

A SYSTEMATIC REVIEW IDENTIFYING AND CHARACTERIZING
PSYCHOTHERAPEUTIC INTERVENTIONS THAT IMPROVE
PARENTAL PSYCHOPATHOLOGY, CHILD PSYCHOPATHOLOGY
AND PARENTING BEHAVIOR

by

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THESIS ABSTRACT

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The high rates of psychopathology in parents and children means that many families are living with a member with psychopathology. The availability of psychotherapeutic interventions that can improve outcomes in parent and child psychopathology as well as parenting quality, a mechanism that explains the transmission of psychopathology in families, has not been reviewed to date. Therefore, the goal of this systematic review is to identify and characterize evidence-based psychotherapeutic interventions which report improvements in all three domains. A total of 49 unique interventions were eligible for review of which twenty-one reported improvements in all three domains. Interventions which targeted all three domains were more effective in improving all three compared to interventions which targeted one or two domains. Importantly, few existing interventions have been tested with families in which a parent, or both parent and child met clinical thresholds. The development of more treatments for these populations is warranted.

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TABLE OF CONTENTS

Chapter	Page
I. INTRODUCTION	1
Empirical Support for a Transactional Relationship Between Parental Psychopathology, Parenting Behavior and Child Psychopathology.....	3
Treatment and the Transactional Model	6
Adult Psychotherapy	7
Parent Training Programs	9
Child & Adolescent-Focused Therapies	10
Integrated Approaches	11
The Current Study.....	13
II. METHOD.....	14
Inclusion and Exclusion Criteria.....	14
Literature Search.....	15
Screening.....	16
Non-independence Issues.....	16
Single Intervention Reported Across Multiple Papers.....	16
Multiple Interventions Tested in a Single Paper.....	16
Interventions with Multiple Independent Trials and Papers.....	16
Data Extraction.....	17
III. RESULTS	20
Aim 1a. Identify Unique Interventions that Assessed all 3 Domains	20
Aim 1b. Categorize Interventions by Domains Targeted and Domains Improved.....	20

Chapter	Page
Categorize Interventions by Domain Improved.....	20
Describe How Targeted Domains Correspond with Percentage of Interventions that Report Improvements in 0, 1, 2 or 3 Domains	21
Identify Interventions that Report Improvements in all 3 Domains	22
Aim 2a. Characterize Participants.....	22
Sample Size, Gender and Age Groups.....	22
Parent Diagnostic Profiles.....	23
Child Diagnostic Profiles	23
Parent-Child Dyad Diagnostic Profiles.....	24
Additional Mental Health Risk Factors	24
Aim 2b. Characterize Interventions	25
Domains Targeted.....	25
IV. DISCUSSION.....	26
Strengths and Limitations	30
Conclusion and Future Directions	33
REFERENCES CITED.....	36

LIST OF FIGURES

Figure	Page
1. PRISMA flow diagram	47

LIST OF TABLES

Table	Page
1. Interventions' targeted domains and reported improvements, listed by number of targeted domains.....	48
2. Percentages of interventions which targeted 1, 2 or 3 domains and reported improvements in none, 1, 2 or 3 of these domains	52
3. Characteristics of study participants and interventions reporting improvement in all 3 domains.....	53

CHAPTER I

INTRODUCTION

The various links by which parent psychopathology, poorer parenting quality, and psychopathology in children are related poses a serious public health problem as the rates of psychopathology in parents and children is high. In the US, 59.7% of men with psychopathology are fathers and 67.2% of women with psychopathology are mothers (Nicholson, Biebel, Katz-Leavy & Williams, 2002). Further, 13-20% of children in the US are reported to experience psychopathology in a given year (O'Connell et al., 2009). Taken together, these estimates suggest that a large number of families are living with a parent, child, or both who have psychopathology. While there is considerable variability in whether and how parental mental disorders affect parenting quality (Zalewski et al., 2017) and most of the research on those associations concerns maternal depression (Bernard et al., 2018; Lovejoy et al., 2000; see Wilson & Durbin, 2010 for an exceptional meta-analysis on paternal depression and parenting), on average, psychopathology in parents is shown to negatively impact the quality of parenting, a key environmental mechanism in the transmission of psychopathology to children (Goodman & Gotlib, 1999). Additionally, child psychopathology may both evoke poorer parenting (Burke et al., 2008) and increase parental stress, which is associated with the development of psychopathology in parents (Barroso et al., 2018). Thus, for many families, parental psychopathology, child psychopathology and poorer parenting quality may be maintained or exacerbated based on well-established links between these three domains.

Basic science studies examining the relationship between these domains present an increasingly complex picture. For example, on average, psychopathology in parents is

associated with poorer parenting quality and in turn, poorer parenting quality is associated with higher rates of psychopathology in children (Berg-Nielsen et al., 2002; Goodman & Gotlib, 1999). However, this strongly supported mechanistic and directional pathway does not fully capture potential transactional influences that may also be unfolding within families. Emerging studies are finding that parenting a child with psychopathology is challenging and undermines parenting quality (Fletcher et al., 2016) and additionally, a few studies have found that child psychopathology is associated with subsequent increases in maternal depression (Gross et al., 2008; Sellers et al., 2016). While there have been significant advances in understanding how parental psychopathology intersects with the postpartum period and infant outcomes (Netsi et al., 2018), the integration of all three of these domains beyond the postpartum period is considerably less researched.

Beyond basic science questions, there is a need to understand the extent to which existing psychotherapeutic interventions are able to improve outcomes across all three domains. Psychological treatment is often structured around targeting the etiology or maintaining factors contributing to a client's presenting symptoms, however psychopathology in a family member may be overlooked as one of these maintaining factors and if left untreated, stands to undermine treatment progress. Evidence-based parent management training programs serve as an example of this, as they have been shown to be considerably less effective for improving parenting and children's outcomes when the parent has psychopathology (Maliken & Katz, 2013). While there is a growing interest in developing and testing integrated or two-generation treatments which target both parent and child symptoms, the extent to which these interventions assess treatment

driven changes in all three domains is currently unknown, as is the degree to which they are able to improve all three domains. Further, as integrated interventions are often in their early stages of development, the field may benefit from synthesizing the current literature base on interventions which have already been rigorously tested.

The primary purpose of this systematic review is to identify psychotherapeutic interventions that have assessed pre- and post-treatment changes in parental psychopathology, child psychopathology, and parenting behavior, and then to characterize the interventions that report improvement in all three domains, in order to inform future treatment development efforts and identify gaps. In this introduction, we first broadly overview evidence of the known links between parental psychopathology, poorer parenting, and child psychopathology. These basic science findings help make the case for a clinical perspective that stresses the importance of improving multiple domains in tandem. We then turn to introduce key intervention studies aimed at improving any of the three domains of adult psychopathology, parenting behavior or child psychopathology, and which have also assessed outcomes in the other domains not explicitly targeted in treatment. These studies set the stage for a newer wave of integrated treatments that target more than one domain and which will be reviewed last.

Empirical Support for a Transactional Relationship Between Parental Psychopathology, Parenting Behavior and Child Psychopathology

Of the various directions of influences, the majority of research has focused on the unidirectional association of psychopathology in parents on parenting quality and child psychopathology, of which theory, use of large datasets, and findings from meta and systematic reviews are used to support that there is a robust association. In a large,

worldwide study, parental psychopathology was found to be a significant risk factor for the development of children's mental disorders, with an estimated 12% of child mental disorders attributable to parental psychopathology (McLaughlin et al., 2012). The leading theory put forth on the transmission of effects of maternal depression on children (Goodman & Gotlib, 1999) is generally regarded as applicable across various forms of psychopathology when considering the various pathways explaining the transmission of psychopathology from parents to children. Four pathways or mechanisms are identified, all of which interact with each other to reduce or exacerbate the risk of children developing a mental disorder: two biological risk factors including genetic heritability and prenatal maternal mental health's influence on fetal growth and development; and two environmental risk factors, the first of which is exposure to stressors like family adversity, low socioeconomic status, family conflict and marital discord (Wadsworth & Achenbach, 2005; McLaughlin et al., 2011; Daryanai et al., 2016). The second environmental risk factor, and one of the most studied, is the quality of parenting behavior.

As most mental disorders are characterized by specific impairments in interpersonal and affective domains, an important and widely studied area is examining how various mental disorders relate to parenting, which is an inherently interpersonal and emotional endeavor. Specifically, several meta-analyses and qualitative reviews have documented associations between specific parental mental disorders and negative parenting behaviors such as parental control, harsh and lax parenting, and lower parental sensitivity (van der Bruggen et al., 2008; Lovejoy et al., 2000; Park et al., 2017; Eyden et al., 2016). In turn, there is ample research on the various ways in which maladaptive

parenting is associated with the development of child mental health problems. For instance, there is evidence that parental rejection is associated with child depression, while parental control is associated with child anxiety (Rapee et al., 1997; van der Bruggen et al., 2008). Mediation studies provide even stronger evidence of the pathway between parental psychopathology, parenting behavior and child mental health outcomes. For instance, parental nurturance, rejection and monitoring have been found to longitudinally mediate the association between parental depressive symptoms and child internalizing and externalizing problems (Elgar et al., 2007). Maternal over-reactive as well as inconsistent discipline have been found to mediate the relationship between maternal ADHD and children's ADHD symptoms (Breux et al., 2017; Moroney et al., 2017), and observed maternal hostility mediated the association between maternal BPD and children's number of psychiatric disorders, externalizing and internalizing behaviors (Kluczniok et al., 2018).

Children and adolescents are not passive members of the parent-child dyad, and recognition of the influence that children's psychopathology has on parents' psychopathology is increasingly being studied. In one study, cross lagged associations were found significant between children's aggression and antisocial behavior with subsequent maternal depression (Gross et al., 2008) and longitudinal findings have shown that daughters' depressive symptoms predict an increase in maternal depression and recurrence of maternal major depressive episodes (Sellers et al., 2016). Increases in parental stress may partially explain this association between children's psychopathology and parental psychopathology, as parenting stress has been found to be strongly related to children's externalizing problems and more moderately associated with children's

internalizing problems (Barroso et al., 2018), as well as associated with parental mental health symptoms (Anastopoulos et al., 1992; van der Oord et al., 2006). As is perhaps indicated by these increased levels of parental stress, parenting a child with psychopathology can be more challenging, and some studies provide evidence that child psychopathology evokes poorer parenting behaviors. Anxious children have been found to elicit parental overinvolvement (Hudson et al., 2009) and boys' externalizing behavior evokes greater use of punitive discipline, greater inconsistent discipline, poorer parental monitoring and more parental yielding to coercion (Fletcher et al., 2016; Fite et al., 2006).

In sum, a robust evidence base links parental psychopathology to poorer parenting behavior and, in turn, to child psychopathology. Evidence also exists to suggest linkages in the opposite direction. This aligns well with theories which propose a transactional model of development, in which outcomes are driven by reciprocal interactions between children and their environment (e.g. between child psychopathology, parental psychopathology and/or parenting behaviors) (Sameroff & Mackenzie, 2003).

Treatment and the Transactional Model

To what extent has research on psychotherapeutic interventions taken these transactional relationships into account, both when targeting each of these three domains and when assessing the potential downstream effects targeting one domain may have on the others? The following section provides an overview of how adult psychotherapy, parent training programs and child-focused interventions have each related to this question, before turning to examine more integrated approaches.

Adult Psychotherapy. Despite the large percentage of adults with psychopathology who are parents, the field of adult individual psychotherapy has largely overlooked the potential importance of the parental role – both as a mechanism through which to influence children’s outcomes and as a causal factor for the development or exacerbation of adult psychological symptoms (Zalewski et al., 2017). While it is reasonable to first assess if a given intervention improves the targeted individual’s symptoms before examining downstream effects on parenting behavior and children’s outcomes, the field’s oversight of the parental role is also due to a division between adult and child track clinical training which de-emphasizes potential mutual effects family members have on one another, as well as the fact that the evidence for the effects of parenthood and child psychopathology on adult psychopathology is a more recent development.

Interventions which have made this conceptual leap are mostly focused on treatment of maternal depression during the perinatal period and its influence on infant mental health and development (for reviews, see Stein et al., 2014 and Tsivos et al., 2015). Similar efforts with parents of older children have been more limited. One small meta-analysis (N=9) by Cuijpers and colleagues (2015) evaluated the effects of RCT tested treatments of maternal depression on children’s outcomes and included two studies aimed at mothers of children over one year of age (Swartz et al., 2008; Verduyn et al., 2003). Overall, including interventions for mothers of infants, the researchers found evidence for improvement of child mental health measures, with a medium effect size of .40 (Cuijpers et al., 2015). The Swartz et al. (2008) study, which focused on mothers of school age children between 6-18 years old, included treatment components targeted at the children in addition to treatment for the mothers’ depression. The effect size of this

intervention on children's depressive symptoms and CBCL scores was large, at .81. The Verduyn et al. (2003) study targeted depressed mothers of children ages 2.5-4 years old, and had a much smaller effect size of .08 on CBCL and ECBI scores.

A systematic review of 18 intervention studies for parents with severe mental illness (which included some more integrated two-generation treatments) reported overall shorter-term improvement of symptoms in parents and children over 1 year of age (Schrank et al., 2015). Children's outcomes were not limited to mental health, and only four of the studies included assessments of children's psychiatric or psychological outcomes (Cohler & Grunebaum, 1982; Crane & Totten, 2003; Hanrahan et al., 2005; Lucas et al., 1984). Within this small set of studies, there were important additional limitations. Perhaps most notably, only the Cohler & Grunebaum (1982) study was a randomized controlled trial and none of them assessed longer-term outcomes at follow-up – making it difficult to evaluate the long-term downstream effects on offspring of severely mentally ill parents who have undergone rigorously tested evidence-based psychotherapy. An additional shortcoming of these reviews is that they do not emphasize the potential mediating treatment effects of parenting behavior. Neither of the two aforementioned studies from the Cuijpers et al. (2015) review included measures of parenting behavior. An additional intervention covered in that review (i.e. Sheeber et al., 2012) which targeted depressed mothers of young children, did assess parenting behavior, but neglected to evaluate children's mental health outcomes. Thus, despite recent efforts to review the potential downstream effects of adult psychotherapy on children's outcomes, significant gaps exist due to a small number of less rigorous studies

which have not taken into account the potential mechanistic pathway leading from parental psychopathology to parenting and children's psychopathology.

Parent Training Programs. Nearly two decades ago, Kazdin & Wassell (2000) pointed to the fact that child and adolescent psychotherapy research was largely limiting its assessment to child symptoms, and proposed a broader view highlighting the potential effects parent training might have on parent symptoms. Indeed, the parent training literature has paid more attention than adult psychotherapy research to the potential secondary effects of treatment on other domains. Findings have been mixed with regards to the effects of parent training on parental psychopathology. One meta-analysis found that group-based parenting programs had beneficial short-term effects on parental depression and anxiety symptoms (Barlow et al., 2012). A review of the effects of behavioral parent training (BPT) on parents' mental health also provides some evidence of improvement in parental depressive symptoms (Gonzalez et al., 2016), specifically pointing to a non-randomized trial by Timmer et al. (2011) of 132 clinically depressive and non-depressive mothers and their children undergoing Parent-Child Interaction Therapy (PCIT) aimed at reducing child behavior problems, which found that treatment had the additional benefit of improving mothers' depressive symptoms. More recently, a meta-analysis which pooled individual participant data from 14 randomized controlled trials of the Incredible Years parent training program found that treatment led to improvements in parenting quality and child behavior problems, but not in parental depression (Leijten et al., 2018). This more robust finding is in contrast to a number of individual Incredible Years RCTs which did report improvements in parent symptoms. Importantly, baseline parental depressive levels in Leijten et al's (2018) meta-analysis

were subclinical. Indeed, despite parent training studies' acknowledgement of potential treatment effects on parent symptoms, one notable limitation of this literature is that studies often may not include clinically disordered parents. Further, parental psychopathology has been found to be a consistent moderator of parent training effects on child outcomes, such that parent training alone is less effective for families in which a parent has clinical level symptoms (Maliken & Katz, 2013; Reyno & McGrath, 2006). Parent training's mixed results with regards to parent symptoms and to child symptoms in the context of parental psychopathology raise questions about its effectiveness for families dealing with dysfunction in multiple domains.

Child & Adolescent-Focused Therapies. While parent training is generally aimed at improving child symptoms (particularly externalizing disorders) through the development of more adaptive parenting behaviors, there is room to distinguish such programs from child and adolescent-focused therapies, in which children are the direct recipients of treatment. To our knowledge, no review has examined the effects of such interventions on parent symptoms. A review by Hoagwood et al. (2012) on changes in outcome domains of child mental health research suggests that outcomes related to parent symptoms have drawn increasing attention from child intervention researchers over the past two decades. However, despite this increase, still only 10.5% (n=21) of the RCTs reviewed included parental psychopathology as an outcome. Most of these cases represented parent training interventions in which children were not the direct recipients of treatment. Additionally, Hoagwood et al's classification of parent symptoms was not limited to psychopathology and included measures of parenting stress (e.g. PSI). Examples of child-focused studies which did examine parental psychopathology

outcomes involved interventions for child anxiety (Cobham et al., 1998; Keeton et al., 2013), PTSD (Deblinger et al., 2006), and OCD (Barrett et al., 2004). Cobham et al. (1998) and Keeton et al. (2013) found spillover effects in the form of reductions in parental symptoms for parents of children receiving treatment for anxiety. Deblinger et al. (2006) found no group x time effect of TF-CBT on parental depression. Barrett et al. (2005) found no group x time effect of CBT for children and adolescents on parents' levels of anxiety or depression. Overall, child and adolescent-focused interventions have not examined parental psychopathology outcomes to the same extent as the parent training literature, making it more difficult to determine potential effects.

Integrated Approaches. As the field has progressed, more integrated approaches have been developed which either target multiple domains (i.e. parent symptoms, parenting behavior, child symptoms) or target a single domain but still take other domains into account (for instance, interventions designed to prevent child psychopathology in families in which a parent has psychopathology). A prime example of this latter approach are Beardslee et al's (1997; 2003; 2007) clinician-facilitated and lecture based preventive interventions for the offspring of depressed parents. The interventions focus on providing psychoeducation on the parent's mood disorder and the risk and resilience factors affecting child outcomes and the clinician-facilitated version involves both individual and conjoint sessions for parents and children. Although Beardslee and colleagues clearly take into account the associations between parental psychopathology and child psychopathology, their assessment of parenting was through a semi-structured interview not designed to evaluate established parenting behaviors such as warmth, behavioral and psychological control. Thus, their studies can only provide partial support for some of the

transactional processes between the three domains. Other preventive interventions which take both parental and child psychopathology into account have been developed, with more work having been devoted to targeting children and adolescents of depressed parents (for a review see Loechner et al., 2018) than to the offspring of parents with other diagnostic profiles.

The past decade or so has seen the emerging development of integrated interventions which target multiple domains (i.e. parent symptoms, child symptoms and parenting behavior). Examples include, but are not limited to, interventions for substance abusing mothers and their children (for reviews see Niccols et al., 2012), a CBT + parent training intervention for depressed mothers of children with ADHD (Chronis-Tuscano et al., 2013), a multimodal group psychotherapy treatment (based on Dialectical Behavioral Therapy) for mothers with ADHD combined with parent training for their children with ADHD (Jans et al., 2015), and an attachment based Child-Parent Psychotherapy intervention for children exposed to marital violence (Lieberman et al., 2006). In each of these cases, the interventions target more than a single domain, thus accounting for some potential transactional influences. However, not all integrated interventions fully assess all three of the domains and the overall degree to which interventions targeting more than one domain are able to achieve improvement in multiple domains is unknown. Further, many integrated interventions are still in the earlier stages of development and the field could benefit from synthesizing findings related to parental psychopathology, child psychopathology and parenting behavior from existing, rigorously tested evidence-based psychotherapies.

The Current Study

To that end, we conducted a systematic review of RCT's of psychotherapeutic interventions which reported pre and post-intervention outcomes for parental psychopathology, child psychopathology and parenting behavior. The review's specific aims were to: 1a) Identify interventions which have assessed all three domains in order to 1b) Categorize them by the number and type of domains improved, and describe how the number of *targeted* domains corresponds with improvements in one, two or three domains; and then focus on interventions which report improvement in all three domains in order to: 2a) characterize the participants with regards to their gender and age groups, as well as their diagnostic profiles and additional mental health risk factors, in an effort to examine whether or not the current evidence-based treatments are able to improve all 3 domains in families most at risk for deleterious transactional effects; and 2b) characterize the interventions themselves by examining the number and type of domains targeted in those interventions which have reported improvement in parental psychopathology, child psychopathology *and* parenting behavior, in order to better inform treatment developers on more or less advantageous approaches towards domain integration. Combined, the review's aims represent a step toward inventorying treatments which have accounted for potential transactional effects, and providing some indication of which of them work and for whom.

CHAPTER II

METHOD

Inclusion and Exclusion Criteria

The PICOS approach (Moher et al., 2009) informed the inclusion and exclusion criteria in defining the participants, interventions, comparison group, outcomes and study design of included papers. To be included, studies had to employ a randomized controlled trial (RCT) that examined a psychotherapeutic intervention in which all three of the following were assessed pre and post treatment: parental psychopathology symptoms, child psychopathology symptoms and parenting behavior. To qualify as having measured parental psychopathology, studies had to include a measure of a DSM identified mental disorder at either the diagnostic or symptom level. To qualify as having measured parenting, studies had to include a measure of parenting that assessed how the parent responded and behaved toward their child. Excluded on this basis were studies which measured only parenting-related constructs such as parenting stress, parental self-efficacy, family cohesion, or parent-child interactions which were measured at the dyadic (but not the parent-only) level. To qualify as having measured child psychopathology, studies had to include a measure that assessed a DSM defined mental disorder in children (diagnosis or symptom level) or for very young children, that measured insecure or disorganized attachment. Insecure attachment patterns are commonly regarded as emerging mental health problems in very young children. Studies that included this as a measure of child psychopathology also had to include an independent measure of parenting. Excluded were studies that measured problems in children but that are not mental disorders such as physical illness or neurodevelopmental disorders (other than

ADHD). Inclusion criteria was limited to children who were between 1 and 18 years old, thus excluding studies focused on the postpartum period (children less than 1 year old). Finally, studies were required to be written in English.

Literature Search

The study search was conducted according to PRISMA guidelines (Moher et al., 2009) and titles and abstracts were sourced from the PsycNET and PubMed databases in February, 2019. In accordance with recommended practices for conducting literature searches (Sampson et al., 2009), the search strategy was peer-reviewed by a university librarian and used a combination of either Index or MeSH terms for psychotherapy (treatment OR therapy OR intervention OR psychotherapy) and mental health (mental health OR mental disorder OR mental illness) and parent related terms (parent* OR mother OR father OR caregiver OR offspring). We also used a methodology filter to specify study designs (clinical trial OR empirical study OR follow up study OR longitudinal study OR literature review OR systematic review OR meta-analysis OR quantitative study OR treatment outcome). Additional articles were retrieved via backwards search following review of the reference sections of selected studies, reviews and meta-analyses. The online archives of the Society for Research on Child Development (years 2015 and 2017) and the Association for Behavioral and Cognitive Therapies (years 2015, 2016 and 2017) were also examined for relevant conference papers. Given that multiple papers from a single RCT may be published without individually reporting on all three of the required outcomes, additional backwards and forwards search efforts were made to retrieve all relevant papers from each unique RCT in order to extract the necessary data.

Screening

Screening and data extraction were completed using DistillerSR (Evidence Partners, Ottawa, Canada) and the eligibility assessment was conducted by the first author. Figure 1 presents the PRISMA flow diagram of the search and screening process. The initial search yielded 6021 studies. An additional 186 records were retrieved from reference sections of reviews, meta-analyses and other sources. Screening by title and abstract identified 618 papers as potentially eligible. These papers were then read to determine if all eligibility criteria were met, resulting in the exclusion of 523 papers.

Non-independence Issues

Single intervention reported across multiple papers. In eleven cases, there were multiple papers from a single RCT, of which no single paper reported on all three required pre and post outcomes, however, across the papers, data on all three was reported.

Multiple interventions tested in a single paper. In one case (Stattin et al., 2015), the paper included a comparison of four different interventions (Cope, Comet, Connect, and Incredible Years) to a waitlist control and data was thus extracted for each unique intervention reported.

Interventions with multiple independent trials and papers. Many interventions are well studied and have been examined by multiple investigators. As the aim of this paper is to review unique interventions, it was important to select and extract data from an exemplar RCT of each intervention. Ten interventions were tested in more than one RCT which met criteria for this review. These included: Triple P (18 RCTs), Incredible Years (9 RCTs), Multisystemic Therapy (2 RCTs), the New Forest Parenting Program (2 RCTs), Strategies to Enhance Positive Parenting (2 RCTs), the Family Bereavement Program (2

RCTs), Parent Management Training Oregon Model (2 RCTs), Trauma-Focused CBT (2 RCTs), Relational Psychotherapy Mothers' Group (2 RCTs) and a bibliotherapy self-help behavioral parent training program (2 RCTs). For each of these interventions, a single exemplar RCT was selected for data extraction on the basis of children's sample size. In the case of Incredible Years, this was a recent meta-analysis which examined individual participant data from 14 RCTs (Leijten et al., 2018). In total, data from 95 papers, representing 81 unique randomized controlled trials and 49 unique interventions, was extracted for the qualitative review.

Data Extraction

A data extraction form was developed and pilot-tested on selected representative papers, with iterative adjustments made as needed. Two trained coders were responsible for coding questions regarding the characterization of participants. Two co-authors (YE & CGM) completed the other questions deemed to require more advanced knowledge. Reliability coding was conducted on 20 percent of the studies, with percentage agreement ranging from 80% to 100%.

Codes followed the two central aims of the review: 1a) categorize interventions by which of the three domains they reportedly improved by extracting data on: whether or not significant improvement was reported on at least one measure of parent symptoms, child symptoms and parenting quality; 1b) describe how targeted domains correspond with the percentage of interventions that report improvements in zero, one, two or three domains by extracting data on whether or not parent symptoms, child symptoms and/or parenting behavior was an explicit target of intervention. Intervention descriptions were read and examined for report that any of these domains were targeted. For example,

relaxation techniques or cognitive restructuring in an integrated parenting intervention (Chronis-Tuscano et al., 2013) were coded as targeting parent symptoms. Other components of that same intervention such as sessions devoted to increasing routines or the use of Time Out were coded as targeting parenting behavior. In examining Cohen et al.'s (2004) TF-CBT intervention, development of children's trauma narratives was coded as targeting child symptoms. As parenting behavior is often the mechanism of change through which interventions aim to target children's symptoms (especially in the case of children's externalizing disorders), it is important to note the distinction made between targeting parenting behavior and targeting children's symptoms. In cases in which a therapist met with the child, who was the primary recipient of the intervention, interventions were coded as targeting child symptoms. This was also the case if interventions trained parents to act as a coach or therapist to help their child cope with symptoms. Interventions which focused primarily on changing parenting behaviors, and in which parents were the primary recipients of the intervention were coded as targeting parenting behavior. Of course, it was possible for interventions to target multiple domains, and interventions which included components targeting child symptoms as well as components aimed at improving parenting behaviors were coded as targeting both of those domains.

2a) characterize participants by extracting data on: i) whether or not the samples of parents and/or children met clinical-level symptoms at baseline and of which disorders. Clinical cutoff scores were obtained for the Beck Depression Inventory (BDI & BDI II), Beck Anxiety Inventory (BAI), Brief Symptoms Inventory (BSI Global Severity), State-Trait Anxiety Inventory (STAI), Depression, Anxiety, Stress Scale (DASS), CES-D Depression Scale, Iowa Conners Rating Scale, Eyberg Child Behavior

Inventory (ECBI), Strengths and Difficulties Questionnaire (SDQ), the Yale-Brown Obsessive-Compulsive Scale (YBOCS), and the Conners Early Childhood Behavior Scales. Measures for which no clear clinical cutoffs could be determined (e.g. Child Behavior Checklist (CBCL)) were coded as missing data;

and ii) whether or not the study samples reflected additional mental health risk factors such as low socioeconomic status, minority status and single parenthood (defined as not married, single, divorced or widowed); iii) Child age groups to determine the degree to which interventions which report improvements in all three domains are suited to a variety of children's developmental stages and needs. Child age groups were assigned according to the mean age of the children's sample, with age groups divided into four categories: toddlers (ages 1-2), preschool (ages 3-5), school (ages 6-11) and adolescents (ages 12-18). iv) Child and parent gender were also coded. 2b) characterize interventions which improved all three domains by coding for which domains were targeted (parent symptoms, child symptoms and/or parenting behavior).

CHAPTER III

RESULTS

Aim 1a) Identify unique interventions that assessed all 3 domains

The search identified 81 unique randomized controlled trials (RCTs) which met the review criteria and assessed pre and post-treatment changes in three outcomes: parent symptoms, child symptoms and parenting behaviors. Seventy-eight of them were published in peer-reviewed journals and three were dissertations. Studies were mostly conducted in the USA (36%; n=29), in European countries (28%; n=23), or in Australia (23%; n=19), with an additional 10 studies conducted in other parts of the world: four studies were conducted in Canada, one study was conducted in South Africa, one in Brazil, one in Puerto Rico, one in Panama, one in Israel and one in New Zealand. In total, the search identified 49 unique interventions. Table 1 details which of the three domains (i.e. parent symptoms, child symptoms and/or parenting behavior) each of the 49 interventions targeted and improved.

Aim 1b) Categorize Interventions by Domains Targeted and Domains Improved

Categorizing interventions by domain improved. Three interventions showed no improvement in parent symptoms, child symptoms or parenting behavior. Eight interventions improved a single domain with four of those improving child symptoms, three improving parenting behavior and one improving parent symptoms. Seventeen interventions showed improvements in two domains with almost 60% of them (n=10) improving both parenting and child symptoms, approximately 30% (n=5) improving parent and child symptoms and an additional two interventions improving parent

symptoms and parenting. More than 40% of the interventions (n=21) showed improvements in all three domains.

Describe how targeted domains correspond with the percentage of interventions that report improvements in zero, one, two or three domains. Table 2 presents the percentages of interventions which targeted and reported improvements in either 1, 2 or 3 domains. Forty-seven percent of the interventions (n=23) were designed to target a single domain and of these 87% (n=20) targeted parenting behavior. Two interventions targeted child symptoms only and another intervention targeted only the parent's symptoms.

Thirty nine percent of single-target interventions (n=9) reported improvements in two domains, with seven of these interventions reporting improvement in parenting behavior and child symptoms (Hanisch et al., 2010 & 2014; Matos et al., 2009; Morawska & Sanders, 2006; Leijten et al., 2018; Smith, 2013; Sourander et al., 2016; Weinblatt & Omer, 2008) and two reporting improvements in parent and child symptoms (Porzig-Drummond et al., 2014; Stattin et al., 2015). Approximately 43% of single-target interventions (n=10) reported improvement in all three domains: parent symptoms, child symptoms and parenting. Of these, nine were aimed at improving parenting behavior and one intervention targeted child symptoms.

Approximately 35% of the interventions (n=17) targeted two domains, with 71% of those (n=12) targeting parent symptoms and parenting behavior, 23.5% (n=4) targeting child symptoms and parenting behavior and one intervention targeting parent symptoms and child symptoms. Two dual-target interventions reported no improvements in any domain. The other 15 dual-target interventions were equally split such that five interventions reported improvements in one, two and three domains, respectively.

Eighteen percent of the interventions (n=9) targeted all three domains. All of them reported improvement in more than a single domain. One third of them reported improvements in two domains, with one intervention reporting improvements in parent symptoms and parenting (Sandler et al., 2003), one reporting improvements in child symptoms and parenting (Guild, 2017) and another reporting improvements in parent and child symptoms (Creswell et al., 2015). Two thirds of these tri-target interventions (n=6) reported improvements in all three domains (Compas et al., 2009 & 2010; Ginsburg et al., 2015; Havighurst et al., 2010; Saldana, 2015; Silverman et al., 2009; Swenson et al., 2010).

Identify interventions that report improvement in all three domains. In total, 21 interventions reported improvements in parent symptoms, child symptoms and parenting behavior. Table 3 presents some of the main findings characterizing their participants and targeted domains, and the following Aim 2 results provide further details on these interventions.

Aim 2a) Characterize the participants

Sample Size, Gender and Age Groups. Within the 21 studies which showed improvement in all three outcomes, children's sample sizes ranged widely between 31 and 1,610. The average percentage of male children included in the studies was 56.8%, and mothers represented an average of 91.9% of the parent samples. Nineteen studies reported children's mean age. Two interventions focused on toddlers, five on preschool-age children, eight on school-age children, and four on adolescents. A study by Jouriles et al. (2009) did not report children's mean age, but did specify an age range of 4-9 years old – indicating a focus on preschool to school age children.

Parent Diagnostic Profiles. Results for parent diagnostic profiles include data on whether or not baseline mean levels of parent symptoms met a clinically meaningful threshold, as well as what forms of psychopathology were assessed. Clinical thresholds for parental symptoms were able to be determined in approximately 76% of the studies (n=16). Of the studies that reported this, half of these included samples in which parent's symptoms were under a clinical threshold. In the eight studies in which parent symptoms met the clinical threshold, four studies had assessed depression symptoms (Cohen et al., 2004; Compas et al., 2009 & 2010; Chronis-Tuscano et al., 2013; Saldana, 2015) two assessed anxiety symptoms (Ginsburg et al., 2015; Gorenstein et al., 2015) and one assessed externalizing symptoms endorsed by mothers who also had a history of substance abuse (Stanger et al., 2011).

Child Diagnostic Profiles. Results for child diagnostic profiles include data on whether or not baseline mean levels of children's symptoms met a clinically meaningful threshold, as well as what forms of psychopathology were assessed. Clinical thresholds for children's symptoms were able to be determined in 81% of the studies (n=17). In eight studies, the samples' baseline means did not meet the clinical threshold. Within the other nine studies, three included samples with clinical levels of externalizing symptoms (Cummings & Wittenberg, 2008; Jouriles et al., 2009; Schwenk et al., 2016). The other six studies each included a sample with clinical levels of ADHD (Chronis-Tuscano et al., 2013), anxiety (Silverman et al., 2009), depression (Compas et al., 2009 & 2010), PTSD (Cohen et al., 2004), OCD (Gorenstein et al., 2015) and insecure/disorganized attachment (Cohen et al., 1999 & 2002).

Parent-Child Dyad Diagnostic Profiles. Because psychopathology in parents and children often co-occur, an important outcome of this review is to identify interventions that improved all three domains in study samples in which both parents and children had clinical levels of symptoms. Clinical thresholds for *both* parents' and children's symptoms were able to be determined in approximately 60% (n=13) of the studies. Four studies included samples in which both parents and children had clinical-level baseline symptoms. In one case, parents and children were dually depressed (Compas et al., 2009). In another instance, an intervention was tested on depressed mothers and children with ADHD (Chronis-Tuscano et al., 2013). In a third case, the sample consisted of depressed parents and children with PTSD symptoms (Cohen et al., 2004). One intervention was tested with anxious parents and children with clinical level OCD symptoms (Gorenstein et al., 2015).

Additional Mental Health Risk Factors. As there are known environmental risk factors for the development of mental health problems, additional data was extracted on SES, single parenthood and minority status to determine the extent to which interventions which improved all three domains included higher risk samples. Eighteen studies reported on the parents' socioeconomic status and more than half of them (n=10) involved low-SES samples. Across 17 studies, an average of 34.9% (ranging from 11%-100%) of participating parents were either not married, single, divorced or widowed. Parents' racial and ethnic background was reported in only 41% (n=9) of the studies. An average of 28.7% (ranging from 12%-63%) of participating parents in these interventions were from an underrepresented minority group.

Aim 2b) Characterize the interventions.

Domains targeted. Almost half of the interventions (n=10) targeted a single domain, with nine interventions targeting parenting behavior (Cummings & Wittenberg, 2008; Irvine et al., 1999; Kierfeld et al., 2013 & Ise et al., 2015; Niccols, 2009; Schwenk et al., 2016; Stanger et al., 2011; Stattin et al., 2015a; Stattin et al., 2015b; Zubrick et al., 2005) and only one targeting child symptoms directly (Gorenstein et al., 2015). Five interventions targeted two domains. Three of these targeted both parent symptoms and parenting quality (Chronis-Tuscano et al., 2013; DeGarmo et al., 2004; Jouriles et al., 2009;). One targeted parent and child symptoms (Cohen et al., 1999) and another targeted child symptoms and parenting behavior (Cohen et al., 2004). Six interventions targeted all three outcomes: parent symptoms, child symptoms and parenting quality (Compas et al., 2009 & 2010; Ginsburg et al., 2015; Havighurst et al., 2010; Saldana, 2015; Silverman et al., 2009; Swenson et al., 2010). In sum, 19 of the 21 interventions included components targeting parenting quality. Nine interventions included components targeting child symptoms. Eleven interventions included components targeting parent symptoms.

CHAPTER IV

DISCUSSION

Families in which one or both members of the parent-child dyad have psychopathology are at heightened risk for detrimental transactional effects and may require interventions that are able to improve psychopathology in both parent and child as well as improve parenting quality. Towards a primary aim of this paper, this review first identified 49 existing interventions which measured parent symptoms, child symptoms and parenting behavior. Further, the review characterized the participants to evaluate whether these treatments are suited to those families at highest-risk of negative transactional effects. Additionally, the review characterized the interventions themselves with regard to the number and type of domains targeted. Our findings add to the extant literature by highlighting the need for interventions which are able to improve multiple interlinked domains in families dealing with psychopathology and by providing an indication of how successful interventions are at improving these domains when they explicitly target parental psychopathology, child psychopathology and/or parenting behavior. We now turn to summarize and contextualize some of the main findings, before considering some of the limitations of this systematic review and making some concluding remarks and recommendations for future intervention development research.

Results found that a sizable proportion of interventions (~40%) report improvements in all three domains: parental psychopathology, child psychopathology and parenting behavior, regardless of the number of domains explicitly targeted during treatment. Interestingly, approximately 90% of the interventions which reported these improvements included treatment components which targeted parenting behavior, either

as a single-target or in combination with other targeted domains. Beyond testing treatment effectiveness, these RCTs may also represent an experimental test of the causal association between parental psychopathology, child psychopathology and parenting behavior, insofar as intervening on one domain has a causal effect on the others. Thus, the results pointing to downstream and spillover changes in additional domains which were not explicitly targeted provides some evidence for the transactional links that basic science research has suggested. Within this context, it is not surprising that parenting behavior is a central target of the overwhelming majority of these interventions, as it is a known mechanism for the transmission of risk of psychopathology from parent to child and for the development of child psychopathology, independent of parental symptoms. Improved parenting also has benefits for parental mental health. Gonzalez and Jones (2017) have proposed two mechanisms through which targeting parenting behavior may result in improvements in parental depression. First, parent training increases parental self-efficacy which may alleviate depressive symptoms. Second, parent training which requires parents to engage more with their child, may reflect a form of behavioral activation requiring and reinforcing positive parent-child interactions through improvements in child behavior. Additionally, as child externalizing behavior is linked to parenting stress (Barroso et al., 2018), it is likely that the subsequent improvements in child behavior as a result of targeting parenting have the additional effect of improving parental symptoms by reducing parenting stress.

After identifying interventions which improved all three domains, the next aim was to determine whether the participants in these RCTs represented those at highest risk of potential deleterious transactional effects by focusing on the diagnostic profiles of

parents and children. While most of the interventions' children samples had clinical level symptoms at baseline, only eight interventions had parent samples who met a clinically meaningful threshold at baseline, with half of these focused on parents with depressive symptoms. The overall absence of parents with psychopathology that reached a clinical threshold highlights a serious and important gap in available interventions, showing that evidence-based treatment options for families in which a parent or both parent and child have psychopathology are lacking. The paucity of interventions assessing and reporting improvements in diagnostic categories other than depression is especially important given that there is ample research to suggest that different disorders vary in their association with specific maladaptive parenting behaviors. For instance, while maternal depression is robustly associated with negative (i.e. hostile and coercive) maternal behavior (Lovejoy et al., 2000), parental anxiety is linked to parental psychological control (van der Bruggen et al., 2008) and maternal borderline personality disorder is associated with more inconsistent parenting behavior, at times overinvolved and overprotective and at other times disengaged or hostile (Eyden et al., 2016). Recruiting parents with different forms of psychopathology and assessing for treatment-driven improvements in transdiagnostic features of psychopathology might allow for a better understanding of the relationship between parent and child symptoms, make treatments suitable to a greater number of families and open the possibility for a more nuanced approach to targeting parenting behaviors which are theoretically linked to specific parental psychopathologies.

In addition to evaluating the diagnostic profiles of participants, demographic variables were examined. Consistent with previous reviews (Magill-Evans et al., 2006; Panter-Brick et al., 2014), our results indicate that mothers are the primary participants in

these interventions. Better recruitment and engagement of fathers is especially important when considering that mothers and fathers differ in their rates of psychopathology and that there are gender differences in prevalence rates of various diagnostic categories. Additionally, as evidence for nonrandom mating in psychiatric populations exists (Nordsletten et al., 2016), it may be more likely that mothers with psychopathology are co-parenting with fathers who have psychopathology. By underrepresenting fathers, intervention researchers may not be accounting for effects of an untreated parent with psychopathology on treatment outcomes.

Our results also point to some interesting differences in the rates of success that interventions targeting one, two or three domains have with regards to improving all three. Approximately 45% of the interventions which targeted a single domain (primarily parenting behavior) were able to report improvement in parental psychopathology, child psychopathology and parenting behavior. This is in comparison to 30% of interventions which targeted two domains (most of which targeted parent symptoms and parenting behavior) and 66% of the interventions which targeted all three domains. While it may seem surprising that dual-target interventions reported improvement in all three domains at a lower rate than single-target interventions, it is important to note that a higher proportion of dual-target interventions included parents and children who met clinical thresholds. Thus, the clinical severity of those samples may partially explain this lower success rate. While the cost-benefit ratio of targeting all three domains is unclear, this strategy may be especially warranted when developing interventions for families at higher risk of negative transactional effects, for instance those families in which a parent, child or both are clinically disordered. As only nine interventions targeted all three

domains, this suggests a possible lack of integrated interventions and a potential future direction for intervention developers who wish to account for the transactional relationship between parental psychopathology, child psychopathology and parenting behavior.

Strengths and Limitations

There are a number of limitations to this systematic review. First, in determining whether or not interventions improved each of the three domains, this review made use of “vote counting” – categorizing results of interventions into positive or negative based on statistical significance. Siddaway and colleagues (2019) have pointed out the flaws of this approach which does not take into account sample size and does not provide an estimate of effect size. A meta-analysis would address these issues, however we favored a qualitative approach because the search was designed to identify a broad range of interventions which reported all three outcomes, resulting in a very clinically diverse pool of studies – in the diagnostic profiles of participants (e.g. clinical vs nonclinical populations), in the type of intervention (e.g. parenting vs child-focused vs two-generation treatments) and in the heterogeneity of outcomes assessed. Moderation analyses within the context of a meta-analysis would likely have resulted in too much heterogeneity within each moderator and small cell sizes would leave moderation analyses underpowered, making a more descriptive systematic review a preferable option. Conceptually, it is reasonable to first examine the extent to which interventions are able to improve all three domains before attempting to assess effect sizes. A second limitation is that in distinguishing between interventions which targeted parenting behavior and interventions which targeted child psychopathology we may, to a degree, be confounding

a distinction between interventions targeted at child externalizing disorders from those targeted at child internalizing disorders. Our operationalization of intervention components which targeted child symptoms was limited only to instances in which the child was the primary recipient of treatment (for instance, they met directly with the therapist). This is less likely in the case of child externalizing disorders because parent training programs, in which parents are the primary recipients of the intervention, are often the recommended treatment. Thus, we acknowledge that our distinction is debatable. However, parent training is the recommended treatment in these cases precisely because of the robust evidence showing that *parenting behavior* is a mechanism of change through which to influence child externalizing symptoms. Therefore, our decision is theoretically based and in line with the review's aims of examining intervention effects on three distinct, yet interlinked, domains. Third, as we aimed to provide results from unique interventions (rather than results from multiple studies on the same intervention – as in the case of Incredible Years or Triple P), we selected an exemplar RCT from each intervention on the basis of sample size. In the case of Incredible Years, a meta-analysis which pooled individual level data from across 14 studies with a sample size of 1,610 (Leijten et al., 2018) was included for results analyses. This meta-analysis found no improvements in parental psychopathology and thus, Incredible Years was not amongst those interventions which reported improvement in all three domains. Other individual RCTs of Incredible Years have reported improvement in all three domains (Bywater et al., 2009; Hutchings et al., 2017; Hutchings et al., 2007; McGilloway et al., 2012) but as they were not selected as exemplar RCTs, they were not included in results on interventions which reported

improvement in all three domains. Although it is reasonable to believe that Leijten et al's (2018) meta-analysis provides a more accurate picture of the effects of Incredible Years on parental psychopathology, and that its selection over other Incredible Years studies is justified, it is worth noting that the decision to exclude other Incredible Years studies impacted results of this review. Fourth, a considerable proportion of studies (up to 40%) did not report baseline means of either parent or child symptoms, making it difficult to assess whether a sample met a clinically meaningful threshold, and necessitating more caution around interpreting results related to participants' diagnostic profiles, especially with regards to parent-child dyad diagnostic profiles. Finally, in searching for interventions which have reported outcomes for parental psychopathology, child psychopathology and parenting behavior, and excluding those studies which did not report on all three outcomes, this systematic review may be vulnerable to publication bias. Statistically significant outcomes are more likely to be reported than non-significant RCT results and this outcome reporting bias has been found to impact the results of systematic reviews (Kirkham et al., 2010). It is possible that additional interventions exist which have assessed all three domains, but did not report all three outcomes and were thus excluded from the review.

Despite these limitations, this review is the first to map out, inventory and evaluate psychotherapeutic interventions which have reported outcomes on parental psychopathology, child psychopathology and parenting and thus allows for a broader perspective on how the field has addressed the proposed transactional relationship between these domains. Some prior reviews have taken a narrower approach by focusing on how interventions have addressed two of these domains – for instance parental

psychopathology in the context of child treatments (Acri et al., 2015; Gonzales et al., 2016), or by concentrating only on a single diagnostic category – for instance, effects of treatment of maternal depression on child and parenting outcomes (Cuijpers et al., 2015), or by honing in on a specific intervention, for instance TF-CBT or behavioral parent training (Gamache-Martin et al., 2018; Gonzales et al., 2016). This review cast a much wider net in an effort to synthesize data on any and all psychotherapies, for any and all diagnostic categories, which reported on all three outcomes. Categorizing the interventions according to targeted domains and reported improvements, coupled with a description of the samples' degree of risk allows for a preliminary understanding of what has worked and for whom as well as what needs are still left unserved by the current state of evidence-based interventions.

Conclusion and Future Directions

Basic science provides support for a transactional model of relationships between parental psychopathology, child psychopathology and parenting behavior. This systematic review can serve to inform clinical researchers and intervention developers as to how existing evidence-based interventions have approached these domains and fared in their aims to improve them. More adult psychotherapy and child-focused interventions would do well to follow the lead of parenting intervention researchers by assessing and reporting outcomes in all three domains, so that the field can better understand reciprocal effects of treatment of one member on the other member of the parent-child dyad. Having highlighted the relative lack of interventions aimed at families in which a parent or both parent and child have psychopathology and which are able to improve parental psychopathology, child psychopathology and parenting behavior, an explicit

recommendation from this review is to encourage the development of more treatments for these populations. Interventions suited to a wider range of diagnostic categories, or which take a transdiagnostic approach, are needed. Until that evidence-base is established, clinicians might, for instance, consider supplementing care for adult clients who are parents with parent training components as well as targeting parental mental health symptoms of parents whose children or adolescents are undergoing therapy.

One question left open is in regards to whether or not components targeting parenting behavior are sufficiently defined and related to specific parental and/or child psychopathology. In other words, are interventions currently targeting specific maladaptive parenting behaviors which are theoretically linked to parental psychopathology or to the development of child psychopathology? Just as CBT for parental depression is distinct from CBT for parental anxiety, the parenting skill deficits of a depressed parent may not be the same as those of an anxious parent. Families dealing with parent and/or child psychopathology may require a more tailored approach when targeting mechanisms of change, than for example, a “one size fits all” behavioral parent management training. Parental psychopathology, child psychopathology and parenting behavior interact in complex ways and future intervention development should be informed by a nuanced understanding of families’ specific risk factors and needs.

The final conclusion of this review is that although there are several effective treatments that can improve psychopathology in both parents and children and improve parenting quality, more treatment development efforts are needed in this area, particularly for families in which both members have clinically elevated psychopathology. Treatment development efforts should go beyond targeting and measuring depression and should

consider transdiagnostic features of psychopathology in order to be relevant to the greatest number of families.

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Figure 1. PRISMA flow diagram

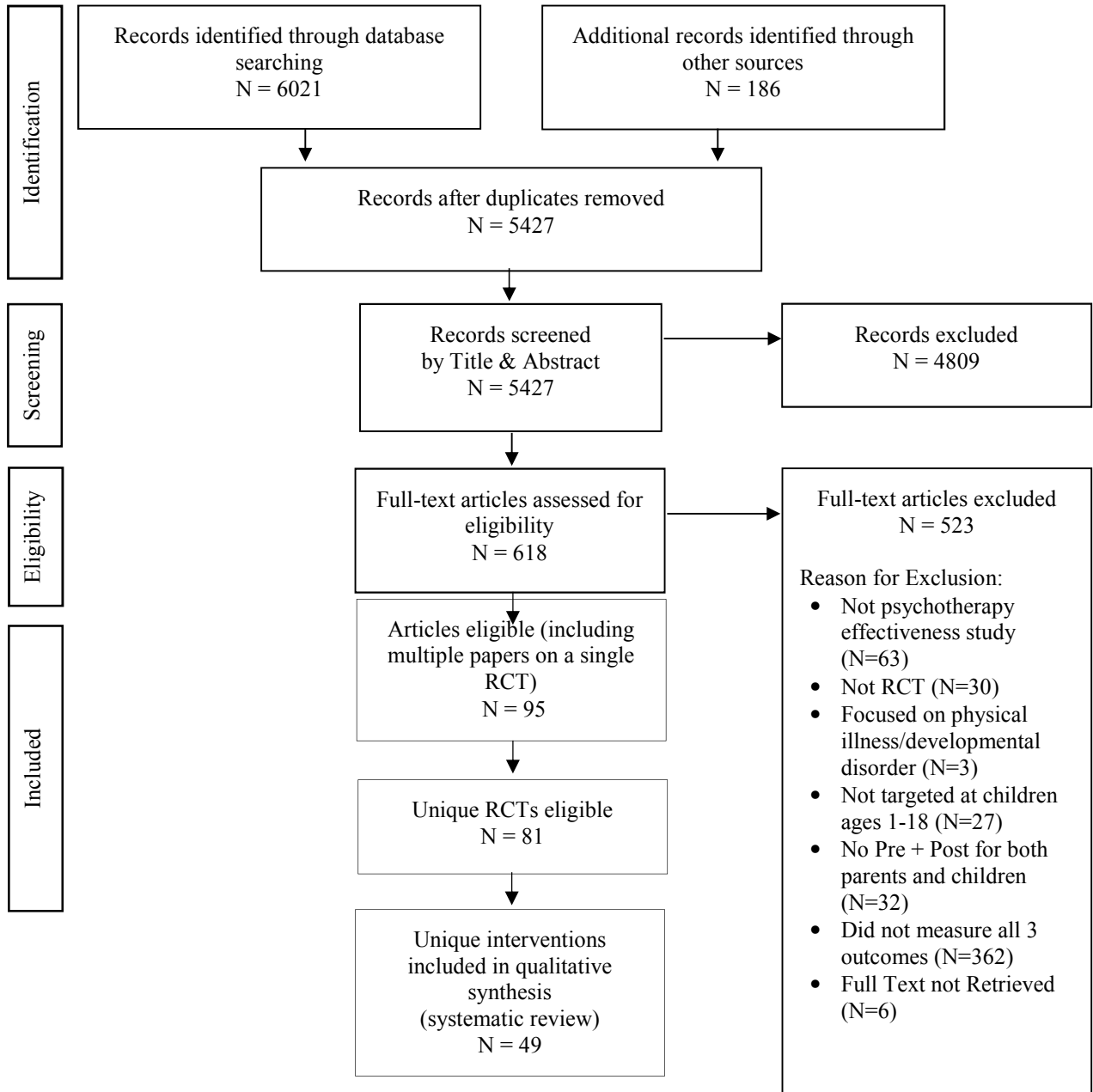


Table 1. Interventions' targeted domains and reported improvements, listed by number of targeted domains.

Study	Intervention	Targeted			Improved		
		Parent Symptoms	Child Symptoms	Parenting Behavior	Parent Symptoms	Child Symptoms	Parenting Behavior
Targeted 3 Domains							
Sandler et al., 2003	Family Bereavement Program (FBP)	x	x	x	x		x
Compas et al., 2009 & 2010	Family Group Cognitive Behavioral Intervention	x ^p	x ^c	x	x	x	x
Silverman et al., 2009	Cognitive Behavioral Therapy with Parent Involvement (CBT/P)	x	x ^c	x	x	x	x
Havighurst et al., 2010	Tuning Into Kids (TIK)	x	x	x	x	x	x
Swenson et al., 2010	Multisystemic Therapy for Child Abuse and Neglect (MST-CAN)	x	x	x	x	x	x
Creswell et al., 2015	Child Cognitive Behavioral Therapy (CCBT) + Maternal Cognitive Behavioral Therapy (MCBT)	x ^p	x ^c	x	x	x	
Ginsburg et al., 2015	Coping and Promoting Strength (CAPS)	x ^p	x	x	x	x	x

Guild, 2017	Child - Parent Psychotherapy	x ^p	x	x		x	x
Targeted 2 Domains							
Fallone, 1998	Parent Training + Cognitive Behavioral Self Management (PT+SM)	x	^c	x		x	
Cohen et al., 1999 & 2002	Watch, Wait, Wonder	x	x ^c		x	x	x
Sanders & McFarland, 2000	Cognitive Behavioral Family Intervention	x ^p	^c	x	x	x	
Sanford et al., 2003	Parent-Education Group	x	^c	x			
Cohen et al., 2004	Trauma-Focused CBT	^p	x ^c	x	x	x	x
DeGarmo et al., 2004	Parent Management Training Oregon Model (PMTO)	x		x	x	x	x
Luthar et al., 2007	Relational Psychotherapy Mothers' Group (RPMG)	x		x		x	x
Jouriles et al., 2009	Project Support	x	^c	x	x	x	x
Waters et al., 2009	Take ACTION Parent + Child		x ^c	x		x	
Beeber et al., 2010	Interpersonal Therapy (IPT)	x ^p		x	x	x	
Burke et al., 2012	ABCD Parenting Young Adolescent Program	x		x		x	

Chronis-Tuscano et al., 2013	Integrated Parenting Intervention for ADHD (IPI-A)	x ^p	c	x	x	x	x
Rajwan et al., 2014	Strategies to Enhance Positive Parenting (STEPP)		x	x			
Wong et al., 2014	Bridges to High School Program/Proyecto Puentes a la Secundaria		x	x			x
Jones et al., 2017	Integrated Bipolar Parenting Intervention (IBPI) + TAU	x ^p		x		x	x
Lachman et al., 2017	Sinovuyo Caring Families Program for Young Children	x	c	x			x
Suchman et al., 2017	Mothering From the Inside Out	x		x	x		x
Targeted 1 Domain							
Irvine et al., 1999	Adolescent Transition Program (ATP)			x	x	x	x
Hutchings et al., 2002	Intensive Treatment Group	p	c	x			
Zubrick et al., 2005	Group Triple P			x	x	x	x
Chronis et al., 2006	Coping With Depression Course (CWDC)	x	c		x		
Morawska & Sanders, 2006	Telephone-Assisted Self-Directed Behavioral Family Intervention (TASD-BFI)			x		x	x

Cummings & Wittenberg, 2008	Supportive Expressive Therapy – Parent Child (SET-PC)		c	X	X	X	X
Hiscock et al., 2008	Universal Parenting Intervention			X			X
Weinblatt & Omer, 2008	Nonviolent Resistance (NVR)			X		X	X
Matos et al., 2009	Parent-Child Interaction Therapy		c	X		X	X
Niccols, 2009	COPEing with Toddler Behavior (CWTB)			X	X	X	X
Hanisch et al., 2010 & 2014	Prevention Program for Externalizing Problem Behavior (PEP)			X		X	X
Stanger et al., 2011	Parent Training + Contingency Management	p		X	X	X	X
Daley & O'Brien, 2013	New Forest Parenting-Programme Self-Help (NFPP)	p	c	X		X	
Kierfeld et al., 2013 & Ise et al., 2015	Telephone Assisted Self-Help Bibliotherapy			X	X	X	X
Smith, 2013	Immediate Cognitive-Behavioral Treatment Group (ICBT)		x ^c			X	X

Porzig-Drummond et al., 2014	1-2-3 Magic Parenting Program DVD		^c	x		x	x	
Gorenstein et al., 2015	Group Cognitive-Behavioral Therapy	^p	x ^c			x	x	x
Stattin et al., 2015a	Comet			x		x	x	x
Stattin et al., 2015b	Connect			x		x	x	x
Schwenck et al., 2016	Plan E Parent Training		^c	x		x	x	x
Sourander et al., 2016	Strongest Families Smart Website			x			x	x
Leijten et al., 2018	Incredible Years		^c	x			x	x

^p clinical level baseline parent sample, ^c clinical level baseline child sample

Table 2. Percentages of interventions which targeted 1, 2 or 3 domains (parent symptoms, child symptoms and/or parenting behavior) and reported improvements in none, 1, 2 or 3 of these domains.

	No Improvements	Improved 1	Improved 2	Improved 3	Total
Targeted 1	2% (n=1)	6% (n=3)	18% (n=9)	20% (n=10)	47% (n=23)
Targeted 2	4% (n=2)	10% (n=5)	10% (n=5)	10% (n=5)	35% (n=17)
Targeted 3	0%	0%	6% (n=3)	12% (n=6)	18% (n=9)
Total	6% (n=3)	16% (n=8)	~35% (n=17)	~43% (n=21)	100% (n=49)

Table 3. Characteristics of study participants and interventions reporting improvement in all 3 domains: parent symptoms, child symptoms and parenting behavior, listed by children's age group.

Study	Intervention	Children's Age Group	Clinical Level Baseline		Targeted		
			Parent	Child	Parent Symptoms	Child Symptoms	Parenting Behavior
Cohen et al., 1999 & 2002	Watch, Wait, Wonder	Toddlers	N	Y (Insecure/ Disorganized Attachment)	x	x	
Niccols, 2009	COPEing with Toddler Behavior (CWTB)	Toddlers	N	N			x
Zubrick et al., 2005	Group Triple P	Preschool	N	N			x
Cummings & Wittenberg, 2008	Supportive Expressive Therapy – Parent Child (SET-PC)	Preschool	N	Y (Externalizing)			x
Jouriles et al., 2009	Project Support	Preschool/ School age	-	Y (Externalizing)	x		x
Havighurst et al., 2010	Tuning Into Kids (TIK)	Preschool	N	N	x	x	x
Stanger et al., 2011	Parent Training + Contingency Management	Preschool	Y (Externalizing)	N			x
Kierfeld et al., 2013 & Ise et al., 2015	Telephone Assisted Self-Help Bibliotherapy	Preschool	N	N			x

Cohen et al., 2004	Trauma-Focused CBT (TF_CBT)	School age	Y (Depression)	Y (PTSD)		x		x
DeGarmo et al., 2004	Parent Management Training Oregon Model (PMTO)	School age	-	N	x			x
Silverman et al., 2009	Cognitive Behavioral Therapy with Parent Involvement (CBT/P)	School age	N	Y (Anxiety)	x	x		x
Compas et al., 2009 & 2010	Family Group Cognitive Behavioral Intervention	School age	Y (Depression)	Y (Depression)	x	x		x
Chronis-Tuscano et al., 2013	Integrated Parenting Intervention for ADHD (IPI-A)	School age	Y (Depression)	Y (ADHD)	x			x
Ginsburg et al., 2015	Coping and Promoting Strength (CAPS)	School age	Y (Anxiety)	N	x	x		x
Stattin et al., 2015a	Comet	School age	N	-				x
Stattin et al., 2015b	Connect	School age	N	-				x
Irvine et al., 1999	Adolescent Transition Program (ATP)	Adolescents	N	N				x
Swenson et al., 2010	Multisystemic Therapy for Child Abuse and Neglect (MST-CAN)	Adolescents	-	-	x	x		x

Gorenstein et al., 2015	Group Cognitive-Behavioral Therapy	Adolescents	Y (Anxiety)	Y (OCD)			x	
Schwenk et al., 2016	Plan E Parent Training	Adolescents	-	Y (Externalizing)				x
Saldana, 2015	Families Actively Improving Relationships program (FAIR)	-	Y (Depression)	-	x		x	x

N=Did not meet a clinical threshold; Y=Met a clinical threshold (diagnostic category listed in parentheses)