ_{y0}	4.18 (<.001)	1.77 (.002)	3.94 (<.001)
μ_{sy}	11.75 (<.001)	3.58 (<.001)	4.37 (.024)
β_y	0.13 (.409)	-0.56 (.008)	-0.69 (<.001)
σ_{y0}	1.57 (.002)	3.94 (<.001)	1.69 (.004)
σ_{sy}	8.58 (<.001)	3.73 (.010)	3.43 (.000)
$\sigma_{y0,sy}$	0.88 (.066)	1.50 (<.001)	1.39 (.001)
$\sigma_{e(y)}$	3.17 (<.001)	3.02 (<.001)	3.12 (<.001)
Bivariate information			
$X \rightarrow y_0$	0.004 (.992)	0.16 (.663)	0.15 (.688)
$X \rightarrow m_0$	0.035 (.907)	2.34 (.002)	1.32 (.301)
$\sigma_{m0,y0}$	0.66 (.046)	2.27(.006)	4.12 (.005)
$\sigma_{sm,sy}$	3.65 (<.000)	2.80 (.004)	7.25 (.001)
$\sigma_{m0,sy}$	4.17 (<.000)	4.68 (.002)	7.46 (.001)
$\sigma_{y0,sm}$	0.38 (.065)	.95 (.033)	1.92 (.050)
Mediation portion			
a ($X \rightarrow s_m$)	0.62 (.010)	1.287 (.006)	1.67 (.057)
b (δy [coupling $M \rightarrow Y$], constrained to be equal over time)	-1.90 (<.001)	-0.33 (.050)	-0.123 (.091)
c' ($X \rightarrow s_y$)	1.01 (.077)	1.28 (.007)	0.77 (.036)
ab (product of *a* and *b*)	-1.17 (.011)	-0.42 (.131)	-0.21 (.235)

CHAPTER 6

General Discussion

Overview of the Project

Disruptive behaviour disorders are common mental health conditions associated with significant impairment, as well as a societal and economic burden (Kessler et al., 2012). One of the most common disruptive behaviour disorders in children and adolescents is Oppositional Defiant Disorder (ODD; Kessler et al., 2012). Due to its prevalence, and the societal and economic burden, effective treatments for ODD have received considerable attention. The most extensively studied treatment, Parent Management Training (PMT), with child participation, has come to be considered the gold standard in evidence-based treatment for children with disruptive behaviour problems (Kaminski & Claussen, 2017). Despite the substantial empirical support for the use of PMT for ODD, limitations are evident. Specifically, PMT does not work to a satisfactory level for up to 50% of individuals (Greene et al., 2004; Murrihy et al., 2023; Ollendick et al., 2016), attrition rates are high (Nock & Feerter, 2005), and the benefits that are obtained following treatment are not always maintained over time (Lundahl et al., 2006). In response to these limitations, treatments such as Collaborative and Proactive Solutions (CPS) have emerged as alternatives (see Greene, 2010). Studies have demonstrated that CPS works as effectively as PMT, for youth with ODD (Greene et al., 2004; Murrihy et al., 2023; Ollendick et al., 2016). While both treatments have shown significant reductions in disruptive behaviours (e.g., Greene & Winkler, 2019; Ollendick et al., 2016), there continues to be considerable room for improvement (Greene et al., 2004; Murrihy et al., 2023; Ollendick et al., 2016). Examining predictors, moderators and mediators of treatment response may be key in furthering our understanding and improving the outcomes associated with both treatments. Unfortunately, examination of these important

features within the disruptive behaviour disorders field has been limited (Dedousis-Wallace et al., 2022; Forehand et al., 2014; Prins et al., 2015). The overarching aim of this thesis was, therefore, to further our understanding of how to improve these treatment outcomes by investigating potential predictors, moderators and mediators for both PMT and CPS for youth with ODD and, in doing so, attempt to address this gap in the research. This aim was addressed by (1) systematically reviewing previous trials examining familial and parental predictors and moderators of PMT for disruptive behaviours thereby examining the current state of the field and directions for future research; (2) selecting variables that are either conceptually or empirically related to CPS and PMT and examining them as potential predictors and moderators of treatment outcome; and (3) investigating hypothesised mechanisms of change in both treatments by examining potential mediators of treatment outcome for CPS and PMT for children with ODD. In this final chapter, I will summarise the main findings from these studies and integrate them into the existing literature in the field. I will also highlight the limitations of the current research, suggest avenues for future research, and discuss the clinical implications of these findings.

Summary of current findings

Study 1 (Dedousis-Wallace et al., 2021) was a systematic review of parental and familial predictors and moderators of PMT for conduct problems. The analysis encompassed both indicated prevention studies, which involved children with subclinical conduct problems and intervention studies, which targeted children diagnosed with clinical conduct issues. Twenty-one studies were included in the review. Of these studies, only five examined moderators of treatment outcomes. Support for parent child-interactions was arguably the clearest finding in Study 1: all three studies examining parent-child relationships and parent-child interactions found that better treatment outcomes were predicted by a positive parent-child relationship and parent-child interactions (Dittman et al., 2014; Lavigne et al., 2008;

Miller-Slough et al., 2016). However, the remaining studies yielded minimal additional uniformity in their findings. These results were unexpected as previous meta-analyses suggest probable links between variables and treatment outcomes (e.g., low socio-economic-status and poor outcomes). I speculated whether these differences could be attributed to the smaller set of recent studies analysed in our review, compared to previous reviews (Lundahl et al, 2006; Reyno & McGrath, 2006). That is, the limited pool of studies may have reduced our ability to identify consistent patterns of results and, consequently, hindered our capacity to draw definitive conclusions. However, in contrast to previous reviews (i.e., Lundahl et al., 2006; Reyno & McGrath, 2006) that restricted their consideration of parental or familial variables, a strength of Study 1 was its unconstrained exploration of parental and family processes in connection to child outcomes following PMT. For example, Lundahl et al., (2006) only examined two parental/familial moderator variables - SES and single parenthood - meaning that while the number of studies examined was greater than Study 1, the variables analysed were limited. Considering the limited number of studies that have examined predictors, and particularly moderators, of PMT, I suggested the need for future RCTs to routinely examine a range of predictors and moderators, including parental and familial characteristics. The findings from Study 1 informed the selection of predictors and moderators examined in Study 2 of this thesis.

Study 2 (Dedousis-Wallace et al., 2022) evaluated potential predictors and moderators of both PMT and CPS for children presenting with ODD. In the absence of strong empirical support for intervention moderators, we examined variables that were either conceptually or empirically associated with treatment outcomes for CPS and PMT (see Prins et al., 2015, for this strategy). Therefore, lagging skills, inconsistent discipline, and parental attributions of child misbehaviour were examined - as well as initial problem severity, which was of empirical interest based on earlier studies (see Shelleby & Shaw, 2014). I undertook

secondary data analyses from an RCT with a hybrid clinical trial design (see Murrihy et al., 2023) in which 145 children (103 male, *M* = 8.88 years) aged 7-14 were randomly assigned to be treated for symptoms of ODD with either PMT or CPS. Assessments were conducted at baseline, post-intervention, and at 6-month follow-up, using independently rated semi-structured diagnostic interviews and parent-ratings of ODD symptoms.

The results of Study 2 demonstrated that higher pre-treatment levels of conduct problems, lagging skills and inconsistent discipline predicted poorer behavioural outcomes following both treatments. Specifically, higher levels of pre-treatment conduct problems predicted poorer treatment outcomes at post-treatment and at 6-month follow-up. Lagging skills predicted poorer treatment outcomes at post-therapy, but not 6-month follow-up. Importantly, these variables were predictors of treatment outcomes associated with these treatments, not moderators (see Ollendick et al., 2008). Finally, attributions of child misbehaviour significantly predicted poorer treatment outcomes at post-treatment, as well as at 6-month follow-up.

The only characteristic that moderated treatment outcome was child-responsible attributions - mothers who were more likely to attribute their child's problematic behaviours to factors in their child had significantly poorer outcomes in PMT than CPS at 6-month follow-up. This significant result suggests that CPS may be a more beneficial treatment than PMT for families who have been identified as having higher levels of child-responsible attributions before commencing treatment for ODD. While these results are suggestive of a treatment-based distinction for parents with high child-responsible attributions, it is unclear why this effect was not observed immediately post-treatment. It could be speculated that CPS requires more time for its effects to fully consolidate. This is perhaps reflected in the study by Murrihy et al. (2023), which, while not statistically significant, showed a trend of greater improvements with CPS from post-treatment to the 6-month follow-up compared to PMT.

Study 3**:** While Study 2 attempted to further our understanding of how to optimise treatment outcomes by addressing the question of for "whom" and "under what conditions treatments" are most effective, study 3 focused on "how" do these treatments work. The aim of Study 3 was, therefore, to contribute to our understanding of these mechanisms by examining potential mediators for CPS and PMT in the treatment of ODD. Again, research in this area is scarce. Among the limited studies available, most have focused on examining parenting practices as mediators of PMT. Furthermore, within these studies, the essential temporal precedence criteria for mediation in treatment outcome studies have often been overlooked (see Kazdin & Nock, 2003). To my knowledge, no studies to date have examined mediators of change for CPS.

The selection of variables examined for Study 3 was partly informed by our moderator findings in Study 2, as well as including the hypothesised mechanisms of change in CPS and PMT. I therefore examined child-responsible attributions, inconsistent discipline, and lagging skills as potential mediators. This was also the first study to construct and assess a longitudinal mediation model with the variables of interest. Similar to Study 2, Study 3 was a secondary analysis of data from the randomised control trial with a hybrid clinical trial design (see Murrihy et al., 2023). As expected, inconsistent discipline was a significant mediator of treatment outcome, however, the direction of the finding was somewhat surprising inasmuch as increased use of inconsistent discipline was found to be associated with better outcomes. Our remaining hypotheses were not supported, with no significant mediation effects found for lagging skills and child responsible attributions. Other avenues for potential research were discussed are explored further in the discussion below.

Integration of findings into existing literature

Moderators and predictors

As previously noted, moderator outcome research for the treatment of ODD with CPS is sparse and is a work in progress for PMT (Booker et al., 2019; Dedousis-Wallace et al., 2021; Prins et al., 2015). The finding in Study 2, whereby child-responsible attributions were found to moderate treatment outcomes was, therefore, noteworthy, albeit tentative in the absence of replication. This finding, whereby treatment outcomes were worse in PMT than CPS for parents who believed that the cause of their child's problem behaviours resides more within the child rather than being attributable to their own parenting practices, can possibly be explained by the theoretical underpinnings of both treatments. More specifically, PMT conceptualises conduct problems as largely stemming from poor parenting practices (Patterson et al., 1998). Treatment therefore focuses on replacing maladaptive parenting practices with more effective ones (e.g., replacing inconsistent discipline with consistent and proportional contingencies; see Barkley, 1997, for example). However, disagreement between the parent and clinician about the nature and cause of the disorder may be an important factor in the engagement and acceptability of treatment (Klasen & Goodman, 2000). For example, if parents who enter treatment believe that the cause of the child's misbehaviour lies more within the child rather than their own parenting behaviours, they may be less likely to engage in the treatment components outlined within PMT.

Attributions. While there is no research, to our knowledge, that has found child-responsible attributions to significantly moderate treatment outcome for ODD, our findings align with previous related studies examining pre-treatment parental attributional motivations and treatment dropout rates in children diagnosed with conduct disorder (CD) as predictors of treatment outcomes. In a large sample of parents of children with conduct problems (N= 124, 5-9-year old boys), Miller and Prinz (2003) found that parents' pre-treatment attributions

regarding their children's behaviour problems were associated with rates of premature termination from treatment. Specifically, if parents attributed the child's problems to factors external to the parent (child factors), they were more likely to drop out of treatments involving the parent than treatments that focused more clearly on the child. Furthermore, Miller and Prinz (2003) identified that families who dropped out of treatment were more likely to expect before entering treatment that the treatment would target the child rather than addressing parenting behaviours. Others have similarly found that mothers who believed themselves to be responsible for their child's behaviour were more likely to complete a course of PMT (Peters et al., 2005).

In contrast to PMT's focus on parenting behaviours as the cause of a child's misbehaviour (Patterson et al., 1998), CPS emphasises that a child's misbehaviour is a result of factors that lie within the child - or, more accurately, the interaction between a child's lagging skills and parental expectations, when the child does not have the requisite skills to meet the parent's expectations (Greene & Winkler, 2019). Furthermore, child-blame attributions are consistently addressed throughout the CPS treatment model. Clinicians are encouraged to remain attentive to attributions that frame the child's behaviour as intentional, manipulative, or attention-seeking. When such beliefs are identified, the CPS model advises clinicians to remind parents of its core principle: that challenging behaviours stem from skill deficits rather than wilful disobedience. In other words, the child's difficulty in meeting expectations is due to a lack of skills, not a matter of intent or control. In contrast, the PMT variant used in our study (i.e., a modified version of The Defiant Child by Barkley, 1997) does not offer the same opportunities for addressing these attributions". However, it does provide the opportunity to indirectly address such attributions in session one where the "Myths of child misbehavior" are discussed within a psycho-educational context. The clearest example in this psycho-educational session of how child-blame attributions may be addressed

is regarding the myth that the child is being manipulative when they are misbehaving. There are no other explicit opportunities to directly address parental attributions beyond this session. Therefore, for parents entering treatment who believe the cause of their child's behaviour lies mainly within the child, this belief may make it easier for these parents to engage in CPS successfully, compared to PMT.

Interestingly, however, high levels of child-responsible attributions also predicted poorer outcomes for both treatments. That is, while parents who attributed their child's behaviour to factors within the child did more poorly in PMT compared to CPS, these attributions were associated with poorer outcomes for both treatments. This is in line with research that suggests parents with very negative attributions about their children are more difficult to engage in parent training interventions (Morrisey-Kane and Prinz, 1999). Also, similar to our own findings, some studies have demonstrated that parental child-responsible attributions in children with behaviour problems predict unfavourable treatment outcomes (Hoza et al., 2000; Mattek et al., 2016; Sawrikar et al., 2018), while others have found no substantial impact of parental child-responsible attributions on treatment results (Dittman et al., 2014; Whittingham et al., 2009). Despite these discrepancies, assessment of parental attributions may be important, not only within the context of choice of treatment, but as a pre-treatment characteristic that predicts parental readiness for treatment (Kil et al., 2020), as well as the likelihood that parents will accept, adhere to and remain in treatment (Johnston & Ohan, 2005; Sawrikar & Dadds, 2018).

Lagging Skills. Both treatment conditions were less effective at post-treatment for children with higher levels of lagging skills. While no study has, to our knowledge, examined the impact of initial levels of lagging skills on treatment outcome, a relatively recent study has explored whether lagging skills are associated with challenging behaviours in youth with autism spectrum disorder (ASD) without intellectual disability (Maddox et al., et al., 2018).

Parents of 182 youth with ASD (6–15 years) completed measures of their children's challenging behaviours, and lagging skills (executive function, language, emotion regulation, and social skills) that were identified to best map onto the CPS assessment of lagging skills (Greene, 2010). They found that lagging skills explained significant variance in participants' challenging behaviours. Our findings, in conjunction with evidence linking lagging skills with externalising disorders in children (e.g., Burke et al., 2010; Cavanagh et al., 2017; Maddox et al., 2018; Rhodes et al., 2012; Schoorl et al., 2018), suggest that lagging skills may potentially contribute to the development of disruptive behaviours (Greene, 2010). It is important to note that lagging skills did not moderate treatment outcomes; individuals with higher levels of lagging skills did not show better outcomes in CPS compared to PMT, contrary to what the theoretical model of CPS would suggest. This indicates that while lagging skills may influence the treatment of ODD, there is no evidence to support a theoretical distinction between CPS and PMT in relation to lagging skills. In sum, lagging skills may need to be examined in future studies, as a risk factor of poor outcomes..

Initial ODD severity. Increased initial severity of child behaviour problems predicted poorer treatment outcomes for both treatments at post-therapy and 6-month follow-up. While this was unexpected, it was consistent with some previous research examining PMT interventions (Dittman et al., 2014; Drugli, Larsson et al., 2010). For example, in an examination of an online Triple P–Positive Parenting Program for disruptive behaviours in children between 3 and 8 years of age (N = 97), Dittman and colleagues (2014) found that high levels of child behaviour problems did not uniquely predict child behaviour at post-intervention. Notably, in the RCT that my analyses are based upon (see Murrihy et al., 2023), a significant portion of children achieved a substantial reduction of conduct problems immediately following treatment and at 6-month follow-up. Up to 50% of children moved into the non-clinical range after treatment, and two-thirds were considered much improved

(Murrihy et al., 2023). Nonetheless, even with these improvements, up to 50% of participating children continued to be diagnosed with ODD, both at the conclusion of treatment, and during the subsequent 6-month follow-up period. It is possible that the presence of a diagnosis following treatment may be partly explained by the severity of symptoms at pre-treatment (i.e. 91.3% of the sample scored 6 or above on the pre ADIS; Murrihy et al., 2023). These children may represent a subset of children with ODD that are difficult to treat. For example, studies have shown that children with callous-unemotional (CU) traits (e.g., lack of empathy, remorse/guilt) exhibit more severe behaviours and are more difficult to treat (Hawes et al., 2014). Although our current study did not investigate CU traits, exploring this aspect in future dataset analyses may be warranted. It is also plausible that children who display severe conduct problems prior to initiating therapy may necessitate a more comprehensive level of support during therapy and/or require a larger dosage to gain the full benefits (Sanders, 1999). This could entail extending the duration of treatment or intensifying the follow-up process beyond the scope of what was offered in our study.

Inconsistent Discipline. As expected, we found that greater use of inconsistent parental discipline at pre-treatment significantly predicted poorer treatment outcomes at post-therapy for both treatments. This is not surprising considering the robust findings demonstrating that inconsistent discipline is strongly associated with the development of conduct problems in children and adolescents (Patterson et al., 1992; Pederson & Fite, 2014; Stanger et al., 2004). Surprisingly, however, few studies have investigated the use of inconsistent discipline as a predictor of treatment outcome for PMT within a clinical sample of children with ODD. Study 1 of this thesis was a systematic review of parental and familial predictors and moderators of treatment outcome for PMT (Dedousis-Wallace et al., 2021). We found few significant findings in relation to the examination of parenting behaviours and treatment outcomes. Among the three studies exploring parenting style (Drugli, Fossum et al.,

2010) and behaviours (Dittman et al., 2014; Werba et al., 2006), only one yielded a significant finding (Werber et al., 2006). This study found that use of criticism and sarcasm observed during parent-child interactions were predictive of treatment dropout and poorer treatment outcomes (Werba et al., 2006). No other associations, including the use of inconsistent discipline, were reported. Results from Study 2, therefore, expands upon earlier research that has established a link between inconsistent discipline and the development of conduct problems, as well as contributing to the limited pool of research investigating inconsistent discipline as a predictor of treatment outcomes for children with conduct problems (Dedousis-Wallace et al., 2021).

Summary. Overall, the lack of moderators found in this project indicates that, with the exception of child-responsible attributions, both treatments work equally well, although in a limited way, for the subgroups examined. This implies that, overall, CPS and PMT appear to benefit youth and their families with similar demographics. However, considering the theoretical differences and subsequent treatment approaches, what cannot be overlooked is that we may not have identified the most salient moderators of treatment outcome. An alternative interpretation is that the theoretical distinctions of CPS and PMT are not supported.

Mediators

As previously mentioned, mediator studies of PMT are limited and have previously focused on parenting strategies (Forehand et al., 2014; Mestre et al., 2022). There are no studies to my knowledge that have examined treatment mediators for CPS (see Metre et al., 2022, for a recent review). Our study examined potential mediators that were theoretically associated with CPS and PMT and/or were targets of change in these treatments. As such, lagging skills, child-responsible attributions and inconsistent discipline were investigated. Only, inconsistent discipline was found to significantly mediate changes in child conduct

problems. These findings are discussed below in the context of previous research and/or future considerations.

Lagging Skills. Our hypothesis that lagging skills would mediate change in disruptive behaviours was not supported. However, when examining the trend in means over time, both CPS and PMT showed improvement in lagging skills, with CPS demonstrating greater improvements. This suggests that whilst lagging skills may not directly explain how or why improvements were observed in child behaviour after undertaking treatment with CPS, lagging skills might still have a role in the changes observed. In addition, the improvement in lagging skills throughout treatment is contingent upon the resolution of problems associated with specific skills. That is, during treatment, a family may choose to work on any number of unsolved problems that may not uniformly correspond to the same underlying skill dimensions (e.g., changing plans may predominantly require cognitive flexibility and getting dressed for school on time may require executive functioning skills, such as planning and focusing). Considering skill acquisition partly relies on repetition (Taie, 2014), a more nuanced strategy, assessing the specific lagging skills associated with each unresolved problem addressed during therapy, and repeatedly targeting the same underlying lagging skill, could offer a more detailed and insightful comprehension of the potential impact of these lagging skills on the outcomes of CPS treatment.

Attributions. In the current project, child-responsible attributions were also found not to mediate treatment outcomes. While unexpected, this finding was in line with one recently published study examining treatment readiness. Specifically, Kil and colleagues (2021) found that child-responsible attributions did not mediate treatment readiness for families with conduct problems. Whilst Kil et al (2021) and Study 3 of this project found no evidence of mediation, the previously mentioned theoretical associations in both CPS and PMT, as well as our results from Study 2 indicating its role as a moderator of treatment outcome for CPS

versus PMT, highlight the importance for future research of examining child-responsible attributions and their potential role in understanding the mechanisms through which CPS and PMT work.

Inconsistent discipline. As expected, inconsistent discipline was a significant mediator of treatment outcome, however, the direction of the relationship was somewhat surprising - increased use of inconsistent discipline was found to be associated with better outcomes. We could only speculate when interpreting this finding. One possible explanation is that the finding may arise from higher levels of inconsistent discipline present in the CPS group, which is observed when examining the means (see Table 5.1). We speculated that it may result from the strategy of temporarily dropping previous expectations (known as "Plan C") in the CPS approach i.e., as parents in the CPS treatment group become proficient in the use of Plan C they may have interpreted that they were being inconsistent in their approach. However, overall, our findings are in contrast to previous research and theory examining inconsistent discipline in relation to PMT programs (Patterson et al., 1998). For instance, Fossum and colleagues (2009) found that changes in inconsistent discipline partially mediated the relationship between treatment and changes in conduct problems among 4 to 8-year-old children (M = 6.6 years; SD = 1.3) following use of the Incredible Years intervention program. They emphasized the importance of reducing use of inconsistent discipline to improve treatment outcomes. In addition, Kaminski and colleagues' (2008) component analysis of the effective treatment components of parent training programs for children with behaviour problems identified parental consistency in their disciplinary approach as one of the most effective components in PMT leading to improvements in child behaviours.

As the direction of the finding in our study was unexpected, we can only highlight the potential role inconsistent discipline may have in unravelling the mechanisms underlying the improvement of behavioural problems following treatment for ODD. Despite this, it confirms

the importance of examining inconsistent discipline, as a standalone mediator, to account for changes in child conduct problems following treatment (Fossum et al., 2009; Henggeler et al., 2009; Lockman & Wells, 2002). Therefore, further research exploring the exact nature of its role in PMT and CPS treatments for child conduct problems requires further examination.

Summary. In summary, the three studies in this project attempted to address a gap in our understanding of how and for whom two treatments for ODD work (Kazdin, 2007). Our main finding was support for CPS, rather than PMT, being implemented for parents with high pre-treatment child-responsible attributions. Our hypothesis that the use of consistent discipline would mediate treatment outcomes was partially supported. However, the findings from this thesis need to be interpreted in light of several limitations, which I will discuss next.

Limitations

Sample size and generalisability

The size and composition of the samples in this thesis may limit the generalisability of the findings. In the systematic review (Study 1), a significant proportion of the studies—more than a third—potentially lacked sufficient statistical power (sample size less than 100), making it difficult to ascertain whether the results reflect effects associated with true prediction or moderation. In addition, relatively few studies met the inclusion criteria, with only 21 studies included in the review and only five examining moderators, highlighting the limitations in this area of research. Fortunately, the sample size for Study 2 was adequate, with an alpha set at .05, and a sample size of 145, the power was .95 to detect a medium effect size (d = .50). In contrast, the sample size for Study 3 was relatively modest, considering it was a longitudinal mediation analysis. A larger sample size may have enhanced the findings' precision and reliability and bolstered the study's ability to detect small mediation effects. Nonetheless, it is worth noting that the sample size employed in Study 3

falls within the range of previous research using similar methodology (see Quigley et al., 2018). Despite this alignment with prior studies, there has been limited exploration into power analyses for LCSM models, such as those utilized in Study 3. Therefore, further investigation is warranted to address power and sample size considerations for LCSM models employed in mediation (Hilley & O'Rourke, 2022).

Studies 2 and 3 were also limited by the demographic homogeneity of the sample, despite our sample aligning with the income, education, and schooling distributions of a clinic situated in the region where these studies were conducted, as indicated by data from the Australian Bureau of Statistics in 2016. Specifically, young people were predominantly from two-parent families (78%) who identified their ethnicity as Australian (56%). This was followed by European (21%), Asian (6%), African (5%), Central American (4%), New Zealand (2%) and North American (1%). Most participants came from relatively high socioeconomic backgrounds, with 57% of families reporting earning an annual wage greater than AUD$150,000/annum. Additionally, approximately three-quarters of the parents had obtained undergraduate university degrees. Despite these limitations, no baseline discrepancies in income level were observed between the two treatment groups. Overall, the sample reflects the challenges seen in similar research of recruiting and maintaining participation from a diverse sample of families for participation in multi-phase clinical treatment studies (Booker et al., 2019).

Attrition

Attrition is a common concern in multi-phase studies with families dealing with oppositional symptoms (Murrihy et al., 2010), and we, too, were impacted by families withdrawing from treatment or not completing all required questionnaires. The risk associated with attrition was mitigated by using data imputation procedures. In both Study 2 and Study 3, the drop-out rate at post-assessment (19%) and at 6-month follow-up (30%),

potentially impacted our results. However, such dropout rates are not uncommon in studies addressing ODD (Murrihy at al., 2010; Ollendick et al., 2016), with our drop-out rate being modest compared to other multi-phase intervention studies addressing externalising problems (Chacko et al., 2016).

Outcome Measures

In the systematic review (Study 1), the studies included in the review utilised different methods and measures for examining child conduct problems. For example, some studies used categorical outcomes (i.e., the presence or absence of a diagnosis), and others used dimensional measures. This made it difficult to meaningfully compare and synthesise the findings. In Study 3, a single outcome measure - Disruptive Behavior Disorders Rating Scale, the ODD subscale (DBDRS – ODD sub scale; Pelham et al., 1992) was administered across the five-time points. This eight-item parent-rated scale was developed to measure symptoms that reflect the DSM-IV criteria for ODD symptoms (see Measures section of Chapter 4 of this thesis for further information). Administering such a brief questionnaire that was required to be completed at frequent intervals had the benefit of increasing the potential that parents would complete it successfully without overburdening them. However, although standard practice in similar studies (e.g., Dose et al., 2021; Kjøbli et al., 2014; Lavigne et al., 2010), our reliance on a single parent-rated measure may have resulted in bias in reporting improvements in behaviour (De Los Reyes et al., 2022; Loerinc et al., 2015). For example, some have suggested that parent-rated measures used alone are less sensitive to intervention effects than direct observation (see Scott, 2001). Therefore, future research can be strengthened by including additional measures and/or informants, such as direct observation and/or teacher-rated measures.

In contrast, Study 2 employed multiple measures for assessing the children's behaviour. Similar to Study 3, the DBDRS was used, but in conjunction with a clinician-rated

semi-structured interview. The use of a clinician-rated measure in addition to a parent-rated measure served to mitigate any potential treatment bias effect.

Implications for Clinical Practice

In this section, I will discuss the clinical implications of the project findings for the treatment of ODD. Study 1 and Study 3 yielded few definitive findings that could be translated into clinical practice. A brief overview of implications for Study 1 and 3 will be presented and then the remainder of this section will focus on the predictors and moderators found in Study 2 and their clinical implications.

The parent-child relationship emerged as the most reliable predictor in Study 1, indicating that the stronger this relationship was, the more improvements were demonstrated following PMT for children with conduct problems. Clinically, this implies that finding ways to strengthen this relationship may play a key role in the success of PMT. While improving the parent-child relationship is typically addressed within existing PMT interventions, such interventions may benefit from focusing on the components of treatment that are most likely to directly support this relationship. Practically, this can be accomplished by enhancing existing PMT modules that specifically focus on increasing positive interactions, thus improving the parent-child relationship. For example, the use of "Special Time", whereby parents and children engage in enjoyable child-led activities together. It may also be helpful to regularly incorporate and review role plays to ensure that parents have fully grasped and are effectively implementing Special Time techniques. Furthermore, equipping parents with counselling skills, such as empathic listening, validation, non-judgmental communication, and expressing warmth/responsiveness towards their child, could enhance parent-child connectedness (O'Brien & Mosco, 2011; Suldo & Fefer, 2013).

Study 3 highlighted the complexities inherent in finding potential mediators that may contribute to our understanding of treatment mechanisms. While inconsistent discipline was found to significantly mediate treatment outcomes, the direction was unexpected, and the clinical implications remain unclear. This finding illustrated the need to further examine and understand the role of inconsistent discipline following treatment with CPS and PMT. In addition, it is plausible that Study 3 did not have enough power to detect mediation in the variables examined.

Study 2 highlighted crucial implications concerning predictors and moderators in the treatment of ODD. In particular, prognostic indicators, or risk factors, of poor treatment outcomes for both CPS and PMT were identified. To recap, these were: lagging skills, the use of inconsistent discipline, initial problem severity and child-responsible attributions. One possible implication for clinical practice from our findings is that screening for these risk factors prior to treatment may be useful. Specifically, if they are identified, clinicians providing additional support targeting these risk factors either before commencing treatment, once treatment has ceased (i.e., as booster sessions) or during treatment, would be of benefit. For example, for the risk factor of child lagging skills, it may take longer for the child to process the information presented and to, therefore, engage in therapy. Depending on what skill deficits the child predominantly has, clinicians may selectively choose to shorten the sessions and/or participation time required by the child, use more role plays or modelling of the skills taught, provide more time in between sessions to practice and implement skills taught and have an expectation that treatment may take longer than the standard protocols. Adjunctive therapies, such as medication and social skills training, may also be considered.

For the risk factor of inconsistent discipline, those participating in a PMT intervention may be provided with additional sessions reinforcing the importance of consistency with their disciplinary practices. This may take the form of psychoeducation and/or providing additional

time to practice these skills with the clinician (e.g., clinician modelling the skills, repeated rehearsal of skills taught in sessions, and more frequent use of role plays). Providing a clear rationale to parents, and re-visiting when necessary, as to the importance of establishing clear, contingent and consistent discipline would also be encouraged. For CPS, it may be important to monitor and provide feedback on how the parents are facilitating the implementation of the solution that both parties have agreed upon closely and regularly. The clinician would need to clearly communicate the importance of following through with the agreed-upon solution in a consistent manner. In addition, motivational interviewing style strategies may be implemented to understand better what barriers prevent them from being consistent and assess their readiness to implement such strategies in both treatments.

The presence of severe behaviour problems at the outset of treatment may indicate the need for a more comprehensive level of support during and after therapy for both interventions. This could entail extending the duration of treatment or intensifying the follow-up process by providing regular booster sessions. The booster sessions could entail regular phone check-ins or monthly (or as needed) in-person sessions. Additional support for these families could also include the implementation of other components to address some of the stressors or barriers to treatment that families may be encountering (e.g., parental emotional dysregulation, stress management skills and logistical barriers; Breaux et al., 2022).

Severe baseline conduct problems as well as poor treatment response have also been associated with the CU traits. (Hawes et al., 2014; Kimonis et al., 2019). Although a detailed discussion of CU traits and their clinical implications is outside the scope of this thesis, we will explore how the potential existence of these traits, in the context of severe initial behavioural problems, may influence clinical decision-making. For example, it may be prudent when high levels of initial problem severity are detected during the assessment phase, to also assess for the presence of CU traits. If there are indications of elevated CU traits, only

implementing positive reinforcement strategies within PMT, instead of the punishment-oriented 'time out' behaviour modification approach may be beneficial as this approach has been demonstrated to significantly alleviate symptoms of disruptive behaviours in boys diagnosed with ODD who are exhibiting high CU traits (Hawes & Dadds, 2005; Kimonis et al., 2023). Alternatively, an additional module could be added to the standard PMT program that targets factors shown to be important to the development of CU traits, such as enhancing parental warmth (i.e., explicitly coaching parents to increase their use of verbal and physical expressions of warmth) in addition to emphasising reinforcement over punishment-based strategies (Kimonis et al., 2019). For CPS, enhancing the parent-child relationship and increasing parental warmth may be achieved by teaching parents micro counselling skills that are focused on reflective listening, in addition to the standard approach of listening to their child in a non-judgmental, curious/open manner. Similar to the PMT suggested approach, parents can also be explicitly coached to increase their use of verbal and physical expressions of warmth.

Implications from Study 2 (Dedousis-Wallace et al., 2022) also suggest that families who enter therapy with high pre-treatment child-responsible attributions would benefit more from CPS than PMT to reduce symptoms of ODD In the least, this should therefore be carefully considered by clinicians in selecting treatment options. However, high levels of child-responsible attributions also predicted poor treatment outcomes for both CPS and PMT, thus, understanding how to target this risk factor for both treatments is vital.

There is little consistent evidence to suggest that explicitly targeting negative parental attributions with the addition of modules to the standard PMT program enhances child behaviour outcomes, beyond what is achieved through the standard program (see Sawrikar & Dadds, 2018). However, this research relates to adding attribution enhancement modules within the standard PMT program and delivering them in a non-targeted way. Importantly, no

studies have explored the impact of targeting attributions for those who have been identified as at risk of poor outcomes, including those with elevated pre-treatment child-responsible attributions (Sawrikar & Dadds, 2018). As such, the addition of cognitive strategies to either PMT or CPS to target and directly modify child-responsible attributions is a possible avenue to optimise treatment responses. While it is acknowledged that it is often more beneficial to validate a parent's worldview than challenge negative attributions during the initial assessment stage (see Hawes & Dadds, 2021), a gentle and considered approach to thought challenging may be beneficial once rapport between clinician and parent has been established. Therefore, for PMT, traditional methods of thought challenging could be implemented throughout the treatment process, as these attributions are voiced.

In CPS there are a number of opportunities to explicitly discuss and monitor child-responsible attributions. While this is generally already addressed within the standard delivery of the CPS model, for those parents at risk of poor outcomes, clinicians may take more time when introducing parts of the model to explicitly elicit these problematic attributions and address them. For example, during the assessment phase, parents identify a child's lagging skills and situations that are preceding the challenging behaviours. Identifying lagging skills helps promote a shift in a parent's attributions regarding the cause of the child's behaviour, from intentional behaviour to lagging skills (Greene, 2023). For parents with elevated levels of child-responsible attributions, this assessment stage provides an opportunity for the clinician to elicit these attributions. Once rapport has been established, the clinician can then proceed to provide psychoeducation as to what causes challenging behaviour according to the CPS model and discuss and challenge the problematic attribution (Sanders et al., 2004).

In sum, the implications for clinical practice drawn from Study 2 (Dedousis-Wallace et al., 2022) underscore the importance of identifying risk factors such as lagging skills,

inconsistent discipline, initial problem severity, and child-responsible attributions during the initial assessment phase. These factors offer valuable cues for tailoring interventions and providing targeted support throughout the treatment journey. Specific strategies could involve adjusting session formats based on identified skill deficits, reinforcing consistent disciplinary practices and closely monitoring agreed-upon solutions. Furthermore, families presenting high pre-treatment child-responsible attributions might benefit more from CPS, necessitating a thoughtful approach to treatment selection. Addressing these predictors and moderators through personalised interventions could substantially enhance treatment outcomes for ODD.

Future directions

I have made several suggestions for how future research might address the limitations of the current thesis and have explored the clinical implications of my findings. In this section, I will delineate the priorities for future research that stem from the insights gained in the current body of work.

Examination of broader moderator variables

The current thesis found little evidence for the differential impact of CPS and PMT for the variables examined. Although it is encouraging that many risk factors explored in this systematic review did not differentially impact treatment effectiveness, it does not further our understanding of why some families respond, and other families fail to respond, following treatment. It is possible that the literature reviewed in Study 1 and the variables examined in Study 2 were not the most pertinent moderators. For example, since Study 1 was published, father engagement, maternal depressive symptoms, individual administration (vs. group), and treatment/targeted prevention approaches (vs. universal prevention) have been identified as potential moderators of parenting intervention for conduct problems (see McMahon et al., 2021). I have outlined other potential moderators to be considered in future studies below.

While these are not extensive, the potential moderators highlighted were briefly suggested in Study 1 and Study 2 and have been explored in more detail below. Unfortunately, I was not able to examine these moderators in the current thesis as they came to light after the commencement of our studies.

Parent-child relationship*:* Study 1 identified parent-child interactions as a significant predictor of treatment outcome for PMT. While improvement in the parent-child relationship is an indirect goal of many PMT programs (e.g., Barkley, 1997), for CPS it is the primary focus (Greene, 2010; Greene & Winkler, 2019). Recent research supports parent-child interactions as a potential variable that can be used by clinicians to guide treatment decision-making (Booker et al., 2019). For example, a recent study found a differential effect of treatment outcome for certain aspects of the parent-child relationship for CPS versus PMT. Booker and colleagues (2019) examined whether facets of the parent-child relationship involving greater warmth (i.e., parental involvement), less rejection, and less family intrusiveness would predict improvements in externalising problems and adaptive skills following both PMT and CPS treatments. For this study, adaptive skills were characterised as the skills required to manage social interactions and experiences of frustration (e.g., social skills and functional communications) - skills that children with ODD often lack (Booker et al., 2019; Greene, 2010; Greene & Winkler, 2019). While Booker and colleagues did not find a moderator effect for externalising problems, they did for adaptive skills – parental warmth predicted the greatest improvements in children's adaptive skills among families receiving PMT. In addition, family hostility predicted more externalising problems and poorer adaptive skills for children; however, families receiving CPS were buffered from the negative effect of family hostility on adaptive skills. This study suggests that if components of the parent-child relationship (e.g., family hostility and parental warmth) are identified before entering treatment, this can help clinicians choose a treatment that maximises the chance of treatment

success. While no moderator effect of the parent-child relationship was found for externalising problems in this study, it is worth noting that the parent-child relationship is multi-faceted and, undoubtedly requires further investigations. Perhaps more aspects (e.g., disciplinary warmth, involving shared decision-making and warmth in terms of nurturance and affection; Furman & Giberson, 1995) may need to be examined to fully understand its potential impact on clinical outcomes in certain clinical treatments, including CPS and PMT.

Family and therapist treatment preference*:* Exploring family and therapist characteristics, such as their treatment preferences before commencing treatment, could also be of potential benefit. These characteristics might indicate the level of compatibility ("goodness of fit") between therapists, treatments, and families, as suggested by previous research (Ollendick et al., 2016). This becomes particularly relevant when considering research that suggests parents tend to selectively adopt strategies from treatments based on how well these strategies align with their own parenting experiences, culture, and personal beliefs (Rahmqvist et al., 2014). To illustrate, families that are not receptive to the PMT treatment model and its underlying principles but instead lean towards the CPS treatment rationale might find it advantageous to align their treatment philosophies with their parenting philosophies and vice versa. This alignment may hold particular significance within the context of the growing neurodiversity movement, which in some segments, is progressively moving away from behaviour-focused interventions towards a strengths-based approach with goals and interventions that are more attuned to the needs and personal goals of the recipient of treatment (see Sandoval-Norton et al., 2019; Schuck et al., 2022).

Mechanisms of change

Study 3 attempted to bring us closer to understanding the mechanisms of change underlying two treatments for ODD to provide insight into how we can improve these treatments. It is noteworthy that prior to this thesis, no research had examined potential

mediators following CPS for ODD. Significant mediation was found for inconsistent discipline, but not lagging skills or child-responsible attributions. These findings provide potentially valuable insights for future research directions and considerations**.**

Prior studies investigating mediators of conduct problems after PMT predominantly utilised composite scores of parenting practices and/or focused on global dimensions of parenting (e.g., Fagan & Benedini, 2016; Hagen et al., 2011; Rimestead et al., 2020; Seabra-Santos et al., 2016). This trend aligns with the intuitive notion that integrating effective parenting components would amplify their impact on a child's behaviour (Forehand et al., 2014). However, while this approach suggests synergistic effects capable of yielding additional positive changes, it hampers the identification of specific influential practices (Forehand et al., 2014; Fagan & Benedini, 2016).

For instance, Gardner et al. (2010) found that improvements in positive parenting, rather than reductions in negative behaviours, notably mediated changes in child problem behaviour following the Incredible Years parenting program. To enhance treatment and outcomes, investigating the distinct effects of individual parenting practices taught in PMT as standalone mediators may offer insights into which behaviours require emphasis, alteration, or abandonment to augment the efficacy of PMT interventions (Fagan & Benedini, 2016).

While previous research on mediators of changes in conduct problems following PMT has primarily focused on parenting variables, it is prudent not to overlook other potential variables that may serve as mediators that are outside of parenting factors. Our investigation of parental attributions is an example of such a mediator that may account for the changes in a child’s behaviour following treatment with CPS or PMT. Although this thesis did not identify parental attributions of blame towards their children as a treatment mediator, its presence as a moderator and its theoretical significance within the CPS model indicate the

need for further investigation. Similarly, lagging skills (in the child) merits further exploration using a more nuanced approach than employed in this thesis. This may involve the inclusion of a more comprehensive and nuanced identification of lagging skills, as well as a more deliberate attempt to repeatedly target the same underlying lagging skills for the problems addressed during therapy. Parental self-efficacy has also been suggested as a potential mediator to explore (Murrihy et al., 2023). Research findings have provided evidence indicating that increased parental self-efficacy potentially mediates the impact of the Incredible Years program on challenging behaviour (Seabra-Santos et al., 2016). While self-efficacy is not directly targeted in either CPS or PMT, the acquisition of skills for managing disruptive behaviours would likely lead to an increase in self-efficacy which may mediate outcomes in both treatments (Murrihy et al., 2023*).* In addition, although our analyses did not directly assess differences in underlying mechanisms between PMT and CPS, this remains a vital area for future research. Investigating these distinctions could provide valuable insights to enhance therapeutic outcomes for children and families.

Another consideration is that while different strategies are used in PMT and CPS, the same underlying mechanisms may produce change. For example, a reduction in negative/harsh parenting, – by using Plan B in CPS to anticipate and proactively plan for challenging behaviour, or the PMT strategy of modifying antecedents to avoid disruptive behaviour - may lead to parents being calmer in their parenting approach, thus decreasing their reliance on negative/harsh parenting practices (Murrihy et al., 2023). Finally, the improvement of the parent-child relationship is another potential mediator that may be the underlying mechanism of change for both treatments. As previously mentioned, the enhancement of this relationship is directly and indirectly targeted in CPS and PMT (Greene, 2010; Barkley, 1997), respectively and would, therefore, benefit from further exploration.

Methodological issues in mediation research, such as questionable temporal relations (Kazdin & Nock, 2003) - an issue I attempted to address in Study 3 - have also proven to be problematic and require further investigation. As previously noted, tests of mediation should have a temporal ordering of variables within a longitudinal research framework to ensure measures of changes in the proposed mediator precede assessment of child behaviour outcomes as suggested by Kazdin and Nock. This temporal ordering has often not been met in previous mediation research, possibly because most of these studies are efficacy studies in which mediation analyses are secondary research questions (Mestre et al., 2022). The extent of this issue is illustrated in two reviews exploring potential mediators of externalising behaviours in children. In these reviews, less than a third of the studies met Kazdin's (2007) temporality criterion (Forehand et al., 2014; Metre et al., 2022). This shortcoming limits the inferences of mediation that can be made (i.e., what changes first, outcome, or mediator). These collective findings highlight the need to further examine mediators of change in intervention studies that prioritise mediation research and meet the required methodological standards for mediation (Kraemer et al., 2004).

In summary, mediator research for CPS and PMT is sparse. It is, therefore, important for researchers to systematically explore potential mediators of CPS and PMT that meet the temporal precedence criteria necessary for mediation in treatment outcome studies (Kraemer et al., 2004). While CPS and PMT have distinctly different philosophies and practices, it cannot be overlooked that they may share underlying mechanisms of change. Potential avenues for future research exploring these shared pathways include examining the use of harsh parenting practices, parent-child relationship, parental attributions, parenting self-efficacy and, with a possibly more nuanced approach, investigations of child-responsible attributions and child lagging skills.

Going beyond predictors, moderators and mediators of treatment outcome

While investigating mediators of change is a crucial step in understanding how therapeutic interventions work (Kazdin, 2007), there are additional methods that can provide valuable insights. These approaches involve various strategies, including direct manipulation of a proposed mechanism (Kazdin, 2007). For example, assessing a PMT program by comparing one that includes coaching parents on maintaining firm and consistent parenting practices with one that excludes this element. Another strategy is to vary the intensity and focus of instruction related to the use of consistent discipline. Additionally, employing multiple lines of evidence, such as treatment moderators, helps in converging on a more precise understanding of the underlying mechanism (Kazdin, 2007).

Another approach to improving therapy outcomes is identifying the components of treatment that actively contribute to desired outcomes (Leitjen at al., 2021). The process of distinguishing between components that facilitate desired therapy results and those that do not promise to enhance the efficiency of treatment delivery (Leitjen at al., 2021). Such discernment can provide valuable insights into which components should be modified or removed and which should be emphasised during treatment, ultimately optimising the therapeutic process (Kaminski et al., 2008).

While studies examining effective therapy components have yet to occur for CPS, Kaminski and colleagues (2008) conducted a meta-analytic review of the components associated with the effectiveness of parent training programs overall. Program components consistently linked to more substantial effects included the enhancement of positive parent-child interactions and parental emotional communication skills, teaching parents use of time-outs, emphasising the significance of parenting consistency, and requiring parents to practice newly acquired skills while interacting with their children during the parent training sessions. Apart from the distinct PMT strategy of time-outs, these components arguably also apply to CPS. For example, parents practice newly acquired skills with the child in the majority of the

sessions when collaborating and proactively coming up with solutions to problems (Green & Winkler, 2019). Also, parental emotional communication skills may be enhanced by listening empathically and calmly to their child's concerns and communicating their own concerns succinctly (Greene & Winkler, 2019). Applying the aforementioned strategies suggested by Leijten and colleagues (2021) to these identified treatment components may provide insights into how we can further improve treatment outcomes.

Concluding remarks

The current body of work echoes Kazdin's (2007) seminal remarks that *"after decades of psychotherapy research, we cannot provide an evidence-based explanation for how or why even our most well studied interventions produce change" (p. 23).* Now, nearly 20 years later, we are in the same state of affairs. Furthermore, this thesis highlights that research on treatments for youth presenting with symptoms of ODD now needs to ask more nuanced questions about treatment programs and, more specifically, when to use one intervention over the other to maximise treatment outcomes. This thesis represents a significant, albeit limited, step in helping us to understand further "for whom" treatments work most effectively. Parents entering therapy with higher child-responsible attributions should consider CPS over PMT to maximise treatment outcomes. Despite these promising findings, research that continues to inform "for whom" and "under what conditions" treatments work most effectively is required (Kazdin, 2007). This thesis tentatively identified inconsistent discipline as a mediator of treatment outcome and a possible mechanism of change, thereby contributing to our understanding of *how* and *why* these treatments work. Furthermore, this thesis has contributed to our current understanding of mediators in the field and provided possible avenues for future research.

Whilst CPS and PMT have been found to have equivalent results in the treatment of ODD in major RCTs (e.g., Murrihy et al., 2023; Ollendick et al., 2016), we still lack a clear

understanding of: (1) whether the positive outcomes observed are indicative of CPS being a superior option for individuals who do not respond favourably to PMT, or vice versa; or (2) if both interventions prove beneficial for the same demographic groups and, therefore, may not address the groups that do not respond to either treatment. While it is possible that both treatments share core effective treatment components and underlying mechanisms of change, which may account for similar outcomes, it is likely an incomplete explanation, given the theoretical and practical differences between the two interventions. Research that continues to contribute to a comprehensive understanding of the moderators and mediators for these two treatments will go a long way in helping us to understand and address these questions. In short, we have come a long way in recent years, but we still have a long way to go. The challenge is before us!

References

Achenbach, T. M. (1991a). *Manual for the Child Behavior Checklist/4-18 and 1991 profile*. Burlington, VT: University of Vermont, Department of Psychiatry.

Achenbach, T. M. (1991b). *Manual for the Teacher's Report Form and 1991 profile*. Burlington, VT: University of Vermont, Department of Psychiatry.

Aebi, M., Barra, S., Bessler, C., Steinhausen, H. C., Walitza, S., & Plattner, B. (2016). Oppositional defiant disorder dimensions and subtypes among detained male adolescent offenders. *Journal of Child Psychology and Psychiatry*, *57*(6), 729-736. https://doi.org/10.1111/jcpp.12473

Ahrons, C. R. (1981). The continuing coparental relationship between divorced spouses. *American Journal of Orthopsychiatry, 51*(3), 415, https://doi.org/10.1111/j.1939-0025.1981.tb01390.x

Aiken L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions.* Newbury Park, CA: Sage Publications Inc.

Althoff, R. R., Kuny-Slock, A. V., Verhulst, F. C., Hudziak, J. J., & van der Ende, J. (2014). Classes of oppositional-defiant behavior: concurrent and predictive validity. *Journal of child psychology and psychiatry, and allied disciplines*, *55*(10), 1162–1171. https://doi.org/10.1111/jcpp.12233

American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4 ed.). Washington, DC: Author.

American Psychiatric Association (2000). *Diagnostic and statistical manual of mental disorders* (4th ed.). Author.

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5 ed.). Arlington, VA: Author.

American Psychiatric Association. (2022). Diagnostic and statistical manual of mental disorders (5th ed., text rev.). https://doi.org/10.1176/appi.books.9780890425787

Andrade, B. F., Aitken, M., Brodkin, S., & Sawrikar, V. (2022). Multiple needs and multiple treatments. What's a clinician to do? Update on the psychosocial treatment of disruptive behaviours in childhood. *Current Opinion in Psychiatry*, *35*(6), 409-416.

Anderson, S. R., & Ollendick, T. (2012). Diagnosing oppositional defiant disorder using the anxiety disorders interview schedule for DSM-IV: Parent version and the diagnostic interview schedule for children. *Journal of Psychopathology and Behavioral Assessment, 34*(4), 467-475. http://dx.doi.org/10.1007/s10862-012-9294-5

Askeland, E., Berg, E., Christiansen, T., Flock, M., & Launes, E. (2006). *Handbook of brief parent training*. Oslo, Norway: The Norwegian Center for Child Behavioral Development.

Areán, P. A., & Chmura Kraemer, H. (2013). *High-quality psychotherapy research: From conception to piloting to national trials.* Oxford University Press.

Australian Bureau of Statistics. (2016, August 9). *2016 Census QuickStats: Randwick (C)*. Commonwealth of Australia. https://quickstats.censusdata.abs.gov.au/census_services/getproduct/census/2016/quickstat/LGA16550

Barkley, R. A. (1997). *Understanding the defiant child: Program manual.* New York: The Guilford Press.

Barkley, R. A. (2013). *Defiant children: A clinician's manual for assessment and parent training* (3rd ed.). New York, NY: The Guilford Press.

Baruch, G., Vrouva, I., & Wells, C. (2011). Outcome findings from a parent training programme for young people with conduct problems. *Child and Adolescent Mental Health*, *16*(1), 47-54, https://doi.org/10.1111/j.1475-3588.2010.00574.x

Baydar, N., Reid, M. J., & Webster-Stratton, C. (2003). The role of mental health factors and program engagement in the effectiveness of a preventive parenting program for Head Start mothers. *Child Development, 74*(5), 1433-1453, https://doi.org/10.1111/1467-8624.00616

*Beauchaine, T. P., Webster-Stratton, C., & Reid, M. J. (2005). Mediators, moderators, and predictors of 1-year outcomes among children treated for early-onset conduct problems: A latent growth curve analysis. *Journal of Consulting and Clinical Psychology, 73*(3), 371-388, https://doi.org/10.1037/0022-006X.73.3.371

Beecham, J. (2014). Annual research review: Child and adolescent mental health interventions: A review of progress in economic studies across different disorders. *Journal of Child Psychology and Psychiatry, 55*(6), 714-732, https://doi.org/10.1111/jcpp.12216

Belsky, J. (1984). Determinants of parenting: a process model. *Child Development*, *55*(1), 83–96. https://doi.org/10.2307/1129836

Biederman, J., Newcorn, J., & Sprich, S. (1991). Comorbidity of attention deficit hyperactivity disorder with conduct, depressive, anxiety, and other disorders. *American Journal of Psychiatry, 148(5),* 564-57. https://doi.org/10.1176/ajp.148.5.564

Biederman, J., Faraone, S. V., Milberger, S., Jetton, J. G., Chen, L., Mick, E., Greene, R.W., & Russell, R. L. (1996). Is childhood oppositional defiant disorder a precursor to adolescent conduct disorder? Findings from a four-year follow-up study of children with ADHD. *Journal of the American Academy of Child & Adolescent Psychiatry*, *35*(9), 1193-1204. https://doi.org/10.1097/00004583-199609000-00017

Booker, J. A., Capriola-Hall, N. N., Greene, R. W., & Ollendick, T. H. (2019). The parent–child relationship and posttreatment child outcomes across two treatments for the

oppositional defiant disorder. *Journal of Clinical Child & Adolescent Psychology*, *49*(3), 405–419. https://doi.org/10.1080/15374416.2018.1555761

Booker, J. A., Ollendick, T. H., Dunsmore, J. C., & Greene, R. W. (2016). Perceived parent-child relations, conduct problems, and clinical improvement following the treatment of the oppositional defiant disorder. *Journal of Child and Family Studies, 25*(5), 1623-1633, https://doi.org/10.1007/s10826-015-0323-3

Bor, W., Sanders, M. R., & Markie-Dadds, C. (2002). The effects of the Triple P-Positive Parenting Program on preschool children with co-occurring disruptive behavior and attentional/hyperactive difficulties. *Journal of Abnormal Child Psychology, 30*(6), 571-587, https://doi.org/10.1023/a:1020807613155

Boylan, K., Rowe, R., Duku, E., Waldman, I., Stepp, S., Hipwell, A., & Burke, J. (2017). Longitudinal Profiles of Girls' Irritable, Defiant and Antagonistic Oppositional Symptoms: Evidence for Group Based Differences in Symptom Severity. *Journal of Abnormal Child Psychology*, *45*(6), 1133–1145. https://doi.org/10.1007/s10802-016-0231-z

Boylan, K., Vaillancourt, T., Boyle, M., & Szatmari, P. (2012). Comorbidity of internalizing disorders in children with oppositional defiant disorder. *European Child & Adolescent Psychiatry, 21*(5), 239-247. https://doi.org/10.1007/s00787-012-0267-1

Boyle, M. H., & Offord, D. R. (1991). Psychiatric disorder and substance use in adolescence. *Canadian Journal of Psychiatry, 36(5)*, 320–327. https://doi.org/10.1177/070674379103601001

Brainerd, C. J., & Kazdin, A. E. (2005). *Parent management training : Treatment for oppositional, aggressive, and antisocial behavior in children and adolescents*. Retrieved from https://ebookcentral.proquest.com

Breaux, R., Lewis, J., Cash, A. R., Shroff, D. M., Burkhouse, K. L., & Kujawa, A. (2022). Parent emotion socialization and positive emotions in child and adolescent clinical samples: A systematic review and call to action. *Clinical Child and Family Psychology Review*, *25*(1), 204-221. https://doi.org/10.1007/s10567-022-00388-2

Brestan, E. V., Eyberg, S. M., Boggs, S. R., & Algina, J. (1997). Parent-child interaction therapy: Parents' perceptions of untreated siblings. *Child & Family Behavior Therapy, 19*(3), 13-28, https://doi.org/10.1300/J019v19n03_02

Brinkmeyer, M. Y., & Eyberg, S. M. (2003). Parent-child interaction therapy for oppositional children. In *Evidence-based psychotherapies for children and adolescents.* (pp. 204-223). New York, NY: The Guilford Press.

Burke, J. D., Boylan, K., Rowe, R., Duku, E., Stepp, S. D., Hipwell, A. E., & Waldman, I. D. (2014). Identifying the irritability dimension of ODD: Application of a modified bifactor model across five large community samples of children. *Journal of Abnormal Psychology, 123*(4), 841–851. https://doi.org/10.1037/a0037898

Burke, J. D., Hipwell, A. E., & Loeber, R. (2010). Dimensions of oppositional defiant disorder as predictors of depression and conduct disorder in preadolescent girls. *Journal of the American Academy of Child and Adolescent Psychiatry*, *49*(5), 484-492. https://doi.org/ 10.1097/00004583-201005000-00009

Burke, J. D., Loeber, R., & Birmaher, B. (2002). Oppositional defiant disorder and conduct disorder: A review of the past 10 years, part II. *Journal of the American Academy of Child and Adolescent Psychiatry*, *41*(11), 1275–1293. https://doi.org/10.1097/00004583-200211000-00009

Burke, J. D., & Romano-Verthelyi, A. M. (2018). Oppositional defiant disorder. In *Developmental pathways to disruptive, impulse-control and conduct disorders* (pp. 21-52). Academic Press. https://doi.org/10.1016/B978-0-12-811323-3.00002-X

Burke, J. D., Rowe, R., & Boylan, K. (2014). Functional outcomes of child and adolescent oppositional defiant disorder symptoms in young adult men. *Journal of Child Psychology and Psychiatry*, *55*(3), 462-472. https://doi.org/10.1111/jcpp.12150

Burke, J. D., & Stepp, S. D. (2012). Adolescent disruptive behavior and borderline personality disorder symptoms in young adult men. *Journal of Abnormal Child Psychology*, *40*, 35-44. https://doi.org/10.1007/s10802-011-9558-7

Burke, J. D., Waldman, I., & Lahey, B. B. (2010). Predictive validity of childhood oppositional defiant disorder and conduct disorder: Implications for the DSM-V. *Journal of Abnormal Psychology, 119*(4), 739-751. https://doi.org/10.1037/a0019708

Burkey, M. D., Hosein, M., Morton, I., Purgato, M., Adi, A., Kurzrok, M., Kohrt, B.A., & Tol, W. A. (2018). Psychosocial interventions for disruptive behaviour problems in children in low-and middle-income countries: A systematic review and meta-analysis. *Journal of Child Psychology and Psychiatry*, *59*(9). https://doi.org/10.1111/jcpp.12894

Canino, G., Polanczyk, G., Bauermeister, J. J., Rohde, L. A., & Frick, P. J. (2010). Does the prevalence of CD and ODD vary across cultures? *Social Psychiatry and Psychiatric Epidemiology*, *45*(7), 695–704. https://doi.org/10.1007/s00127-010-0242-y

Capage, L. C., Bennett, G. M., & McNeil, C. B. (2001). A comparison between African American and Caucasian children referred for treatment of disruptive behavior

disorders. *Child & Family Behavior Therapy*, *23*(1), 1-14, https://doi.org/10.1300/J019v23n01_01

Capriola, N. N., Booker, J. A., & Ollendick, T. H. (2017). Profiles of temperament among youth with specific phobias: Implications for CBT outcomes. *Journal of abnormal child psychology*, *45*(7), 1449-1459. https://doi.org/10.1007/s10802-016-0255-4

Cavanagh, M., Quinn, D., Duncan, D., Graham, T., & Balbuena, L. (2017). Oppositional defiant disorder is better conceptualized as a disorder of emotional regulation. *Journal of attention disorders*, *21*(5), 381-389. https://doi.org/10.1177/1087054713520221

Chacko, A., Jensen, S. A., Lowry, L. S., Cornwell, M., Chimklis, A., Chan, E., Lee, D., & Pulgarin, B. (2016). Engagement in behavioral parent training: Review of the literature and implications for practice. *Clinical child and family psychology review*, *19*, 204-215. https://doi.org/ 10.1007/s10567-016-0205-2

Christenson, J. D., Crane, D. R., Malloy, J., & Parker, S. (2016). The cost of oppositional defiant disorder and disruptive behavior: A review of the literature. *Journal of Child and Family Studies, 25*(9), 2649-2658, https://doi.org/10.1007/s10826-016-0430-9

Cicchetti, D., & Lynch, M. (1993). Toward and ecological/transactional model of community violence and child maltreatment. *Psychiatry, 56*(1), 96-118. https://doi.org/10.1080/00332747.1993.11024624

Cicchetti, D., & Lynch, M. (1995). Failures in the expectable environment and their impact on individual development: The case of child maltreatment. In D. Cicchetti & D. J. Cohen (Eds.), *Developmental Psychopathology, Vol. 2. Risk, Disorder, and Adaptation* (pp. 32–71). John Wiley & Sons.

Cohen, J. (1960). A coefficient of agreement for nominal scales. *Educational and Psychological Measurement*, *20*(1), 37–46. https://doi.org/10.1177/001316446002000104

Colalillo, S., & Johnston, C. (2016). Parenting cognition and affective outcomes following parent management training: A systematic review. *Clinical Child and Family Psychology Review*, *19*, 216-235. https://doi.org/ 10.1007/s10567-016-0208-z

Colder, C. R., Scalco, M., Trucco, E. M., Read, J. P., Lengua, L. J., Wieczorek, W. F., & Hawk, L. W. (2013). Prospective associations of internalizing and externalizing problems and their co-occurrence with early adolescent substance use. *Journal of Abnormal Child Psychology, 41*(4), 667-677, https://doi.org/10.1007/s10802-012-9701-0

Copeland, W. E., Shanahan, L., Costello, E. J., & Angold, A. (2009). Childhood and Adolescent Psychiatric Disorders as Predictors of Young Adult Disorders. *Archives of General Psychiatry*, *66*(7), 764–772. https://doi.org/10.1001/archgenpsychiatry.2009.85

Copeland, W. E., Shanahan, L., Egger, H., Angold, A., & Costello, E. J. (2014). Adult diagnostic and functional outcomes of DSM-5 disruptive behavior disorder subtypes. *Journal of the American Academy of Child & Adolescent Psychiatry, 53(4), 328-340.* https://doi.org/ 10.1176/appi.ajp.2014.13091213

Costin, J., & Chambers, S. M. (2007). Parent management training as a treatment for children with oppositional defiant disorder referred to a mental health clinic. *Clinical Child Psychology and Psychiatry*, *12*(4), 511-524. https://doi.org/10.1177/1359104507080979

Cunningham, N. R., & Ollendick, T. H. (2010). Comorbidity of anxiety and conduct problems in children: Implications for clinical research and practice. *Clinical Child and Family Psychology Review*, *13*, 333-347. https://doi.org/10.1007/s10567-010-0077-9

Dadds, M. R., Cauchi, A. J., Wimalaweera, S., Hawes, D. J., & Brennan, J. (2012). Outcomes, moderators, and mediators of empathic-emotion recognition training for complex conduct problems in childhood. *Psychiatry Research*, *199*(3), 201-207. https://doi.org/10.1016/j.psychres.2012.04.033

Dadds, M. R., Collins, D. A. J., Doyle, F. L., Tully, L. A., Hawes, D. J., Lenroot, R. K., Anderson, V., Frick, P. J., Moul, C., & Kimonis, E. R. (2018). A benchmarking study of father involvement in Australian child mental health services. *PloS One*, *13*(8).https://doi.org/10.1371/journal.pone.0203113

Dadds, M. R., Thai, C., Mendoza Diaz, A., Broderick, J., Moul, C., Tully, L. A., Hawes, D. J., Davies, S., Burchfield, K., & Cane, L. (2019). Therapist-assisted online treatment for child conduct problems in rural and urban families: Two randomized controlled trials. *Journal of Consulting and Clinical Psychology, 87*(8), 706–719. https://doi.org/10.1037/ccp0000419

Dadds, M., & Hawes, D. (2006). *Integrated family intervention for child conduct problems: A behaviour-attachment-systems intervention for parents*. Australian Academic Press.

Dadds, M. R., & Tully, L. A. (2019). What is it to discipline a child: What should it be? A reanalysis of time-out from the perspective of child mental health, attachment, and trauma. *American Psychologist*, *74*(7), 794-808. https://doi.org/10.1037/amp0000449

Danforth, J. S. (1998). The outcome of parent training using the behavior management flow chart with mothers and their children with oppositional defiant disorder and attention-deficit hyperactivity disorder. *Behavior Modification, 22*(4), 443-473, https://doi.org/10.1177/01454455980224001

Danielson, M. L., Bitsko, R. H., & Ghandour, R. M., Holbrook, JR, Kogan, MD, Blumberg, S. J. (2018). Prevalence of parent-reported ADHD diagnosis and associated treatment

among US children and adolescents, 2016. *Journal of Clinical Child Adolescent Psychology*, *47*(2), 199-212. https://doi.org/10.1080/15374416.2017.1417860

Dedousis-Wallace, A., Drysdale, S. A., McAloon, J., & Ollendick, T. H. (2021). Parental and familial predictors and moderators of parent management treatment programs for conduct problems in youth. *Clinical Child and Family Psychology Review*, *24*(1), 929. https://doi.org/10.1007/s10567-020-00330-4

Dedousis-Wallace, A., Drysdale, S.A., McAloon, J., Murrihy, R.C., Greene, R.W., & Ollendick, T.H. (2022). Predictors and moderators two treatments of oppositional defiant disorder in children. *Clinical Child & Adolescent Psychology, 53,* 1-16. https://doi.org/10.1080/15374416.2022.2127102

Deković, M. A. J. A., & Stoltz, S. E. M. J. (2015). Moderators and mediators of treatments for youth who show externalizing problem behavior. *Moderators and mediators of youth treatment outcomes*, 97-122, https://doi.org/10.1093/med:psych/9780199360345.003.0005

De Los Reyes, A., Talbott, E., Power, T. J., Michel, J. J., Cook, C. R., Racz, S. J., & Fitzpatrick, O. (2022). The needs-to-goals gap: How informant discrepancies in youth mental health assessments impact service delivery. *Clinical Psychology Review*, *92*, https://doi.org/10.1016/j.cpr.2021.102114

Demmer, D.H., Hooley, M., Sheen, J., McGillivray, J. A., & Lum, J.A. (2017). Sex differences in the prevalence of oppositional defiant disorder during middle childhood: a meta-analysis. *Journal of Abnormal Child Psychology*, *45*(2), 313-325. https://doi.org/10.1007/s10802-016-0170-8

Déry, M., Lapalme, M., Jagiellowicz, J., Poirier, M., Temcheff, C., & Toupin, J. (2017). Predicting depression and anxiety from oppositional defiant disorder symptoms in

elementary school-age girls and boys with conduct problems. *Child Psychiatry & Human Development*, *48*, 53-62. https://doi.org/10.1007/s10578-016-0652-5

Dishion, T. J., Patterson, G. R., & Kavanagh, K. A. (1992). An experimental test of the coercion model: Linking theory, measurement, and intervention. In J. McCord & R. E. Tremblay *Preventing antisocial behavior: Interventions from birth through adolescence*. Guilford Press.

*Dittman, C. K., Farruggia, S. P., Palmer, M. L., Sanders, M. R., & Keown, L. J. (2014). Predicting success in an online parenting intervention: The role of child, parent, and family factors. *Journal of Family Psychology, 28*(2), 236-243, https://doi.org/10.1037/a0035991

Doebel, S. (2020). Rethinking executive function and its development. *Perspectives on Psychological Science*, *15*(4), 942-956.

*Drugli, M., Fossum, S., Larsson, B., & Mørch, W. (2010). Characteristics of young children with persistent conduct problems 1 year after treatment with the Incredible Years program. *European Child & Adolescent Psychiatry, 19*(7), 559-565, https://doi.org/10.1007/s00787-009-0083-y

*Drugli, M., Larsson, B., Fossum, S., & Mørch, W. (2010). Five- to six-year outcome and its prediction for children with ODD/CD treated with parent training. *Journal of Child Psychology and Psychiatry, and Allied Disciplines, 51*(5), 559-566, https://doi.org/10.1111/j.1469-7610.2009.02178.x

Dumas, J. E. (1984). Child, adult-interactional, and socioeconomic setting events as predictors of parent training outcome. *Education and Treatment of Children*, 351-363.

*Eckshtain, D., Marchette, L. K., Schleider, J., Evans, S., & Weisz, J. R. (2019). Parental depressive symptoms as a predictor of outcome in the treatment of child internalizing

and externalizing problems. *Journal of Abnormal Child Psychology, 47*(3), 459-474, https://doi.org/10.1007/s10802-018-0446-2

Elgar, F. J., Waschbusch, D. A., Dadds, M. R., & Sigvaldason, N. (2007). Development and validation of a short form of the Alabama Parenting Questionnaire. *Journal of Child and Family Studies*, *16*(2), 243-259. https://doi.org/10.1037/t07327-000

Enebrink, P., Högström, J., Forster, M., & Ghaderi, A. (2012). Internet-based parent management training: a randomized controlled study. *Behaviour Research & Therapy, 50*(4), 240-249, https://doi.org/10.1016/j.brat.2012.01.006

Evans, S. C., Burke, J. D., Roberts, M. C., Fite, P. J., Lochman, J. E., De La Peña, F. R., & Reed, G. M. (2017). Irritability in child and adolescent psychopathology: An integrative review for ICD-11. *Clinical Psychology Review*, *53*, 29–45. https://doi.org/10.1016/j.cpr.2017.01.004

Eyberg, S. M., Boggs, S. R., & Algina, J. (1995). Parent-child interaction therapy: a psychosocial model for the treatment of young children with conduct problem behavior and their families. *Psychopharmacology Bulletin.*

Eyberg, S. M., Nelson, M. M., & Boggs, S. R. (2008). Evidence-based psychosocial treatments for children and adolescents with disruptive behavior. *Journal of Clinical Child & Adolescent Psychology*, *37*(1), 215-237, https://doi.org/10.1080/15374410701820117

Eyberg, S. M., & Robinson, E. A. (1982). Parent-child interaction training: Effects on family functioning. *Journal of Clinical Child & Adolescent Psychology*, *11*(2), 130-137.

Ezpeleta, L., Navarro, J.B., de la Osa, N., Penelo, E., & Doménech, J.M. (2019). First incidence, age of onset outcomes and risk factors of onset of DSM-5 oppositional defiant disorder: a cohort study of Spanish children from ages 3 to 9. *BMJ Open, 9 (3), e022493.*

Fagan, A. A., & Benedini, K. M. (2016). How do family-focused prevention programs work? A review of mediating mechanisms associated with reductions in youth antisocial behaviors. *Clinical Child and Family Psychology Review, 19*(4), 285–309. https://doi.org/10.1007/s10567-016-0207-0

Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods, 39,* 175–191. https://doi.org/10.3758/BF03193146

Florean, I. S., Dobrean, A., Păsărelu, C. R., Georgescu, R. D., & Milea, I. (2020). The efficacy of internet-based parenting programs for children and adolescents with behavior problems: A meta-analysis of randomized clinical trials. *Clinical Child and Family Psychology Review*, *23*(4), 510-528. https://doi.org/10.1007/s10567-020-00326-0

Forehand, R., & Kotchick, B. A. (2002). Behavioral parent training: Current challenges and potential solutions. *Journal of Child and Family Studies*, *11*(4). https://doi.org/10.1023/A:1020913422609

Forehand, R., Lafko, N., Parent, J., & Burt, K. B. (2014). Is parenting the mediator of change in behavioral parent training for externalizing problems of youth? *Clinical Psychology Review*, *34*(8), 608-619. https://doi.org/10.1016/j.cpr.2014.10.001

Forehand, R. L., & McMahon, R. J. (1981). *Helping the noncompliant child: A clinician's guide to parent training*. New York: Guilford Press.

Forgatch, M. S., & Gewirtz, A. H. (2018). The evolution of the Oregon Model of parent management training: An intervention for antisocial behavior in children and adolescents. In J. R. Weisz & A. E. Kazdin (Eds.), *Evidence-based psychotherapies for children and adolescents* (p. 85–102). The Guilford Press.

*Fossum, S., Mørch, W. T., Handegård, B. H., Drugli, M. B., & Larsson, B. O. (2008). Parent training for young Norwegian children with ODD and CD problems: Predictors and mediators of treatment outcome. *Scandinavian Journal of Psychology*, *50*(2), 173-181, https://doi.org/10.1111/j.1467-9450.2008.00700.x

Frick, P. J., & Morris, A. S. (2014). Temperament and developmental pathways to conduct problems. *Journal of Clinical Child & Adolescent Psychology, 43*(1), 54-68. https://doi.org/10.1080/15374416.2013.848772

Frick, P. J., Ray, J. V., Thornton, L. C., & Kahn, R. E. (2014). Can callous-unemotional traits enhance the understanding, diagnosis, and treatment of serious conduct problems in children and adolescents? A comprehensive review. *Psychological Bulletin, 140*(1), 1-57. https://doi.org/10.1037/a0033076

Furlong, M., McGilloway, S., Bywater, T., Hutchings, J., Smith, S. M., & Donnelly, M. (2012). Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years. *Cochrane Database of Systematic Reviews*, *2*(2), CD008225–CD008225. https://doi.org/10.1002/14651858.CD008225.pub2

Furman, W., & Giberson, R. S. (1995). Identifying the links between parents and their children's sibling relationships. In S. Shulman, *Close relationships and socioemotional development*. Ablex Publishing.

Gadow, K. D., Sprafkin, J., & Schneider, J. (2018). The relationship of oppositional defiant disorder dimensions to other DSM-IV diagnoses in a clinical sample of ADHD children. *Journal of Attention Disorders, 22*(1), 3-14. https://doi.org/10.1177/1087054714551489

Gardner, F., Burton, J., & Klimes, I. (2006). Randomised controlled trial of a parenting intervention in the voluntary sector for reducing child conduct problems: outcomes

and mechanisms of change. *Journal of Child Psychology and Psychiatry*, *47*(11), 1123-1132. https://doi.org/10.1111/j.1469-7610.2006.01668.x

Gardner, F., Connell, A., Trentacosta, C. J., Shaw, D. S., Dishion, T. J., & Wilson, M. N. (2009). Moderators of outcome in a brief family-centered intervention for preventing early problem behavior. *Journal of Consulting and Clinical Psychology, 77*(3), 543-553, https://doi.org/10.1037/a0015622

*Gardner, F., Hutchings, J., Bywater, T., & Whitaker, C. (2010). Who benefits and how does it work? Moderators and mediators of outcome in an effectiveness trial of a parenting intervention. *Journal of Clinical Child & Adolescent Psychology, 39*(4), 568-580, https://doi.org/10.1080/15374416.2010.486315.

Gardner, F., Leijten, P., Harris, V., Mann, J., Hutchings, J., Beecham, J., Bonin, E.-M., Berry, V., McGilloway, S., Gaspar, M., Seabra-Santos, M. J., de Castro, B. O., Menting, A., Williams, M., Axberg, U., Morch, W.T., Scott, S., & Landau, S. (2019). Equity effects of parenting interventions for child conduct problems: A pan-European individual participant data meta-analysis. *The Lancet Psychiatry*, *6*(6), 518-527. https://doi.org/10.1016/S2215-0366(19)30162-2

Gardner, F., Leijten, P., Melendez-Torres, G. J., Landau, S., Harris, V., Mann, J., Beecham, J., Hutchings, J., & Scott, S. (2019). The earlier the better?: Individual participant data and traditional meta-analysis of age effects of parenting interventions for pre-adolescent children. *Child Development*, *90*(1), 7-19. https://doi.org/10.1111/cdev.13138

Gonzales, N. A., Dumka, L. E., Millsap, R. E., Gottschall, A., McClain, D. B., Wong, J. J., Germán, M., Mauricio, A. M., Wheeler, L., Carpentier, F. D., & Kim, S. Y. (2012). Randomized trial of a broad preventive intervention for mexican american

adolescents. *Journal of Consulting and Clinical Psychology*, *80*(1), 1–16. https://doi.org/10.1037/a0026063

Gonzalez, J. C., Klein, C. C., Barnett, M. L., Schatz, N. K., Garoosi, T., Chacko, A., & Fabiano, G. A. (2023). Intervention and implementation characteristics to enhance father engagement: a systematic review of parenting interventions. *Clinical Child and Family Psychology Review, 26*(2), 445–458. https://doi.org/10.1007/s10567-023-00430-x

Goodman, R. (1997). The Strengths and Difficulties Questionnaire: a research note. *Journal of Child Psychology and Psychiatry, 38*(5), 581-586, https://doi.org/10.1111/j.1469-7610.1997.tb01545.x

Gottlieb, G. (1992). *Individual development and evolution: The genesis of novel behavior* (1st ed.), Oxford University Press, New York.

Graham, A., & Rutter, M. (2019). Conduct disorder and oppositional defiant disorder: A review of the past 10 years, part II. *Journal of Child Psychology and Psychiatry, 60*(1), 4-16. https://doi.org/10.1111/jcpp.12916

Greene, R. W. (1998). *The explosive child: A new approach for understanding and parenting easily frustrated, "chronically inflexible" children.* HarperCollins Publishers.

Greene, R. W. (2010). Collaborative Problem Solving. In R. Murrihy, A. Kidman, & T. Ollendick (Eds.), *A clinician's handbook of assessing and treating conduct problems in youth* (pp. 193-220). Springer Publishing.

Greene, R. W. (2014). *Lost at school: Why our kids with behavioral challenges are falling through the cracks and how we can help them*. Scribmer. http://dx.doi.org/10.14507/er.v23.1976

Greene, R. W., Ablon, J. S., & Goring, J. C. (2003). A transactional model of oppositional behavior: Underpinnings of the Collaborative Problem-Solving approach. *Journal of*

Psychosomatic Research, 55(1), 67-75, https://doi.org/10.1016/s0022-3999(02)00585-8

Greene, R.W., Ablon, J.S., Goring, .C., Raezer-Blakely, L., Markey J., Monuteaux M.C., Henin, A., Edwards, G., & Rabbit, S. (2004). Effectiveness of collaborative problem solving in affectively dysregulated youth with oppositional defiant disorder: Initial findings. *Journal of Consulting and Clinical Psychology, 72,* 1157-64. https://doi.org/10.1037/0022-006X.72.6.1157

Greene, R.W., Ablon, J.S., Hassuk, B., Regan, K.M., & Martin, A. (2006). Innovations: Child psychiatry: Use of collaborative problem solving to reduce seclusion and restraint in child and adolescent inpatient units. *Psychiatric Services, 57*(5), 610–612. https://doi.org/10.1176/ps.2006.57.5.610

Greene, R. W., Biederman, J., Zerwas, S., Monuteaux, M. C., Goring, J. C., & Faraone, S. V. (2002). Psychiatric comorbidity, family dysfunction, and social impairment in referred youth with oppositional defiant disorder. *American Journal of Psychiatry*, *159*(7), 1214-1224. https://doi.org/10.1176/appi.ajp.159.7.1214

Greene, R., & Winkler, J. (2019). Collaborative & Proactive Solutions (CPS): A review of research findings in families, schools, and treatment facilities. *Clinical Child and Family Psychology Review*, *22*(4), 549-561. https://doi.org/10.1007/s10567-019-00295-z

Gross, D., Fogg, L., & Tucker, S. (1995). The efficacy of parent training for promoting positive parent-toddler relationships. *Research in Nursing & Health*, *18*(6), 489-499, https://doi.org/10.1002/nur.4770180605

Hagen, K. A., Ogden, T., & Bjørnebekk, G. (2011). Treatment outcomes and mediators of parent management training: A one-year follow-up of children with conduct

problems. *Journal of Clinical Child & Adolescent Psychology*, *40*(2), 165-178. https://doi.org/10.1080/15374416.2011.546050

Halldorsdottir, T., Fraire, M. G., Drabick, D. A. G., & Ollendick, T. H. (2023). Co-occurring conduct problems and anxiety: Implications for the functioning and treatment of youth with oppositional defiant disorder. *International Journal of Environmental Research and Public Health*, *20*(4), 3405. https://doi.org/10.3390/ijerph20043405

Hare, M. M., & Graziano, P. A. (2021). Treatment response among preschoolers with disruptive behavior disorders: The role of temperament and parenting. *Journal of Clinical Child & Adolescent Psychology*, *50*(6), 950-965. https://doi.org/10.1080/15374416.2020.1846540

Hartman, R. R., Stage, S. A., & Webster-Stratton, C. (2003). A growth curve analysis of parent training outcomes: Examining the influence of child risk factors (inattention, impulsivity, and hyperactivity problems), parental and family risk factors. *Journal of Child Psychology and Psychiatry*, *44*(3), 388-398, https://doi.org/10.1111/1469-7610.00129

Hawes, D. J., & Dadds, M. R. (2005). The treatment of conduct problems in children with callous-unemotional traits. *Journal of Consulting and Clinical Psychology*, *73*(4), 737-741. https://doi.org/10.1037/0022-006X.73.4.737

Hawes, D. J., & Dadds, M. R. (2021). Practitioner review: Parenting interventions for child conduct problems: reconceptualising resistance to change. *Journal of Child Psychology and Psychiatry, and Allied Disciplines*, *62*(10), 1166–1174. https://doi.org/10.1111/jcpp.13378

Hawes, D. J., Price, M. J., & Dadds, M. R. (2014). Callous-unemotional traits and the treatment of conduct problems in childhood and adolescence: A comprehensive

review. *Clinical Child and Family Psychology Review*, *17*(3), 248-267. https://doi.org/10.1007/s10567-014-0167-1

Hayes, A. F. (2017). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. Guilford publications.

Hayes, J., & O'Reilly, G. (2013). Psychiatric disorder, IQ, and emotional intelligence among adolescent detainees: A comparative study. *Legal and Criminological Psychology*, *18*(1), 30-47. https://doi.org/ 10.1111/j.2044-8333.2011.02027.x

Hautmann, C., Dose, C., Duda-Kirchhof, K., Greimel, L., Hellmich, M., Imort, S., & Doepfner, M. (2018). Behavioral versus nonbehavioral guided self-help for parents of children with externalizing disorders in a randomized controlled trial. *Behavior Therapy*, *49*(6), 951-965. https://doi.org/10.1016/j.beth.2018.02.002

Henggeler, S. W., Letourneau, E. J., Chapman, J. E., Borduin, C. M., Schewe, P. A., & McCart, M. R. (2009). Mediators of change for multisystemic therapy with juvenile sexual offenders. *Journal of Consulting and Clinical Psychology*, *77*(3), 451.

Higgins, J. P. T., Savović, J., Page, M. J., & Sterne, J. A. C. (2016). Revised Cochrane risk of bias tool for randomized trials (RoB 2.0). *Bristol: University of Bristol*.

Hilley, C. D., & O'Rourke, H. P. (2022). Dynamic change meets mechanisms of change: Examining mediators in the latent change score framework. *International Journal of Behavioral Development*, *46*(2), 125-141.

Hinshaw, S. P. (1992). Externalizing behavior problems and academic underachievement in childhood and adolescence: Causal relationships and underlying mechanisms. *Psychological Bulletin, 111*(1), 127-155. https://doi.org/10.1037/0033-2909.111.1.127

Hinshaw, S. P. (2007). Moderators and mediators of treatment outcome for youth with ADHD: Understanding for whom and how interventions work. *Journal of Paediatric Psychology*, *32*(6), 664-675. https://doi.org/10.1093/jpepsy/jsl055

Hinshaw, S. P., Owens, E. B., Wells, K. C., Kraemer, H. C., Abikoff, H. B., Arnold, L. E., Conors, C. K., Elliot, G., Greenhill, L. L., Hechtman, L., Hoza, B., Jensen, P. S., Arch, J. S., Newcorn, J. H., Pelham W. E., Swanson, J. M., Vitiello B., & Wigal, T. (2000). Family processes and treatment outcome in the MTA: negative/ineffective parenting practices in relation to multimodal treatment. *Journal of Abnormal Child Psychology, 26*(6), 555-568. https://doi.org/10.1023/a:1005183115230

Hoath, F. E., & Sanders, M. R. (2002). A feasibility study of Enhanced Group Triple P—positive parenting program for parents of children with attention-deficit/hyperactivity disorder. *Behaviour Change, 19*(4), 191-206, https://doi.org/10.1375/bech.19.4.191

*Högström, J., Enebrink, P., Melin, B., & Ghaderi, A. (2014). Eighteen-month follow-up of internet-based parent management training for children with conduct problems and the relation of homework compliance to outcome. *Child Psychiatry & Human Development*, *46*(4), 577-588, https://doi.org/10.1007/s10578-014-0498-7

Hood, K. K., & Eyberg, S. M. (2003). Outcomes of parent-child interaction therapy: Mothers' reports of maintenance three to six years after treatment. *Journal of Clinical Child and Adolescent Psychology*, *32*(3), 419-429, https://doi.org/10.1207/S15374424JCCP3203_10

Hoyle, R. H., & Panter, A. T. (1995). Writing about structural equation models in structural equation modeling. In R. H. Hoyle (Ed.), *Structural equation modeling: Concepts, issues, and applications* (pp. 158−176). Thousand Oaks, CA: Sage.

Hoza, B., Owens, J. S., Pelham, W. E., Jr., Swanson, J. M., Conners, C. K., Hinshaw, S. P., Arnold, L. E., & Kraemer, H. C. (2000). Parent cognitions as predictors of child treatment response in attention-deficit/hyperactivity disorder. *Journal of Abnormal Child Psychology, 28*(6), 569–583. https://doi.org/10.1023/A:1005135232068

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6,* 1–55. http://dx.doi.org/10.1080/10705 519909540118

Jarrett, M. A., Wolff, J., & Ollendick, T. (2007). Concurrent validity and informant agreement of the ADHD module of the anxiety disorders interview schedule for DSM-IV. *Journal of Psychopathology and Behavioral Assessment, 29*(3), 159-168. http://dx.doi.org/10.1007/s10862-006-9041-x

Jerrell, J. M., McIntyre, R. S., & Park, Y.-M. M. (2015). Risk factors for incident major depressive disorder in children and adolescents with attention-deficit/hyperactivity disorder. *European Child & Adolescent Psychiatry, 24*(1), 65-73, https://doi.org/10.1007/s00787-014-0541-z

Johnston, C., Chen, M., & Ohan, J. (2006). Mothers' attributions for behavior in nonproblem boys, boys with attention deficit hyperactivity disorder, and boys with attention deficit hyperactivity disorder and oppositional defiant behavior. *Journal of Clinical Child & Adolescent Psychology, 35*(1), 60 71. https://doi.org/10.1207/s15374424jccp3501_6

Johnston, C., & Ohan, J. L. (2005). The importance of parental attributions in families of children with attention-deficit/hyperactivity and disruptive behavior disorders. *Clinical Child and Family Psychology Review*, *8*, 167-182.https://doi.org/10.1007/s10567-005-6663-6

Jones, D., Forehand, R., Cuellar, J., Parent, J., Honeycutt, A., Khavjou, O., . . . Newey, G. (2014). Technology-enhanced program for child disruptive behavior disorders: development and pilot randomized control trial. *Journal of Clinical Child and Adolescent Psychology, 43*(1), 88-101, https://doi.org/10.1080/15374416.2013.822308

Judd, C. M., Kenny, D. A., & McClelland, G. H (2001). Estimating and testing mediation and moderation in within subject design. *Psychological Methods, 6*(2), 115-134. http://dx.doi.org/10.1037//1082-989X.6.2.115

Kaehler, L. A., Jacobs, M., & Jones, D. J. (2016). Distilling common history and practice elements to inform dissemination: Hanf-model BPT programs as an example. *Clinical Child and Family Psychology Review, 19*(3), 236-258, https://doi.org/10.1007/s10567-016-0210-5.

Kaminski, J. W., & Claussen, A. H. (2017). Evidence base update for psychosocial treatments for disruptive behaviors in children. *Journal of Clinical Child & Adolescent Psychology*, *46*(4), 477-499. https://doi.org/10.1080/15374416.2017.1310044

Kaminski, J. W., Valle, L. A., Filene, J. H., & Boyle, C. L. (2008). A meta-analytic review of components associated with parent training program effectiveness. *Journal of Abnormal Child Psychology*, *36*(4), 567-589. https://doi.org/10.1007/s10802-007-9201-9

Katzmann, J., Hautmann, C., Greimel, L., Imort, S., Pinior, J., Scholz, K., & Döpfner, M. (2017). Behavioral and nondirective guided self-help for parents of children with externalizing behavior: mediating mechanisms in a head-to-head comparison. *Journal of Abnormal Child Psychology*, *45*(4), 719-730. https://doi.org/10.1007/s10802-016-0195-z

Kaur, M., Floyd, A., & Balta, A. M. (2022). Oppositional defiant disorder: Evidence-based review of behavioral treatment programs. *Annals of Clinical Psychiatry: Official Journal of the American Academy of Clinical Psychiatrists*, *34*(1), 44-58.https://doi.org/10.12788/acp.0056

Kazdin, A.E. (1990). Premature termination from treatment among children referred for antisocial behavior. *Journal of Child Psychology and Psychiatry, 31*: 415-425, https://doi.org/10.1111/j.1469-7610.1990.tb01578.x

Kazdin, A.E. (2007). Mediators and mechanisms of change in psychotherapy research. *Annual Review of Clinical Psychology, 13,* 1-27. https://doi.org/10.1146/annurev.clinpsy.3.022806.091432

Kazdin, A. E., & Nock, M. K. (2003). Delineating mechanisms of change in child and adolescent therapy: Methodological issues and research recommendations. *Journal of Child Psychology and Psychiatry*, *44*(8), 1116-1129. https://doi.org/10.1111/1469-7610.00195

Kazdin, A. E., & Wassell, G. (2000). Predictors of barriers to treatment and therapeutic change in outpatient therapy for antisocial children and their families. *Mental Health Services Research*, *2*(1), 27-40, https://doi.org/10.1023/A:1010191807861

Kazdin, A. E., & Whitley, M. K. (2006). Comorbidity, case complexity, and effects of evidence-based treatment for children referred for disruptive behavior. *Journal of Consulting and Clinical Psychology*, *74*(3), 455. https://doi.org/10.1037/0022-006X.74.3.455

Kessler, R. C., Avenevoli, S., Costello, E. J., Georgiades, K., Green, J. G., Gruber, M. J., He, J., Koretz, D., McLaughlin, K. A., Petukhova, M., Sampson, N. A., Zaslavsky, A. M., & Merikangas, K. R. (2012). Prevalence, persistence, and sociodemographic correlates of DSM-IV disorders in the national comorbidity survey replication adolescent supplement. *Archives of General Psychiatry*, *69*(4), 372-380. https://doi.org/10.1001/archgenpsychiatry.2011.160

Kil, H., Martini, J., & Andrade, B. F. (2020). Parental attributions, parenting skills, and readiness for treatment in parents of children with disruptive behavior. *Journal of*

Psychopathology and Behavioral Assessment, *42*, 464-474. https://doi.org/10.1007/s10862-020-09801-y

Kil, H., Singh, A. D., Bains, A., Rodak, T., & Andrade, B. F. (2021). Parental attributions in ethnocultural minority, immigrant, and country of origin parents: a scoping review and call for research. *Clinical Child and Family Psychology Review*, *24*(4), 707-724. https://doi.org/10.1007/s10567-021-00361-5

Kim, Y. H., Moon, D. S., & Kang, N. R. (2023). Comorbid psychiatric symptom associated with oppositional defiant symptom in community school-age children. *Journal of the Korean Academy of Child and Adolescent Psychiatry*, *34*(3), 169.

Kim-Cohen, J., Arseneault, L., Caspi, A., Tomas, M. P., Taylor, A., & Moffitt, T. E. (2003). Validity of DSM-IV conduct disorder in 4½-5-year-old children: A longitudinal epidemiological study. *American Journal of Psychiatry, 160(6),* 1108-1113. https://doi.org/10.1176/appi.ajp.162.6.1108

Kim-Cohen, J., Caspi, A., Moffitt, T. E., Harrington, H., Milne, B. J., & Poulton, R. (2003). Prior juvenile diagnoses in adults with mental disorder: developmental follow-back of a prospective-longitudinal cohort. *Archives of General Psychiatry*, *60*(7), 709-717, https://doi.org/10.1001/archpsyc.60.7.709

Kimonis, E. R., Fleming, G., Briggs, N., Brouwer-French, L., Frick, P. J., Hawes, D. J., Bagner, D. M., Thomas, R., & Dadds, M. (2019). Parent-child interaction therapy adapted for preschoolers with callous-unemotional traits: An open trial pilot study. *Journal of Clinical Child & Adolescent Psychology*, *48*(sup1), S347-361. https://doi.org/10.1080/15374416.2018.1479966

Kimonis, E. R., Fleming, G. E., & Murrihy, R. C. (2023). Disruptive behavior disorders. In *Handbook of Child and Adolescent Psychology Treatment Modules*. Academic Press.

*Kjøbli, J., Nærde, A., Bjørnebekk, G., & Askeland, E. (2014). Maternal mental distress influences child outcomes in brief parent training. *Child and Adolescent Mental Health, 19*(3), 171-177, https://doi.org/doi:10.1111/camh.12028

*Kling, Å., Forster, M., Sundell, K., & Melin, L. (2010). A randomized controlled effectiveness trial of parent management training with varying degrees of therapist support. *Behavior Therapy, 41*(4), 530-542, https://doi.org/10.1016/j.beth.2010.02.004

Klasen, H., & Goodman, R. (2000). Parents and GPs at cross-purposes over hyperactivity: A qualitative study of possible barriers to treatment. *British Journal of General Practice*, *50*(452), 199-202.

Kraemer, C.H., Kiernan, M., Essex, M., & Kupfer, D.J. (2008). How and why criteria defining moderators and mediators differ between the Baron & Kenny and MacArthur approaches. *Health Psychology*, *27*(2), 101-108. https://doi.org/10.1037/0278-6133.27.2(Suppl.).S101

Kraemer, H. C., Wilson, G. T., Fairburn, C. G., & Agras, W. S. (2002). Mediators and moderators of treatment effects in randomized clinical trials. *Archives of General Psychiatry, 59*(10), 877-883, https://doi.org/10.1001/archpsyc.59.10.877

Laible, D., & Song, J. (2006). Constructing emotional and relational understanding: The role of affect and mother-child discourse. *Merrill-Palmer Quarterly (1982-), 52*(1), 44-69, https://doi.org/10.1353/mpq.2006.0006

Larsson, B., Fossum, S., Clifford, G., Drugli, M. B., Handegård, B. H., & Mørch, W.-T. (2009). Treatment of oppositional defiant and conduct problems in young Norwegian children: Results of a randomized controlled trial. *European Child & Adolescent Psychiatry, 18*(1), 42-52, https://doi.org/10.1007/s00787-008-0702-z

Lahey, B. B., & Loeber, R. (1994). *Framework for a developmental model of oppositional defiant disorder and conduct disorder.* Plenum Press.

Lavigne, J. V., Bryant, F. B., Hopkins, J., & Gouze, K. R. (2015). Dimensions of oppositional defiant disorder in young children: model comparisons, gender and longitudinal invariance. *Journal of Abnormal Child Psychology*, *43*(3), 423–439. https://doi.org/10.1007/s10802-014-9919-0

*Lavigne, J., Lebailly, S., Gouze, K., Cicchetti, C., Jessup, B., Arend, R., . . . Binns, H. (2008). Predictor and moderator effects in the treatment of oppositional defiant disorder in pediatric primary care. *Journal of Pediatric Psychology, 33*(5), 462-472, https://doi.org/10.1093/jpepsy/jsm075

Lavigne, J. V., LeBailly, S. A., Gouze, K. R., Cicchetti, C., Pochyly, J., Arend, R., Jessup, B. W., & Binns, H. J. (2007). Treating oppositional defiant disorder in primary care: a comparison of three models. *Journal of Pediatric Psychology, 33*(5), 449-461, https://doi.org/10.1093/jpepsy/jsm074

Lawrence, D., Johnson, S., & Hafekost, J. (2015). *The mental health of children and adolescents: Report on the second Australian child and adolescent survey of mental health and wellbeing.* Department of Health. https://doi.org/10.1177%2F0004867415617836

Leadbeater, B. J., & Ames, M. E. (2017). The longitudinal effects of oppositional defiant disorder symptoms on academic and occupational functioning in the transition to young adulthood. *Journal of Abnormal Child Psychology*, *45*(4), 749-763. https://doi.org/10.1007/s10802-016-0190-4

Leadbeater, B. J., Merrin, G. J., Contreras, A., & Ames, M. E. (2023). Trajectories of oppositional defiant disorder severity from adolescence to young adulthood and

substance use, mental health, and behavioral problems. *Journal of the Canadian Academy of Child and Adolescent Psychiatry*, *32*(4), 224

Leijten, P., Raaijmakers, M. A., de Castro, B. O., & Matthys, W. (2013). Does socioeconomic status matter? A meta-analysis on parent training effectiveness for disruptive child behavior. *Journal of Clinical Child & Adolescent Psychology, 42*(3), 384-392, https://doi.org/10.1080/15374416.2013.769169

* Leijten, P., Raaijmakers, M. A., Orobio de Castro, B., van den Ban, E., & Matthys, W. (2017). Effectiveness of the incredible years parenting program for families with socioeconomically disadvantaged and ethnic minority backgrounds. *Journal of Clinical Child & Adolescent Psychology*, *46*(1), 59-73. https://doi.org/10.1080/15374416.2015.1038823

Leijten, P., Raaijmakers, M., Wijngaards, L., Matthys, W., Menting, A., Hemnick-van-Putten, M., & de Castro, B. O. (2018). Understanding who benefits from parenting interventions for children's conduct problems: An integrative data analysis. *Prevention Science*, *19*(4), 579-588. https://doi.org/10.1007/s11121-018-0864-y

Leijten, P., Scott, S., Landau, S., Harris, V., Mann, J., Hutchings, J., Beecham, J., & Gardner, F. (2020). Individual participant data meta-analysis: Impact of conduct problem severity, comorbid attention-deficit/hyperactivity disorder and emotional problems, and maternal depression on parenting program effects. *Journal of the American Academy of Child & Adolescent Psychiatry*, *59*8, 933-943. https://doi.org/10.1016/j.jaac.2020.01.023

Leijten, P., Weisz, J. R., & Gardner, F. (2021). Research strategies to discern active psychological therapy components: A scoping review. *Clinical Psychological Science, 9(3)*, 307-322. https://doi.org/10.1177/2167702620978615

Little, R. J. (1988). A test of missing completely at random for multivariate data with missing values. *Journal of the American Statistical Association*, *83*(404), 1198-1202. https://doi.org/10.1080/01621459.1988.10478722

Little, T. D. (2013). *Longitudinal structural equation modeling*. New York, NY: Guilford Press.

Loeber, R., Green, S. M., Keenan, K., & Lahey, B. B. (1995). Which boys will fare worse? Early predictors of the onset of conduct disorder in a six-year longitudinal study. *Journal of the American Academy of Child & Adolescent Psychiatry, 34*(4), 499-509. https://doi.org/10.1097/00004583-199504000-00017

Loeber, R., Burke, J. D., Lahey, B. B., Winters, A., & Zera, M. (2009). Oppositional defiant and conduct disorder: A review of the past 10 years, part I. *Journal of the American Academy of Child & Adolescent Psychiatry, 48*(4), 345-365. https://doi.org/10.1097/CHI.0b013e3181984f3a

Loerinc, A. G., Meuret, A. E., Twohig, M. P., Rosenfield, D., Bluett, E. J., & Craske, M. G. (2015). Response rates for CBT for anxiety disorders: Need for standardized criteria. *Clinical Psychology Review, 42*, 72-82, https://doi.org/10.1016/j.cpr.2015.08.004

Lundahl, B., Risser, H. J., & Lovejoy, M. C. (2006). A meta-analysis of parent training: Moderators and follow-up effects. *Clinical Psychology Review, 26*(1), 86-104, https://doi.org/10.1016/j.cpr.2005.07.004

Lundahl, B. W., Tollefson, D., Risser, H., & Lovejoy, M. C. (2008). A meta-analysis of father involvement in parent training. *Research on Social Work Practice*, *18*(2), 97-106, https://doi.org/10.1177/1049731507309828

MacKinnon, D. P., Lockhart, G., Baraldi, A. N., & Gelfand, L. A. (2013). 15 Evaluating treatment mediators and moderators. *The Oxford handbook of research strategies for clinical psychology*, 262.

Maddox, B. B., Cleary, P., Kuschner, E. S., Miller, J. S., Armour, A. C., Guy, L., Kenworthy, L., Schultz, R. T., & Yerys, B. E. (2018). Lagging skills contribute to challenging behaviors in children with autism spectrum disorder without intellectual disability. *Autism: The International Journal of Research and Practice*, *22*(8), 898–906. https://doi.org/10.1177/1362361317712651

Mah, J. W. T., & Johnston, C. (2008). Parental social cognitions: Considerations in the acceptability of and engagement in behavioral parent training. *Clinical Child and Family Psychology Review, 11*(4), 218-236. https://doi.org/10.1007/s10567-008-0038-8

Maric, M., Prins, P. J. M., & Ollendick, T. H. (2015). *Moderators and mediators of youth treatment outcomes*. Oxford University Press.

Masi, G., Muratori, P., Manfredi, A., Lenzi, F., Polidori, L., Ruglioni, L., & Pfanner, C. (2016). Children with oppositional defiant disorder and conduct disorder: A systematic review of psychotherapeutic interventions. *Expert Review of Neurotherapeutics, 16*(3), 313-323.

Mattek, R. J., Harris, S. E., & Fox, R. A. (2016). Predicting treatment success in child and parent therapy among families in poverty. *The Journal of Genetic Psychology, 177*(2), 44–54. https://doi.org/10.1080/00221325.2016.1147415

Maughan, B., Rowe, R., Messer, J., Goodman, R., & Meltzer, H. (2004). Conduct disorder and oppositional defiant disorder in a national sample: developmental epidemiology. *Journal of Child Psychology and Psychiatry, and Allied Disciplines*, *45*(3), 609–621. https://doi.org/10.1111/j.1469-7610.2004.00250.x

McCart, M. R., Priester, P. E., Davies, W. H., & Azen, R. (2006). Differential effectiveness of behavioral parent-training and cognitive-behavioral therapy for antisocial youth: A

meta-analysis. *Journal of Abnormal Child Psychology*, *34*, 527-43. https://doi.org/10.1007/s10802-006-9031-1

McCart, M. R., & Sheidow, A. J. (2016). Evidence-base psycho- social treatments for adolescents with disruptive behavior. *Journal of Clinical Child & Adolescent Psychology*, *45*(5), 29–563. https://doi.org/10.1080/15374416.2016.1146990

McMahon, R., & Forehand, R. (2003). *Helping the noncompliant child*. New York, NY: The Guildford Press.

McMahon, R. J., Goulter, N., & Frick, P. J. (2021). Moderators of psychosocial intervention response for children and adolescents with conduct problems. *Journal of Clinical Child & Adolescent Psychology, 50*(4), 525-533. https://doi.org/10.1080/15374416.2021.1894566Merikangas

McTaggart, P., & Sanders, M. (2007). Mediators and moderators of change in dysfunctional parenting in a school-based universal application of the Triple-P positive parenting programme. *Journal of Children's Services, 2*(1), 4-17, https://doi.org/10.1108/17466660200700002

Menting, A. T., de Castro, B. O., & Matthys, W. (2013). Effectiveness of the Incredible Years parent training to modify disruptive and prosocial child behavior: A meta-analytic review. *Clinical Psychology Review, 33*(8), 901-913, https://doi.org/10.1016/j.cpr.2013.07.006

Merikangas, K. R., Nakamura, E. F., & Kessler, R. C. (2009). Epidemiology of mental disorders in children and adolescents. *Dialogues in clinical neuroscience, 11*(1), 7-20.

Mestre, J. M., Taubner, S., Mota, C. P., Henriques, M.R., Saliba, A., Heinonen, E., Ramos, S., Moreno-Peral, P., Volkert, J., Adler, A., Barkauskiene, R., Conejo-Cerón, S., DiGiacomo, D., Ioannou, Y., Mucha Vieira, Røssberg, J.I., Sales, C.M., Schmidt, S. J., Perdih, T.S., Ulberg, ., & Protić, S. (2022). Theories of change and mediators of

psychotherapy effectiveness in adolescents with externalising behaviours: A Systematic Review. *Frontiers in Psychiatry*, *12*. https://doi.org/10.3389/fpsyt.2021.730921

Michelson, D., Davenport, C., Dretzke, J., Barlow, J., & Day, C. (2013). Do evidence-based interventions work when tested in the "real world?" A systematic review and meta-analysis of parent management training for the treatment of child disruptive behavior. *Clinical Child and Family Psychology Review, 16*(1), 18-34, https://doi.org/10.1007/s10567-013-0128-0

Miller, G. E., & Prinz, R. J. (2003). Engagement of families in treatment for childhood conduct problems. *Behavior Therapy*, *34*(4), 517-534. https://doi.org/10.1016/S0005-7894(03)80033-3

*Miller-Slough, R. L., Dunsmore, J. C., Ollendick, T. H., & Greene, R. W. (2016). Parent-child synchrony in children with oppositional defiant disorder: Associations with treatment outcomes. *Journal of Child and Family Studies, 25*(6), 1880-1888, https://doi.org/10.1007/s10826-015-0356-7

Mischel, W., Shoda, Y., & Rodriguez, M. L. (1989). Delay of gratification in children. *Science*, *244*(4907), 933–938. https://doi.org/10.1126/science.2658056

Moffitt, T. E., Arseneault, L., Jaffee, S. R., Kim-Cohen, J., Koenen, K. C., Odgers, C. L., Slutske, W.S., & Viding, E. (2008). Research review: DSM-V conduct disorder: research needs for an evidence base. *Journal of Child Psychology and Psychiatry, 49*(1), 3-33. https://doi.org/10.1111/j.1469-7610.2007.01823.x

Moffitt, T. E., & Caspi, A. (2001). Childhood predictors differentiate life-course persistent and adolescence-limited antisocial pathways among males and females. *Development and Psychopathology*, *13*(2), 355-375, https://doi.org/10.1017/s0954579401002097

Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., & Group, P. (2009). Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *PLoS Medicine, 6*(7), e1000097, https://doi.org/10.1371/journal.pmed.1000097

Moher, D., Shamseer, L., Clarke, M., Ghersi, D., Liberati, A., Petticrew, M., Shekelle, P., Stewart, L. A., & PRISMA-P Group (2015). Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. *Systemtic Reviews, 4*, 1, https://doi.org/10.1186/2046-4053-4-1

Morrissey-Kane, E., & Prinz, R. J. (1999). Engagement in child and adolescent treatment: The role of parental cognitions and attributions. *Clinical Child and Family Psychology Review, 2*(3), 183–198. https://doi.org/10.1023/A:1021807106455

Mulraney, M., Sciberras, E., Payne, J. M., De Luca, C., Mills, J., Tennant, M., & Coghill, D. (2022). Collaborative and Proactive Solutions compared with usual care to treat irritability in children and adolescents: a pilot randomized controlled trial. *Clinical Psychologist*, *26*(2), 231-239. https://doi.org/10.1080/13284207.2022.2041983

Muratori, P., Bertacchi, I., Giuli, C., Lombardi, L., Bonetti, S., Nocentini, A., Manfredi, A., Polidori, L., Ruglioni, L., Milone, A., & Lochman, J. E. (2015). First adaptation of coping power program as a classroom-based prevention intervention on aggressive behaviors among elementary school children. *Prevention Science, 16*(3), 432–439. https://doi.org/10.1007/s11121-014-0501-3

Muratori, P., Lochman, J. E., Lai, E., Milone, A., Nocentini, A., & Pisano, S. (2020). Oppositional defiant disorder in young children: Developmental considerations for research and practice. *Journal of Abnormal Child Psychology, 48*(8), 1083-1093. https://doi.org/10.1007/s10802-020-00633-4

Murray-Close, D., Holterman, L. A., Breslend, N. L., Sullivan, K. M., & Fales, J. (2017). Parent–child relationship quality and oppositional defiant disorder symptoms in a

longitudinal community sample of preschoolers. *Journal of Abnormal Child Psychology, 45*(8), 1625-1636. https://doi.org/10.1007/s10802-017-0277-7

Murray, J., & Farrington, D. P. (2008). Risk factors for conduct disorder and delinquency: Key findings from longitudinal studies. *Canadian Journal of Psychiatry, 53*(8), 616-625. https://doi.org/10.1177/070674370805300808

Murrihy, R. C., Drysdale, S. A. O., Dedousis-Wallace, A., Rémond, L., McAloon, J., Ellis, D. M., Halldorsdottir, T., Greene, R. W., & Ollendick, T. H. (2023). Community-Delivered Collaborative and Proactive Solutions and Parent Management Training for Oppositional Youth: A Randomized Trial. *Behavior Therapy*, *54*(2), 400-417. https://doi.org/10.1016/j.beth.2022.10.005

Murrihy, R. C., Kidman, A. D., & Ollendick, T. H. (2010). *Clinical handbook of assessing and treating conduct problems in youth*. New York, NY: Springer Science & Business Media.

Muthén L. K., & Muthén B, O. (2022). *Mplus User's Guide: Statistical Analysis with Latent Variables: User's Guide (Version 8.8). Los Angeles, CA:.* Muthén & Muthén.

Nobel, E., Hoekstra, P. J., Brunnekreef, A.J., Messink-de Vries, D. E., Fischer, B.,Emmelkamp, P. M., & Van den Hoofdakker, B. J. (2020). Home-based parent training for school-aged children with attention-deficit/hyperactivity disorder and behavior problems with remaining impairing disruptive behaviors after routine treatment: a randomized controlled trial. *European Child & Adolescent Psychiatry*, *29*, 395-408. https://doi.org/10.1007/s00787-019-01375-9

Nock, M. K., & Ferriter, C. (2005). Parent management of attendance and adherence in child and adolescent therapy: A conceptual and empirical review. *Clinical Child and Family Psychology Review, 8*(2), 149-166, https://doi.org/10.1007/s10567-005-4753-0

Nock, M. K., & Kazdin, A. E. (2005). Randomized controlled trial of a brief intervention for increasing participation in parent management training. *Journal of Consulting and Clinical Psychology*, *73*(5), 872. https://doi.org/10.1037/0022-006X.73.5.872

Nock, M. K., Kazdin, A. E., Hiripi, E., & Kessler, R. C. (2007a). Lifetime prevalence, correlates, and persistence of oppositional defiant disorder: results from the National Comorbidity Survey Replication. *Journal of Child Psychology and Psychiatry*, *48*(7), 703-713. https://doi.org/10.1111/j.1469-7610.2007.01733.x

Nock, M. K., Kazdin, A. E., Hiripi, E., & Kessler, R. C. (2007b). Prevalence, subtypes, and correlates of DSM-IV conduct disorder in the National Comorbidity Survey Replication. *Psychological Medicine, 37*(4), 571-582. https://doi.org/10.1017/S0033291706009064

Ollendick, T. H., Booker, J. A., Ryan, S., & Greene, R. W. (2018). Testing multiple conceptualizations of oppositional defiant disorder in youth. *Journal of Clinical Child & Adolescent Psychology*, *47*(4), 620-633. https://doi.org/10.1080/15374416.2017.1286594

* Ollendick, T. H., Greene, R. W., Austin, K. E., Fraire, M. G., Halldorsdottir, T., Allen, K. B.,Jarrett, M. A., Lewis, K. M., Whitmore Smith, M., Cunningham, N. R., Noguchi, R. J. P., Canavera, K., & Wolff, J. C. (2016). Parent Management Training and Collaborative & Proactive Solutions: A randomized control trial for oppositional youth. *Journal of Clinical Child and Adolescent Psychology, 45*(5), 591-604, https://doi.org/10.1080/15374416.2015.1004681

Ollendick, T. H., Jarrett, M. A., Grills-Taquechel, A. E., Hovey, L. D., & Wolff, J. C. (2008). Comorbidity as a predictor and moderator of treatment outcome in youth with anxiety, affective, attention deficit/hyperactivity disorder, and oppositional/conduct

disorders. *Clinical Psychology Review*, *28*(8), 1447-1471. https://doi.org/10.1016/j.cpr.2008.09.003

Ollendick, T. H., White, S. W., & White, B. A. (Eds.). (2018). *The Oxford handbook of clinical child and adolescent psychology*. Oxford Library of Psychology.

*Parent, J., Forehand, R. L., Merchant, M. J., Long, N., & Jones, D. J. (2011). Predictors of outcome of a parenting group curriculum: A pilot study. *Behavior Modification, 35*(4), 370-388, https://doi.org/10.1177/0145445511405185

Patterson, G.R. (1982). *Coercive family process.* Eugene, Oregon: Castalia Publishing.

Patterson, G. R. (2005). The next generation of PMTO models. *The Behavior Therapist, 28*(2). 27–33.

Patterson, G. R., & Oregon, E. (1982). A social learning approach, Volume 3: Coercive family process.

Patterson, G. R., Reid, J. B., & Dishion, T. J. (1998). *Antisocial boys.* In J. M. Jenkins, K. Oatley, & N. L. Stein (Eds.), *Human emotions: A reader*. Blackwell Publishing.

Patterson, G. R., Reid, J. B., Jones, R. R., & Conger, R. E. (1975). *A social learning approach to family intervention: Families with aggressive children* (Vol. 1). Eugene, OR: Castalia Publishing Co.

Pederson, C. A., & Fite, P. J. (2014). The impact of parenting on the associations between child aggression subtypes and oppositional defiant disorder symptoms. *Child Psychiatry & Human Development, 45*(6), 728-735. https://doi.org/10.1007/s10578- 014-0441-y

Pelham Jr, W. E., Gnagy, E. M., Greenslade, K. E., & Milich, R. (1992). Teacher ratings for DSM-III-R symptoms for the disruptive behavior disorders. *Journal of the American Academy of Child and Adolescent Psychiatry, 31*(2), 210-218. https://doi.org/10.1097/00004583-199203000-00006

Pelletier, J. (2006). Assessment of disruptive behaviors in preschoolers: Psychometric properties of the disruptive behavior disorders rating scale and school situations questionnaire. *Journal of Psychoeducational Assessment, 24*(1), 3-18. http://dx.doi.org/10.1177/0734282905285235

Peters, S., Calam, R., & Harrington, R. (2005). Maternal attributions and expressed emotion as predictors of attendance at parent management training. *Journal of Child Psychology and Psychiatry*, *46*(4), 436-448. https://doi.org/10.1111/j.1469-7610.2004.00365.x

Polanczyk, G. V., Salum, G. A., Sugaya, L. S., Caye, A., & Rohde, L. A. (2015). Annual research review: A meta-analysis of the worldwide prevalence of mental disorders in children and adolescents. *Journal of child psychology and psychiatry*, *56*(3), 345-365. https://doi.org/10.1111/jcpp.12381

Prins, P. J. M., Ollendick, T. H., Marie, M., & MacKinnon, D. P. (2015). Moderators and mediators in treatment outcome studies of childhood disorders: The what, why, and how. In M. Maric, P. J. M. Prins, & T. H. Ollendick (Eds.), *Moderators and mediators of youth treatment outcomes* (pp. 1–19). Oxford University Press. https://doi.org/10.1093/med:psych/9780199360345.003.0001

Prinstein, M. J., & Youngstrom, E. A. (2021). Introduction to the special issue on moderators of treatment efficacy in clinical child and adolescent psychology. *Journal of Clinical Child & Adolescent Psychology*, *50*(4), 441-442. https://doi.org/10.1080/15374416.2021.1961264

Quigley, L., Dozois, D. J. A., Bagby, R. M., Lobo, D. S. S., Ravindran, L., & Quilty, L. C. (2019). Cognitive change in cognitive-behavioural therapy v. pharmacotherapy for adult depression: a longitudinal mediation analysis. *Psychological Medicine*, *49*(15), 2626–2634. https://doi.org/10.1017/S0033291718003653

Rahmqvist, J., Wells, M. B., & Sarkadi, A. (2014). Conscious parenting: A qualitative study on Swedish parents' motives to participate in a parenting program. *Journal of Child and Family Studies*, *23*, 934-944. https://doi.org/10.1007/s10826-013-9750-1R

Reyno, S. M., & McGrath, P. J. (2006). Predictors of parent training efficacy for child externalizing behavior problems–a meta-analytic review. *Journal of Child Psychology and Psychiatry, 47*(1), 99-111, https://doi.org/doi:10.1111/j.1469-7610.2005.01544.x

Rimstead, M. L., O'Toole, M. S., & Hougaard, E. (2020). Mediators of change in a parent training program for early ADHD difficulties: The role of parental strategies, parental self-efficacy, and therapeutic alliance. *Journal of Attention Disorder, 24*(14), 1966–1976. https://doi.org/10.1177/1087054717733043

Rivenbark, J. G., Odgers, C. L., Caspi, A., Harrington, H., Hogan, S., Houts, R. M., Poulton, R., & Moffitt, T. E. (2018). The high societal costs of childhood conduct problems: Evidence from administrative records up to age 38 in a longitudinal birth cohort. *Journal of Child Psychology and Psychiatry, 59.* https://doi.org/10.1111/jcpp.12850

Robinson, E. A., Eyberg, S. M., & Ross, A. W. (1980). The standardization of an inventory of child conduct problem behaviors. *Journal of Clinical Child & Adolescent Psychology, 9*(1), 22-28, https://doi.org/10.1080/15374418009532938

Rowe, R., & Costello, E. J. (2009). Anger and irritability in children: Bridging the gap between clinical and epidemiological approaches. Journal of the American Academy of Child & Adolescent Psychiatry.

Rowe, R., Costello, E. J., Angold, A., Copeland, W. E., & Maughan, B. (2010). Developmental pathways in oppositional defiant disorder and conduct disorder. *Journal of Abnormal Psychology*, *119*(4), 726-738. https://doi.org/10.1037/a0020798

Rhodes, S. M., Park, J., Seth, S., & Coghill, D. R. (2012). A comprehensive investigation of memory impairment in attention deficit hyperactivity disorder and oppositional defiant disorder. *Journal of Child Psychology and Psychiatry*, *53*(2), 128-137. https://doi.org/10.1111/j.1469-7610.2011.02436.x

Rutter, M. (1979). Protective factors in children's responses to stress and disadvantage. *Annals of the Academy of Medicine, Singapore, 8*(3), 324.

Rutter, M., & Schaffer, D. (1980). *Developmental and clinical perspectives on aggressive and violence.* Lawrence Erlbaum.

Sanders, M. R. (1999). Triple P-Positive Parenting Program: Towards an empirically validated multilevel parenting and family support strategy for the prevention of behavior and emotional problems in children. *Clinical Child and Family Psychology Review, 2*(2), 71-90, https://doi.org/10.1023/a:1021843613840

Sanders, M. R., Dittman, C. K., Farruggia, S. P., & Keown, L. J. (2014). A comparison of online versus workbook delivery of a self-help positive parenting program. *The Journal of Primary Prevention, 35*(3), 125-133, https://doi.org/10.1007/s10935-014-0339-2

Sanders, M. R., Pidgeon, A. M., Gravestock, F., Connors, M. D., Brown, S., & Young, R. W. (2004). Does parental attributional retraining and anger management enhance the effects of the Triple P-Positive Parenting Program with parents at risk of child maltreatment? *Behavior Therapy*, *35*(3), 513-535. https://doi.org/10.1016/S0005-7894(04)80030-3

Sandler, I. N., Schoenfelder, E. N., Wolchik, S. A., & MacKinnon, D. P. (2011). Long-term impact of prevention programs to promote effective parenting: Lasting effects but uncertain processes. *Annual Review of Psychology*, *62*(1), 299–329. https://doi.org/10.1146/annurev.psych.121208.131619

Sandoval-Norton, A. H., Shkedy, G., & Shkedy, D. (2019). How much compliance is too much compliance: Is long-term ABA therapy abuse? *Cogent Psychology*, *6*(1). https://doi.org/10.1080/23311908.2019.1641258

Sawrikar, V., & Dadds, M. (2018). What role for parental attributions in parenting interventions for child conduct problems? Advances from research into practice. *Clinical Child and Family Psychology Review*, *21*, 41-56. https://doi.org/10.1007/s10567-017-0243-4

Sawrikar, V., Hawes, D. J., Moul, C., & Dadds, M. R. (2018). The role of parental attributions in predicting parenting intervention outcomes in the treatment of child conduct problems. *Behaviour Research and Therapy*, *111*, 64-71, https://doi.org/10.1016/j.brat.2018.10.004

Sawrikar, V., Hawes, D. J., Moul, C., & Dadds, M. R. (2020). How do mothers' parental attributions affect child outcomes from a positive parenting intervention? A mediation study. *Child Psychiatry & Human Development*, *51*, 597-608. https://doi.org/10.1007/s10578-019-00942-0

Schoorl, J., Van Rijn, S., de Wied, M., van Goozen, S., & Swaab, H. (2018). Boys with oppositional defiant disorder/conduct disorder show impaired adaptation during stress: An executive functioning study. *Child Psychiatry and Human Development*, *49*(2), 298–307. https://doi.org/10.1007/s10578-017-0749-5

Schuck, R. K., Tagavi, D. M., Baiden, K. M. P., Dwyer, P., Williams, Z. J., Osuna, A., Ferguson, E. F., Jimenez Muñoz, M., Poyser, S. K., Johnson, J. F., & Vernon, T. W. (2022). Neurodiversity and autism intervention: Reconciling perspectives through a naturalistic developmental behavioral intervention framework. *Journal of Autism and Developmental Disorders, 52(*10), 4625–4645. https://doi.org/10.1007/s10803-021-05316-x

Schuhmann, E. M., Foote, R. C., Eyberg, S. M., Boggs, S. R., & Algina, J. (1998). Efficacy of parent-child interaction therapy: Interim report of a randomized trial with short-term maintenance. *Journal of Clinical Child Psychology*, *27*(1), 34-45, https://doi.org/10.1207/s15374424jccp2701_4

Schoorl, J., van Rijn, S., de Wied, M., Van Goozen, S., & Swaab, H. (2018). Boys with oppositional defiant disorder/conduct disorder show impaired adaptation during stress: An executive functioning study. *Child Psychiatry & Human Development*, *49*(2), 298-307. https://doi.org/10.1007/s10578-017-0749-5

Scott, S. (2001). Deciding whether interventions for antisocial behaviour work: Principles of outcome assessment, and practice in a multicentre trial. *European Child & Adolescent Psychiatry*, *10*(1), S59-S70. http://dx.doi.org/10.1007/s007870170007.

*Scott, S. (2005). Do parenting programmes for severe child antisocial behaviour work over the longer term, and for whom? One year follow-up of a multi-centre controlled trial. *Behavioural and Cognitive Psychotherapy, 33*(4), 403-421, https://doi.org/10.1017/S135246580500233X

Scott, S. (2012). Conduct disorders. In Rey, J. M. (Ed.), *IACAPAP e-Textbook of Child and Adolescent Mental Health*. Geneva: International Association for Child and Adolescent Psychiatry and Allied Professions.

Scott, S., & Dadds, M. R. (2009). Practitioner Review: When parent training doesn't work: Theory-driven clinical strategies. *Journal of Child Psychology and Psychiatry*, *50*(12), 1441-1450. https://doi.org/10.1111/j.1469-7610.2009.02161.x

Scott, S., Spender, Q., Doolan, M., Jacobs, B. and Aspland, H. (2001). Multicentre controlled trial of parenting groups for child antisocial behaviour in clinical practice. *British Medical Journal, 323(*7306), 194–197, https://doi.org/10.1136/bmj.323.7306.194

*Seabra-Santos, M. J., Gaspar, M. F., Azevedo, A. F., Homem, T. C., Guerra, J., Martins, V., . . . Moura-Ramos, M. (2016). Incredible Years parent training: What changes, for whom, how, for how long? *Journal of Applied Developmental Psychology, 44*, 93-104, https://doi.org/10.1016/j.appdev.2016.04.004

Shaffer, D., Fisher, P., Lucas, C. P., Dulcan, M. K., & Schwab-Stone, M. E. (2000). NIMH diagnostic interview schedule for children version IV (NIMH DISC-IV): Description, differences from previous versions, and reliability of some common diagnoses. *Journal of the American Academy of Child & Adolescent Psychiatry, 39*(1), 28-38, https://doi.org/10.1097/00004583-200001000-00014

Shaw, D. S., Dishion, T. J., Supplee, L., Gardner, F., & Arnds, K. (2006). Randomized trial of a family-centered approach to the prevention of early conduct problems: 2-year effects of the family check-up in early childhood. *Journal of Consulting & Clinical Psychology, 74*(1), 1-9, https://doi.org/10.1037/0022-006X.74.1.1

Shelleby, E. C., & Shaw, D. S. (2014). Outcomes of parenting interventions for child conduct problems: A review of differential effectiveness. *Child Psychiatry & Human Development, 45*(5), 628-645, https://doi.org/10.1007/s10578-013-0431-5

Silverman, W. K., & Albano, A. M. (1996). *Anxiety disorders interview schedule for DSM-IV: Child version*. New York, NY: Oxford University Press Inc.

Stanger, C., Dumenci, L., Kamon, J., & Burstein, M. (2004). Parenting and children's externalizing problems in substance-abusing families. *Journal of Clinical Child and Adolescent Psychology*, *33*(3), 590-600. https://doi.org/10.1207/s15374424jccp3303_16

Stepp, S. D., Burke, J. D., Hipwell, A. E., & Loeber, R. (2012). Trajectories of attention deficit hyperactivity disorder and oppositional defiant disorder symptoms as

precursors of borderline personality disorder symptoms in adolescent girls. *Journal of Abnormal Child Psychology*, *40*, 7-20. https://doi.org/10.1007/s10802-011-9530-6

Snarr, J. D., Smith Slep, A. M., & Grande, V. P. (2009). Validation of a new self-report measure of parental attributions. *Psychological Assessment, 21*(3), 390-401. http://dx.doi.org/10.1037/a0016331

Snyder, J. J., & Patterson, G. R. (1995). Individual differences in social aggression: A test of a reinforcement model of socialization in the natural environment. *Behavior Therapy, 26,* 371–391. https://doi.org/10.1016/S0005-7894(05)80111-X

*Stattin, H., Enebrink, P., Ozdemir, M., & Giannotta, F. (2015). A national evaluation of parenting programs in Sweden: The short-term effects using an RCT effectiveness design. *Journal of Consulting & Clinical Psychology, 83*(6), 1069-1084, https://doi.org/10.1037/a0039328

Steketee, G., & Chambless, D. L. (1992). Methodological issues in prediction of treatment outcome. *Clinical Psychology Review, 12*(4), 387-400, https://doi.org/10.1016/0272-7358(92)90123-P

Stoltz, S., Deković, M., van Londen, M., Orobio de Castro, B., & Prinzie, P. (2013). What works for whom, how and under what circumstances? Testing moderated mediation of intervention effects on externalizing behavior in children. *Social Development*, *22*(2), 406-425. https://doi.org/10.1111/sode.12017

Stringaris, A., Cohen, P., Pine, D. S., & Leibenluft, E. (2009). Adult outcomes of youth irritability: a 20-year prospective community-based study. *American Journal of Psychiatry*, *166*(9), 1048-1054. https://doi.org/10.1176/appi.ajp.2009.08121849

Stringaris, A., & Goodman, R. (2009). Longitudinal outcome of youth oppositionality: Irritable, headstrong, and hurtful behaviors have distinctive predictions. *Journal of the*

American Academy of Child and Adolescent Psychiatry, *48*(4), 404–412. doi:10.1097/CHI.0b013e3181984f30

Stringaris, A., Lewis, G., & Maughan, B. (2014). Developmental pathways from childhood conduct problems to early adult depression: findings from the ALSPAC cohort. *The British Journal of Psychiatry, 205*(1), 17-23, https://doi.org/10.1192/bjp.bp.113.134221

Taie, M. (2014). Skill acquisition theory and its important concepts in SLA. *Theory and practice in language studies*, *4*(9), 1971-1976. ttps://doi.org/10.4304/tpls.4.9.1971-1976

Tanner-Smith, E. E., Wilson, S. J., & Lipsey, M. W. (2013). Risk factors and crime. *The Oxford handbook of criminological theory*, 89-111, https://doi.org/10.1093/oxfordhb/9780199747238.013.0005

Taylor, E., Chadwick, O., Heptinstall, E. and Danckaerts, M. (1996). Hyperactivity and conduct problems as risk factors for adolescent development. *Journal of the American Academy of Child and Adolescent Psychiatry, 35*, 1213–1226. https://doi.org/10.1097/00004583-199609000-00019

Tein, J. Y., Sandler, I. N., MacKinnon, D. P., & Wolchik, S. A. (2004). How did it work? Who did it work for? Mediation in the context of a moderated prevention effect for children of divorce. *Journal of Consulting and Clinical Psychology*, *72*(4), 617, https://doi.org/10.1037/0022-006X.72.4.617

Tseng, W.L., Kawabata, Y., & Gau, S. S.-F. (2011). Social adjustment among Taiwanese children with symptoms of ADHD, ODD, and ADHD comorbid with ODD. *Child Psychiatry and Human Development*, *42*(2), 134-51. https://doi.org/10.1007/s10578-010-0204-3

Tucker, S., Gross, D., Fogg, L., Delaney, K., & Lapporte, R. (1998). The long-term efficacy of a behavioral parent training intervention for families with 2-year-olds. *Research in Nursing & Health, 21*(3), 199-210, https://doi.org/10.1002/(sici)1098-240x(199806)21:3<199::aid-nur3>3.0.co;2-c

Tully, L. A., Piotrowska, P. J., Collins, D. A. J., Mairet, K. S., Black, N., Kimonis, E. R., Hawes, D. J., Moul, C., Lenroot, R. K., Frick, P. J., Anderson, V., & Dadds, M. (2017). Optimising child outcomes from parenting interventions: fathers' experiences, preferences and barriers to participation. *BMC Public Health*, *17*(1), 550, https://doi.org/10.1186/s12889-017-4426-1

van Aar, J., Leijten, P., de Castro, B. O., Weeland, J., Matthys, W., Chhangur, R., & Overbeek, G. (2019). Families who benefit and families who do not: Integrating person-and variable-centered analyses of parenting intervention responses. *Journal of the American Academy of Child & Adolescent Psychiatry*, *58*(10), 993-1003. DOI: https://doi.org/10.1016/j.jaac.2019.02.004

Van Zeijl, J., Mesman, J., Van IJzendoorn, M. H., Bakermans-Kranenburg, M. J., Juffer, F., Stolk, M. N., Koot, H. M., & Alink, L. R. (2006). Attachment-based intervention for enhancing sensitive discipline in mothers of 1- to 3-year-old children at risk for externalizing behavior problems: A randomized controlled trial. *Journal of Consulting and Clinical Psychology, 74*(6), 994-1005, https://doi.org/10.1037/0022-006X.74.6.994

Vrieze, S. I. (2012). Model selection and psychological theory: a discussion of the differences between the Akaike information criterion (AIC) and the Bayesian information criterion (BIC). *Psychological methods*, *17*(2), 228. doi: 10.1037/a0027127

Wade, M., & Andrade, B. F. (2015). Validation of a measure of parental readiness for treatment in a clinical sample of children with disruptive behavior. *Journal of Psychopathology and Behavioral Assessment*, *37*(2), 184–195. https://doi.org/10.1007/s10862-014- 9458-6

Webster-Stratton, C. (1981). Modification of mothers' behaviors and attitudes through videotape modeling group discussion program. *Behavior Therapy, 12*, 634 – 642, https://doi.org/10.1016/S0005- 7894(81)80135–9

Webster-Stratton, C. (1982a). The long-term effects of a videotape modeling parent-training program: Comparison of immediate and one-year follow-up results. *Behavior Therapy, 13*, 702-704, https://doi.org/10.1016/S0005-7894(82)80026-9

Webster-Stratton, C. (1982b). Teaching mothers through videotape modeling to change their children's behavior. *Journal of Pediatric Psychology*, *7*(3), 279-294, https://doi.org/10.1093/jpepsy/7.3.279

Webster-Stratton, C. (1984). Randomized trial of two parent-training programs for families with conduct-disordered children. *Journal of Consulting and Clinical Psychology, 52*(4), 666-678, https://doi.org/10.1037/0022-006x.52.4.666

Webster-Stratton, C. (1990). Long-term follow-up of families with young conduct problem children: From preschool to grade school. *Journal of Clinical Child Psychology, 19*(2), 144-149, https://doi.org/10.1207/s15374424jccp1902_6

Webster-Stratton, C. (1992). Individually administered videotape parent training: "who benefits?". *Cognitive Therapy and Research, 16*(1), 31-52, https://doi.org/10.1007/BF01172955

Webster-Stratton, C. (1994). Advancing videotape parent training: A comparison study. *Journal of Consulting and Clinical Psychology, 62*(3), 583-593, https://doi.org/10.1037/0022-006x.62.3.583

Webster-Stratton, C. (1998). Preventing conduct problems in Head Start children: Strengthening parenting competencies. *Journal of Consulting and Clinical Psychology*, *66*(5), 715, https://doi.org/ 10.1037//0022-006x.66.5.715

Webster-Stratton, C. (2008). *Preschool BASIC parent training program.* Seattle, WA: Incredible Years

Webster-Stratton, C., Gaspar, M. F., & Seabra-Santos, M. J. (2012). Incredible Years® parent, teachers and children's series: Transportability to Portugal of early intervention programs for preventing conduct problems and promoting social and emotional competence. *Psychosocial Intervention, 21*(2), 157-169, https://doi.org/10.5093/in2012a15

Webster-Stratton, C., & Hammond, M. (1997). Treating children with early-onset conduct problems: A comparison of child and parent training interventions. *Journal of Consulting and Clinical Psychology, 65*(1), 93-109, https://doi.org/10.1037/0022-006X.65.1.93

Webster-Stratton, C., Hollinsworth, T., & Kolpacoff, M. (1989). The long-term effectiveness and clinical significance of three cost-effective training programs for families with conduct-problem children. *Journal of Consulting and Clinical Psychology, 57*, 550–553, https://doi.org/10.1207/S15374424JCCP3301_11

Webster-Stratton, C., & Reid, M. J. (2003). The Incredible Years parents, teachers and children training series: a multifaceted treatment approach for young children with conduct problems. In *Evidence-based psychotherapies for children and adolescents*. New York, NY: The Guildford Press.

*Weeland, J., Chhangur, R. R., van der Giessen, D., Matthys, W., de Castro, B. O., & Overbeek, G. (2017). Intervention effectiveness of the Incredible Years: New insights

into sociodemographic and intervention-based moderators. *Behavior Therapy, 48*(1), 1-18, https://doi.org/j.beth.2016.08.002

Weisz, J. R., Chorpita, B. F., Palinkas, L. A., Schoenwald, S. K., Miranda, J., Bearman, S. K., . . . Gibbons, R. D. (2012). Testing standard and modular designs for psychotherapy treating depression, anxiety, and conduct problems in youth: A randomized effectiveness trial. *Archives of General Psychiatry, 69*(3), 274-282, https://doi.org/10.1001/archgenpsychiatry.2011.147

Weisz, J. R., Sandler, I. N., Durlak, J. A., & Anton, B. S. (2005). Promoting and protecting youth mental health through evidence-based prevention and treatment. *American Psychologist*, *60*(6), 628. https://doi.org/10.1037/0003-066X.60.6.628

*Werba, B. E., Eyberg, S. M., Boggs, S. R., & Algina, J. (2006). Predicting outcome in parent-child interaction therapy: Success and attrition. *Behavior Modification*, 30(5), 618-646, https://doi.org/10.1177/0145445504272977

Whelan, Y. M., Stringaris, A., Maughan, B., & Barker, E. D. (2013). Developmental continuity of oppositional defiant disorder subdimensions at ages 8, 10, and 13 years and their distinct psychiatric outcomes at age 16 years. *Journal of the American Academy of Child & Adolescent Psychiatry*, *52*(9), 961-969. https://doi.org/10.1016/j.jaac.2013.06.013

Whittingham, K., Sofronoff, K., Sheffield, J., & Sanders, M. R. (2009). Stepping Stones Triple P: An RCT of a parenting program with parents of a child diagnosed with an autism spectrum disorder. *Journal of Abnormal Child Psychology*, *37*, 469-480. https://doi.org/10.1007/s10802-008-9285-x

Willcutt, E. G., Betjemann, R. S., Wadsworth, S. J., Samuelsson, S., Corley, R., Defries, J. C., Byrne, B., Pennington, B. F., & Olson, R. K. (2007). Preschool twin study of the relation between attention-deficit/ hyperactivity disorder and prereading

skills. *Reading & Writing*, *20*(1–2), 103–125. https://doi.org/10.1007/s11145-006-9020-3

Willcutt, E. G., Nigg, J. T., Pennington, B. F., Solanto, M. V., Rohde, L. A., Tannock, R., Loo, S.K., Carlson, C.L., McBurnett, K., & Lahey, B.B. (2012). Validity of DSM-IV attention deficit/hyperactivity disorder symptom dimensions and subtypes. *Journal of Abnormal Psychology, 121*(4), 991-1010. https://doi.org/10.1037/a0027347

Wilson, D. B., & Lipsey, M. W. (2001). The role of method in treatment effectiveness research: Evidence from meta-analysis. *Psychological Methods*, *6*(4), 413, https://doi.org/10.1037//1082-989X.6.4.413

Wyatt Kaminski, J., Valle, L. A., Filene, J. H., & Boyle, C. L. (2008). A meta-analytic review of components associated with parent training program effectiveness. *Journal of Abnormal Child Psychology*, *36*, 567-589. https://doi.org/10.1007/s10802-007-9201-9

*Zachary, C., Jones, D. J., McKee, L. G., Baucom, D. H., & Forehand, R. L. (2017). The role of emotion regulation and socialization in behavioral parent training: A proof-of-concept study. *Behavior Modification*, 0145445517735492, https://doi.org/10.1177/0145445517735492

Zhou, Q., Sandler, I. N., Millsap, R. E., Wolchik, S. A., & Dawson-McClure, S. R. (2008). Mother-child relationship quality and effective discipline as mediators of the 6-year effects of the New Beginnings Program for Children from divorced families. *Journal of Consulting and Clinical Psychology*, *76*(4), 579–594. https://doi.org/10.1037/0022-006X.76.4.579

* = study included in analysis in Study 1, Chapter 3.