Treatment Components and Mechanisms of Change in Guided Self-Help for Parents of Children with Externalizing Behavior Problems

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1 Introduction

This cumulative thesis focuses on treatment components and process mechanisms of telephone-assisted self-help parent management training for child externalizing behavior problems with a behavioral basis and a nondirective basis (cf. Treier, Hautmann, Dose, et al., 2022; Treier, Hautmann, Katzmann, et al., 2022).

Chapter one provides general information on the prevalence, classification, and development of externalizing behavior problems, before describing various treatment options. Subsequently, self-help parent management training – which is the focus of the present thesis – is presented as an effective treatment option with low barriers for families. After emphasizing the importance of analyzing process mechanisms in parent management training, methodological considerations and the current evidence base regarding mediator variables in (self-help) parent management training are reported. Therapist behavior is then presented as a potential mediator of symptom change, and existing measures for the assessment of treatment components in interventions with different therapeutic approaches are presented. With the aim of better reflecting the complexity of the therapeutic process, an extended mediator model is subsequently proposed, with parental adherence following therapist behavior as a sequential mediator. Concluding the first chapter, the aims of the present thesis are described.

Chapter two comprises the first publication of the current thesis, on treatment components of guided self-help parent management training with a behavioral basis and a nondirective basis for child externalizing behavior problems (cf. Treier, Hautmann, Katzmann, et al., 2022). Chapter three presents the second publication of the thesis, on mediators of change of the two analyzed self-help interventions (cf. Treier, Hautmann, Dose, et al., 2022). In the final chapter, the results of the two publications are summarized and discussed.

1.1 Prevalence, Classification, and Development of Externalizing Behavior Problems

Approximately 13 percent of children and adolescents worldwide are affected by mental disorders (Polanczyk et al., 2015). After anxiety disorders, externalizing behavior problems rank second in prevalence rates. Externalizing behavior problems comprise attention-deficit/hyperactivity disorder (ADHD), oppositional defiant disorder (ODD), as well as conduct disorder (CD; Battagliese et al., 2015).

The Diagnostic and Statistical Manual of Mental Disorders (DSM-5; American Psychiatric Association, 2013) specifies inattention, impulsivity, and hyperactivity as core symptoms of ADHD. Inattention encompasses behaviors such as distractibility, difficulties in the organization,

or forgetfulness. Impulsivity consists of behaviors such as interrupting others or difficulties in waiting. Hyperactivity refers to behaviors such as fidgeting, excessive talking, or leaving one's seat when one is not supposed to. Besides the combined diagnosis with all of the three core symptoms present, there is a predominantly inattentive subtype and a predominantly hyperactive-impulsive subtype, in which only some of the core symptoms are present. The DSM-5 (American Psychiatric Association, 2013) defines ODD as a pattern of angry or irritable mood, and defiant or vindictive behavior. Since a certain degree of this behavior is developmentally typical at a certain age, this diagnosis is given only when age norms are exceeded. In contrast, CD comprises a pattern of more harmful behaviors that violate other people's social rights or norms or essential rights, which are not typically part of the behavioral spectrum (American Psychiatric Association, 2013). These behaviors include, e.g., physical fights, bullying or threatening others, cruelty to people or animals, destruction of property, or theft. For each diagnosis, some additional conditions must be met, such as functional impairment caused by the symptoms or no other mental disorder that better explains the symptoms.

Very often, children showing symptoms of ADHD, ODD, or CD suffer from a reduced quality of life, especially in terms of psychosocial and family-related quality of life (Dey et al., 2012). These impairments often remain into adulthood (Gadow et al., 2007; Szentiványi & Balázs, 2018). Children or adults with symptoms of both ADHD and ODD are particularly impaired (Gadow et al., 2007; Szentiványi & Balázs, 2018).

Several studies have reported a high co-existence of symptoms of ADHD, ODD, and CD (e.g., Azeredo et al., 2018; Ghosh & Sinha, 2012; Gillberg et al., 2004). There is a high comorbidity between ADHD and ODD, at about 60 percent, and a moderate comorbidity between ADHD and CD, at about 16 to 20 percent (Azeredo et al., 2018). ADHD seems to precede ODD and CD in many cases. For ODD and CD, some studies have reported distinct pathways while others have described ODD as a mild subtype and precursor of CD – the latter, especially in children with ADHD (Ghosh & Sinha, 2012).

A major factor in the strong relationship between the three disorders seems to be shared genetic influences (Azeredo et al., 2018). Additionally, shared environmental influences seem to play a significant role in ODD and CD. An early onset of comorbid externalizing disorders appears to be more strongly attributable to shared genetic influences whereas a late onset appears to be more strongly attributable to shared environmental influences.

As an environmental influence, the role of parenting behavior is crucial in children's development (Mingebach et al., 2018). In a review, Grusec (2011) found that parents have to support, structure, and empathize with their children for healthy development. Moreover, children need to feel a certain degree of control over their actions. In contrast, negative parenting practices such as inconsistent discipline or negative emotional expressiveness, as well as parental mental health problems, have shown strong associations with disruptive behavior and emotion regulation problems (Duncombe et al., 2012).

1.2 Treatment of Externalizing Behavior Problems

To reduce or even prevent the described long-lasting impairments of externalizing disorders, an early, accurate, and effective treatment of externalizing behavior problems is needed (Gorman et al., 2015; Weisz et al., 2017). Accordingly, a multitude of studies has evaluated treatments specifically developed for children and adolescents with externalizing behavior problems and their families. Two of the most common treatment types for ADHD, ODD, and CD are pharmacological and psychological treatment: German and international guidelines recommend psychological treatments as the first-line treatment, particularly parent management training, which focuses on the modification of parenting, for preschool children with ADHD and children with ODD/CD without comorbid ADHD (Deutsche Gesellschaft für Kinder- und Jugendpsychiatrie, 2016; Deutsche Gesellschaft für Kinder- und Jugendpsychiatrie et al., 2017; National Institute for Health and Care Excellence, 2013, 2018). For children with ADHD beyond preschool age, German and international guidelines differ slightly: German guidelines recommend pharmacological treatment combined with psychoeducation as the first-line treatment for children with moderate to severe ADHD, and psychological treatment, particularly parent management training, for children with low to moderate ADHD (Deutsche Gesellschaft für Kinder- und Jugendpsychiatrie et al., 2017). In contrast, international guidelines recommend the combination of pharmacological treatment and psychoeducation as the first-line treatment, independent of the severity of ADHD (National Institute for Health and Care Excellence, 2018).

For the pharmacological treatment of ADHD, stimulants have been found to exert large effects on symptom severity (Cortese et al., 2018). For children with ADHD combined with ODD or CD, stimulants provide the most beneficial treatment as well, although mainly for the ADHD core symptoms (Pringsheim et al., 2015a). Finally, for children with ODD or CD without a comorbid ADHD diagnosis, there is support for a moderate efficacy of risperidone, an

antipsychotic; however, there are major side effects of this medication (Gorman et al., 2015; Pringsheim et al., 2015b).

Although psychopharmacological treatment can be a very effective treatment option in children with externalizing disorders, there may be several obstacles: First, there are side effects for any medication – minor or major depending on the type of medication and the specific reaction of the child (Gorman et al., 2015; National Institute for Health and Care Excellence, 2018). Second, for preschool children and children without comorbid ADHD, the use of pharmacological treatment has not yet been evaluated sufficiently (Childress & Stark, 2018; Gorman et al., 2015). Third, Biederman et al. (2019) demonstrated that only approximately half of children and adolescents who were diagnosed with ADHD took their stimulant treatment as prescribed. Reasons for low adherence might include reservations about taking medicines (Swanson, 2003), the side effects of medication (Gorman et al., 2015), or symptoms such as forgetfulness or defiant behavior (Swanson, 2003). In addition, about a quarter of parents refuse to implement a pharmacological treatment for their child at all (Swanson, 2003). Lastly, even if medication is taken regularly and works effectively, there is often residual impairment – a complete normalization is rare (Sonuga-Barke et al., 2013). For most types of medication, the effects only last for several hours (Swanson, 2003). Thus, families might still have certain times during which they have to cope with symptoms, e.g., in the mornings before taking the medication or in the afternoon or at night after the effects wear off.

The efficacy of psychological treatment for ADHD, ODD, and CD has been demonstrated by extensive meta-analyses, which reported small to moderate effects (e.g., Bakker et al., 2017; Battagliese et al., 2015; Mingebach et al., 2018; Weisz et al., 2017). One of the most effective forms of intervention is parent management training, which yields moderate effect sizes (Herr et al., 2015; Mingebach et al., 2018). In general, parent management training in the case of externalizing behavior problems aims at de-escalating coercive cycles of parent-child interactions by modifying parenting behavior and thus facilitating the child's emotion regulation and prosocial behavior (Mingebach et al., 2018). However, the foci differ according to the therapeutic approach applied: In behavioral parent management interventions, therapists typically guide parents directively to modify familial structures and to direct their child’s behavior through contingency management (Lundahl et al., 2006; McKee et al., 2008). In nonbehavioral parent management interventions, therapists typically focus on the modification of parent-child communication (e.g., listening with empathy and acceptance), child-centered needs and cognitions, and joint problem-solving (Lundahl et al., 2006; Weisz et al., 2017).

Examples of nonbehavioral interventions include nondirective interventions, systemic interventions, or attachment-based interventions. Research comparing the efficacy of different therapeutic approaches has revealed that behavioral and nonbehavioral approaches show comparable effects across different outcomes and observers (Lundahl et al., 2006; Weisz et al., 2017).

As with pharmacological treatment, there are some obstacles to face-to-face parent management training as well (Reardon et al., 2017): First, some parents have negative attitudes towards mental health care in general, such as fear of stigma, unsupportive professionals, or consequences of diagnosis for the child. Second, structural problems are rather common: Due to direct contact with the therapist, resources are limited. Thus, waiting times are typically long and appointment times are inflexible. Furthermore, especially in rural areas, the accessibility of psychological treatment is limited. Third, family circumstances can further limit the accessibility of treatment. For instance, other activities or a limited support network e.g., regarding childcare for siblings during the sessions, might hinder the possibility to start or maintain treatment. The COVID-19 pandemic has unveiled another obstacle to face-to-face treatment: Due to restrictions on physical distancing, psychological treatment has been interrupted or limited for most families (Fegert et al., 2020).

1.3 Self-Help Parent Management Training

Self-help parent management training provides a possibility to remove many of the barriers to face-to-face treatment as they offer a form of treatment that can be provided to parents at home and at any time (Cortese et al., 2020; Tarver et al., 2014). Self-help interventions are delivered via multimedia or in written format and range from fully self-administered programs to those with additional minimal therapist contact – termed guided self-help (O'Brien & Daley, 2011; Treier, Hautmann, Dose, et al., 2022). O'Brien and Daley (2011) define minimal therapist contact as consultations with trained therapists lasting less than 30 minutes per week with the aim of monitoring, discussing, and prompting parental behavior based on self-help materials. Compared to face-to-face treatment, guided self-help parent management has achieved almost equivalent effects, but with the advantage of fewer obstacles (Bennett et al., 2019). In light of the COVID-19 pandemic, Cortese et al. (2020) recommended the format of self-help interventions to improve accessibility to psychotherapy.

In the context of externalizing behavior problems, self-help parent management training has demonstrated small to large effects on child outcomes and small to moderate effects on

parental behavior and parental well-being according to parent ratings (Bennett et al., 2019; Tarver et al., 2014). For observer ratings or blind ratings of child outcomes, the evidence is mixed (Bennett et al., 2019; Tarver et al., 2014). Contact with the therapist appears to increase the efficacy of particular outcomes (Bennett et al., 2019; Tarver et al., 2014). We identified only one study – the data form the focus of the present thesis – comparing the efficacy between therapeutic approaches (behavioral and nondirective) in self-help parent management training for child externalizing behavior problems (Hautmann et al., 2018; Treier, Hautmann, Dose, et al., 2022; Treier, Hautmann, Katzmann, et al., 2022). In line with the results for face-to-face treatment, the efficacy of the two interventions was mostly comparable across outcomes and informants.

1.4 Analysis of Process Mechanisms

Despite the well-documented evidence for the efficacy of parent management training including self-help interventions, knowledge regarding the process mechanisms leading to changes in child and parental behavior is limited (Treier, Hautmann, Dose, et al., 2022). In particular, we do not know whether different therapeutic approaches (e.g., behavioral and nondirective approaches) bring about change in unique ways.

Typically, mediation analyses are conducted to analyze potential process mechanisms (Kazdin, 2007). A mediator is a variable that at least partially explains the relationship between a dependent variable (e.g., change in child or parent behavior) and an independent variable (e.g., treatment group; Kazdin, 2007; Treier, Hautmann, Dose, et al., 2022). There are several requirements to establish a mediator of change in psychotherapy research (Kazdin, 2007): First of all, there should be a strong association between both the intervention and the mediator as well as the mediator and the treatment outcome. Second, the association should be specific, e.g., a specific pathway for different interventions. Third, the association should be replicated consistently across different studies and samples. Fourth, the independent variable should be experimentally manipulated. Fifth, a coherent timeline according to the mediation model should be implemented to be able to infer causal relations. Sixth, stronger activation of the mediator should lead to a stronger change in the dependent variable. Lastly, the proposed mediator should be plausible considering the theoretical background of the intervention.

In parent management training, mediation studies have largely focused on facets of the parents or parent-child interactions, in particular parenting, as putative mediators of change (e.g., Dose et al., 2021; Fagan & Benedini, 2016; Forehand et al., 2014; Gardner et al., 2010;

Hanisch et al., 2014; Katzmann et al., 2017; Kling et al., 2010; cf. Schmidt & Schimmelmann, 2015; Treier, Hautmann, Dose, et al., 2022). For parent management training programs that aim to reduce child externalizing behavior, most publications focus on positive (e.g., praise, attention) or negative (e.g., threats, criticism) parenting, discipline (e.g., rules, instructions), or composite measures (Fagan & Benedini, 2016; Forehand et al., 2014). The evidence regarding the specific parenting behaviors is heterogeneous (e.g., Dose et al., 2021; Forehand et al., 2014; Gardner et al., 2010; Hanisch et al., 2014; Katzmann et al., 2017; Kling et al., 2010), but the strongest evidence was found for a composite measure of parenting and discipline (Forehand et al., 2014). Besides focusing on parenting behavior, several studies have analyzed parents' own internal processes, such as mental health, distress, self-efficacy, or cognitions, again with heterogenous evidence (David, 2014; Day & Sanders, 2017; Hanisch et al., 2014; Katzmann et al., 2017).

1.5 Therapist Behavior as a Process Mechanism

Compared to the strong emphasis on parents, the therapist and his/her behavior during therapy sessions has only recently become a focus (Leitao et al., 2021). However, distinct therapist behavior is implemented for different theoretical approaches. Accordingly, therapist behavior may be especially interesting when comparing process mechanisms between different therapeutic approaches (Treier, Hautmann, Dose, et al., 2022; Treier, Hautmann, Katzmann, et al., 2022). In particular, we would expect that a) different psychotherapeutic approaches (independent variable) would explain approach-specific therapist behavior (mediator), and that b) approach-specific therapist behavior (mediator) would reduce child externalizing behavior problems as well as functional impairment (dependent variable; Treier, Hautmann, Dose, et al., 2022; see Fig. 1).

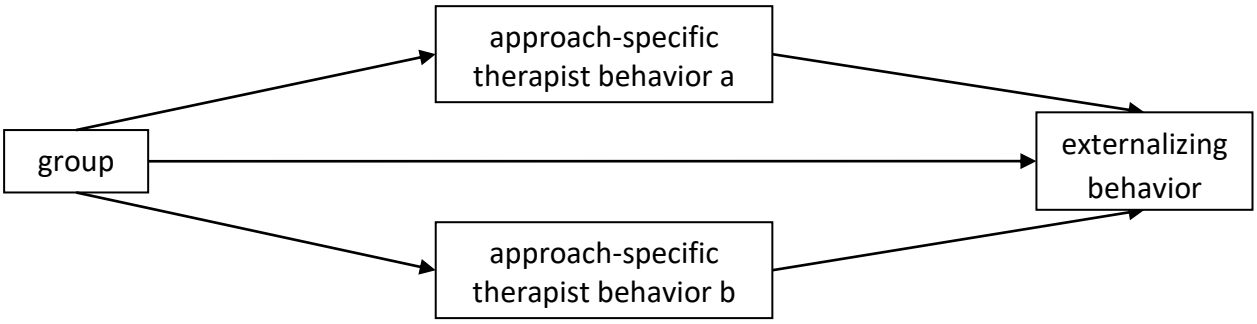
As such, we should be able to analyze whether particular therapist behavior can account for changes in treatment outcomes. Understanding these process mechanisms responsible for change not only helps to validate the theoretical models underlying the interventions but may also enable us to identify relevant treatment components (Kazdin, 2007; Schmidt & Schimmelmann, 2015).

Research analyzing therapist behavior as a potential mediator of change, especially when comparing different therapeutic approaches, is lacking. Only one previous study has analyzed therapist behavior as a potential mediator (Treier, Hautmann, Dose, et al., 2022): Barnett et al. (2014) found that responsive coaching by the therapist in behavioral parent-child

interaction training mediated the effect on parenting skills from one session to the next, while no mediating effect was found for directive coaching. In addition to this mediation study, several studies have highlighted the importance of therapist behavior in the prediction of outcomes for parent management training (Treier, Hautmann, Dose, et al., 2022): In a meta-analysis, Dekkers et al. (2022) found that therapists' emphasis on the antecedents of child behavior improved parent outcomes. Furthermore, Leitao et al. (2021) reported that specific therapist behaviors such as structuring sessions, praising parents, or treatment integrity improved parent outcomes in a systematic review.

Figure 1

Exemplary Parallel Mediation Model With the Group as the Independent Variable, the Approach-Specific Therapist Behavior a and b as the Mediators, and the Externalizing Behavior Problems as the Dependent Variable



1.6 Assessment of Therapist Behavior

In theory, different therapeutic approaches are based on different assumptions and models explaining the treatment processes that result in symptom change. However, the basis of this assumption is that therapists implement the intervention according to the theoretical model. Thus, the analysis of the treatment integrity might be a particularly interesting construct in the comparison of therapeutic approaches (Treier, Hautmann, Katzmann, et al., 2022).

Treatment integrity comprises three core aspects (Goense et al., 2014; Grikscheit et al., 2015; McLeod et al., 2015; McLeod et al., 2013):

1) treatment adherence – To what extent does the therapist deliver interventions that are substantial to the evaluated treatment (= prescribed interventions)?

2) treatment differentiation – To what extent does the therapist deliver interventions of other treatments beyond the evaluated treatment (= proscribed interventions)? To what extent do evaluated treatments differ from each other?

3) therapeutic competence – How responsive and skilled is the therapist in delivering the evaluated treatment?

So far, research focusing on treatment adherence has reported small but significant effects on treatment outcomes (Collyer et al., 2020). However, when comparing interventions based on different therapeutic approaches, treatment differentiation seems to be especially important. Only if proscribed interventions are measured as well are we able to evaluate the effectiveness and particular mediators of change (Bhar & Beck, 2009).

Indirect measures of therapist behavior such as self-ratings of therapists usually overestimate the integrity of the therapist (Hurlburt et al., 2010; Weck et al., 2011). Although direct measures using video- or audiotapes or transcripts are resource-intensive, they imply objective and independent ratings (Herschell et al., 2019; Weck et al., 2011). To our knowledge, only a small number of observational instruments cover facets of different therapeutic approaches for adults or adolescents (e.g., Diamond et al., 2007; Midgley et al., 2018; Watzke et al., 2008). Diamond et al. (2007) used the *Therapeutic Behavior Rating Scale* to compare therapist behavior in attachment-based family therapy, multidimensional family therapy, and cognitive behavioral therapy in substance-abusing adolescents and their families. The scale contains the subscales cognitive behavioral interventions (behavioral interventions, cognitive monitoring, homework assignments), restructuring interventions (e.g., parental monitoring, coaching interaction), reattachment interventions (e.g., relational reframe, coaching reattachment), and common interventions (e.g., generating hope, forming treatment goals, expressing interest). Midgley et al. (2018) used the *Comparative Psychotherapy Process Scale – External Rater Form* to compare cognitive behavioral therapy, short-term psychoanalytic psychotherapy, and brief psychosocial intervention in depressive adolescents. This scale contains a cognitive behavioral therapy scale (e.g., explicit advice, discussion of belief systems, initiation of practice between sessions) and a psychodynamic-interpersonal scale (e.g., exploration of feelings, focus on patterns in relationships, allowing the patient to initiate discussion). Watzke et al. (2008) used the *Hamburg Psychotherapy Process Scale – Observer* to compare cognitive behavioral therapy and psychodynamic therapy in adults with mental disorders. The scale encompasses behavioral intervention subscales (cognitive interventions, psychoeducation, structuring, directivity, exploration, behavioral interventions, self-efficacy, therapeutic bond) and psychodynamic subscales (transference, past, confrontation, interpretation, relationships, emotion, group) for mental disorders in general.

Measures focusing on child psychotherapy are even more limited. McLeod et al. (2015) used the *Therapy Process Observational Coding System for Child Psychotherapy – Revised Strategies* scale to compare cognitive behavioral therapy with usual care in children with primary anxiety disorders. The scale contains a cognitive subscale (e.g., cognitive education, cognitive distortion), a behavioral subscale (e.g., functional analysis of behavior, operant strategies, respondent interventions, modeling), a psychodynamic subscale (e.g., addressing transference, exploring the past), a family subscale (e.g., parenting style, family members' roles), a client-centered subscale (e.g., validates client, client perspective, positive regard), and general items (e.g., rehearsal, treatment goals, homework). To our knowledge, there is only one observational instrument containing facets of different therapeutic approaches for children which focuses on externalizing behavior problems: Hurlburt et al. (2010) used the *Child Therapy Process Rating System* in outpatient therapy in families of children diagnosed with externalizing behavior problems. The scale contains goals and strategies from different therapeutic approaches such as cognitive behavioral therapy, psychodynamic therapy, or family systems therapy (e.g., revision of progress, identification of cognitive distortions, identification of cues for specific emotions, strengthening of relationships, improving the ability to be consistent with others). However, since the measure does not assign specific goals/strategies to specific therapeutic approaches, it is not suitable for the analysis of treatment differentiation. Thus, there is a need to develop a new observational scale.

1.7 Extending the Mediation Model

Studies analyzing mediators of change typically consider simple mediation models or parallel mediation models in the context of parent management training (Fagan & Benedini, 2016; Forehand et al., 2014; Treier, Hautmann, Dose, et al., 2022). A simple mediation model considers one mediator while a parallel mediation model considers multiple mediators that do not causally influence each other (Hayes, 2018). However, the complex therapeutic process might be reflected more adequately by considering multiple mediators that also causally influence each other (McMahon & Forehand, 2003; Schmidt & Schimmelmann, 2015) – the serial or sequential mediation model (e.g., treatment group influences therapist behavior, which then affects parental behavior, which in turn influences child externalizing behavior). Although a small number of studies have analyzed sequential mediation models in child psychotherapy (Dekovic et al., 2012; McClain et al., 2010), these models have not yet been

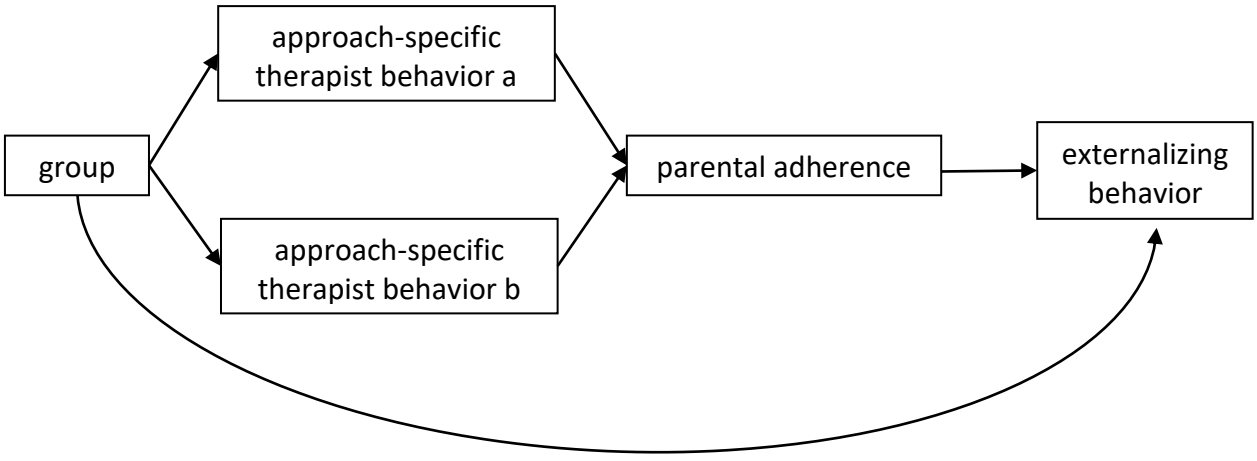
considered in parent management training for child externalizing behavior problems (Treier, Hautmann, Dose, et al., 2022).

One potential sequential mediator in parent management training might be parental adherence. Parental adherence – also known as parent (participation) engagement or parent involvement – can be defined as active and meaningful participation in treatment (Haine-Schlagel & Walsh, 2015). The concept of parental adherence covers a rather broad spectrum of therapy-related behavior, from active participation in sessions to the implementation of interventions in between sessions, e.g., homework assignments or adapting parenting behaviors (Haine-Schlagel & Walsh, 2015). Interestingly, previous research suggests both that a) therapist behavior influences parental adherence (Leitao et al., 2021; Martinez et al., 2017) and b) parental adherence influences child outcomes (Haine-Schlagel & Walsh, 2015; Kling et al., 2010).

Taking the research on therapist behavior and parental adherence together, the following sequential mediation model might be established: Interventions with different therapeutic approaches (independent variable) would explain approach-specific therapist behaviors (first mediator), which might then increase parental adherence (second mediator), which in turn might reduce child externalizing behavior problems and functional impairment (dependent variable; see Fig. 2).

Figure 2

Exemplary Sequential Mediation Model With the Group as the Independent Variable, the Approach-Specific Therapist Behavior a and b as the Mediators, and the Externalizing Behavior Problems as the Dependent Variable



1.8 Aims of the Present Thesis

The present thesis analyzes data from Hautmann et al. (2018). In this randomized controlled trial, telephone-assisted self-help parent management training with a behavioral focus was compared to telephone-assisted self-help parent management training with a nondirective focus (Hautmann et al., 2018; Katzmann et al., 2017; Treier, Hautmann, Dose, et al., 2022; Treier, Hautmann, Katzmann, et al., 2022). The sample comprised parents of children diagnosed with externalizing behavior problems. Both interventions combined self-help booklets with therapist consultations via telephone.

The aim of the first publication in this thesis was to examine the differentiation in treatment components between the two interventions. Due to the lack of an observational measure for the classification of behavioral and nondirective therapist behavior in parent management training for child externalizing behavior problems, we developed and evaluated the Therapist Intervention Scale (TIS) before analyzing treatment components using the newly developed measure (Treier, Hautmann, Katzmann, et al., 2022).

In the second publication, the aim was to examine potential mediating processes in the two interventions. Specifically, we aimed at finding differential process mechanisms for the behavioral and the nondirective intervention. We analyzed whether the two interventions would lead to approach-specific therapist behavior, which would in turn be associated with a decline in externalizing behavior and functional impairment (Treier, Hautmann, Dose, et al., 2022). Due to the lack of studies investigating sequential mediator models in the treatment of child externalizing behavior problems, we additionally analyzed parental adherence as a sequential mediator from an exploratory perspective (Treier, Hautmann, Dose, et al., 2022). In particular, we analyzed whether the two interventions would lead to approach-specific therapist behavior, which would increase parental adherence, which would then be associated with a decline in child externalizing behavior and functional impairment (Treier, Hautmann, Dose, et al., 2022).

To our knowledge, the following two publications were the first to develop an observational measure focusing on treatment differentiation in the treatment of children diagnosed with externalizing behavior problems (cf. Treier, Hautmann, Katzmann, et al., 2022) and the first to analyze therapist behavior as a potential process mechanism and a sequential mediator model in parent management training for child externalizing behavior problems with different therapeutic foundations (cf. Treier, Hautmann, Dose, et al., 2022).

2 Treatment Differentiation in Behavioral and Nondirective Guided Self-Help

Treier, A.-K., Hautmann, C., Katzmann, J., Nordmann, L., Pinior, J., Scholz, K. K., & Doepfner, M. (2022). Treatment components in behavioral versus nondirective telephone-assisted self-help interventions for parents of children with externalizing behavior problems. *Journal of Clinical Psychology*, *78*(5), 735-746. https://doi.org/10.1002/jclp.23255

The following publication corresponds to the published manuscript. However, to facilitate the readability of the text, we incorporated the tables from the online supplement and adapted the numbering of the tables. Additionally, we have incorporated the references of this publication into one reference list for the thesis – thus unifying reference styles.
Please cite the reference stated above when referring to the publication.

1 Introduction

Numerous studies have developed and evaluated interventions specifically for the context of child and adolescent psychotherapy (Weisz et al., 2017). The efficacy of these therapies has been demonstrated for behavioral as well as nonbehavioral approaches in extensive meta-analyses (e.g., Weisz et al., 2017). Parent management training has been shown to be one of the most effective interventions for the treatment of externalizing behavior problems (e.g., Mingebach et al., 2018). Psychotherapy interventions supporting children or parents in the form of guided self-help interventions demonstrated nearly equivalent effects to face-to-face therapies, while yielding the additional advantage of easier access (Bennett et al., 2019). Although there is a large knowledge base on the efficacy of parent management training including self-help interventions, much less is known about the mechanisms leading to change in mental disorders in children and adolescents.

Typically, studies focus on the mechanisms of change related to the patient, parent, or family (Patel et al., 2017). Only a small number of studies have focused on change that may be induced by different therapeutic techniques (e.g., Martinez et al., 2017). Measuring therapeutic behavior is of particular interest as it offers the possibility to evaluate (1) whether treatment components have been delivered as planned—that is, treatment integrity—and subsequently; (2) whether a particular behavior may be of importance for treatment outcomes. To identify whether therapeutic behavior is causing change, it is crucial to measure and implement treatment integrity adequately. It is necessary to evaluate both intended and unintended interventions (McLeod et al., 2015). Furthermore, when comparing two or more treatments in a controlled trial, these treatments should demonstrate sufficient differentiation. Only if all of these prerequisites are accurate can adequate conclusions about the efficacy of treatments be drawn (Bhar & Beck, 2009).

Measuring treatment integrity within psychotherapeutic treatments is rather complex. In their systematic review, Goense et al. (2014) investigated the assessment of treatment integrity in evidence-based interventions for youth with externalizing behavior. The authors demonstrated that only a small number of studies applied measures of treatment integrity and even fewer studies measured different aspects of treatment integrity. Additionally, therapist ratings are typically applied for the assessment, but these indirect measures usually overestimate the integrity (Weck et al., 2011). While direct observational measures using videotapes, audiotapes, or transcripts are more resource-intensive, they offer the advantage of independent and objective ratings. To the best of our knowledge, there are only a small

number of observational instruments which measure treatment components of different psychotherapeutic approaches for adults or adolescents (e.g., Grikscheit et al., 2015; Midgley et al., 2018; Watzke et al., 2008). Moreover, there are even fewer for children (McLeod et al., 2015) and none with a focus on parent management training.

In a recent study, we compared a behavioral with a nondirective telephone-assisted self-help parenting intervention (Hautmann et al., 2018). The analysis of efficacy revealed that symptom improvements occurred in both interventions. Moreover, while differences emerged in blinded symptoms of the oppositional defiant disorder (ODD), there were no differences between the interventions across primary outcomes and informants. To adequately interpret these findings, we consider it important to assess treatment differentiation in the trial. Therefore, we aimed to (1) develop a reliable and valid rating system measuring behavioral and nondirective interventions and (2) to analyze the treatment differentiation in the behavioral and the nondirective telephone-assisted self-help intervention based on the developed rating system.

2 Methods

2.1 Design

In this randomized controlled trial, 149 parents of children aged 4–11 years fulfilling the diagnosis of attention deficit hyperactivity disorder (ADHD) and/or ODD according to the DSM-IV (American Psychiatric Association, 2000) were allocated to a behavioral or a nondirective telephone-assisted self-help intervention for parents by block randomization (intent-to-treat sample). Fifty-one parents completed the behavioral intervention and 59 completed the nondirective intervention (per-protocol sample). Details about the procedure can be found in Hautmann et al. (2018). In both interventions, over a period of five months, parents received eight self-help booklets fortnightly via mail and ten telephone consultations of 20–30 min by a therapist in the weeks in between. The booklets contained information on parenting behavior and interventions for handling problem behaviors of children. If parents gave permission, telephone consultations were audiotaped.

For our research question, all 16 booklets were rated with the newly developed Therapist Intervention Scale (TIS). Within the per-protocol sample, one audiotaped telephone counseling session was randomly selected for each family. We layered randomization by treatment phases: psychoeducation (Sessions 1–2), intervention (Sessions 3–8), booster (Sessions 9–10) in the ratio of 2:6:2. Sessions were rated if (a) parents had given consent to the

audiotaping, (b) data were available, and (c) data quality was sufficient, which was the case for 108 of 110 families. To assess interrater reliability, all 16 booklets and 20 randomly selected audiotaped sessions were rated twice. The required sample size for audiotaped sessions was calculated using the formulas of Walter et al. (1998).

2.2 Participants

2.2.1 Families. The participating parents had a mean age of *M* = 38.44 years (*SD* = 6.91), were mainly female (97.22%), and had *M* = 12.83 years of education (*SD* = 2.75). 17.59% were single parents. The children had a mean age of *M* = 7.19 years (*SD* = 1.98) and were mainly male (79.62%). 75.00% met the diagnostic criteria for ADHD while 78.70% met the diagnostic criteria for ODD according to the DSM-IV (American Psychiatric Association, 2000). There were no significant differences between the intervention groups regarding age, gender, diagnoses, or education. In comparative terms, more single parents participated in the nondirective intervention ($\chi^2[1] = 4.04$, $p = 0.044$).

2.2.2 Therapists. The five therapists performing the telephone consultations were clinical psychologists or educationalists, doctoral students, and in training for child and adolescent cognitive-behavioral therapy. All therapists received intensive training in both interventions and treated parents of both interventions. Regular supervision was conducted on the basis of audiotaped sessions, focusing on the integrity to the respective treatment manual and the discussion and rehearsal of difficult therapeutic situations. Supervisors were experienced psychotherapists of either treatment approach.

2.2.3 Raters. The two raters were clinical psychologists and doctoral students. One rater was in training for child and adolescent cognitive behavioral therapy, while the second rater had already completed the training. Both raters received intensive training based on a rating manual, rating samples of a booklet used in a previous study, and audiotaped sessions from families who terminated the treatment prematurely.

2.3 Treatment

The self-help booklets in the behavioral self-help intervention were developed based on a behavioral self-help book for parents of children with externalizing behavior problems (Döpfner & Schürmann, 2017), thus directly targeting children with ADHD and ODD. Information included psychoeducation about ADHD and ODD as well as instructions on the definition and behavioral analysis of specific problem behaviors, on interventions promoting

positive parent-child interaction, on the implementation of family rules, effective commands, positive and negative consequences as well as token systems, on the promotion of resources, and on stimulus management for difficult situations. Adapted to the theoretical background of the behavioral intervention, therapists counseled in a structured and directive way, focusing on the instructions for specific strategies and their implementation.

The self-help booklets in the nondirective self-help intervention were developed based on a nondirective self-help book for parents (Gordon, 2019), thus targeting challenging parenting situations in general. Information included psychoeducation about the parent-child relationship, instructions on demonstrating acceptance to children, on the implementation of communication methods and conflict resolution, and on stimulus management for simplifying daily life. Adapted to the theoretical background of the nondirective intervention, therapists counseled in a less structured way, without specific interventions other than basic interpersonal skills such as positive regard, empathy, authenticity, and support in exploring and expressing emotions.

2.4 Measures

2.4.1 Therapist Intervention Scale. To assess the extent of treatment components implemented by booklets and therapists, a team of three experts on child and adolescent psychotherapy (AT, CH, MD) constructed an item pool for the development of the TIS using an intensity content analysis approach with a combination of inductive and deductive development of categories to ensure content validity (Mayring, 2015). Deductively, we developed items for the original item pool based on treatment manuals, booklets, and sample audio tapes from noncompleter families. Inductively, we compared the developed items with items of the behavioral, nondirective, or family subscales of existing observational scales for treatment differentiation (M-PE/CBT-Adherence Scale: Grikscheit et al., 2015; Therapy Process Observational Coding System for Child Psychotherapy Strategies revised scale: McLeod et al., 2015; Comparative Psychotherapy Process Scale External Rater: Midgley et al., 2018; Hamburg Psychotherapy Process Scale Observer: Watzke et al., 2008) as well as reviews on treatment elements in clinical trials with children (Chorpita & Daleiden, 2009; Garland et al., 2008). Items with similar content were grouped together and summarized as one item in a second step. If necessary, items were reformulated to be independent of the psychotherapeutic approach to avoid bias towards one approach (McLeod et al., 2013).

We developed two versions of the TIS—one for the analysis of the booklets (TIS-Booklet) and one for the analysis of therapist behavior (TIS-Therapist) as it was not possible to assess items concerning interactive interventions (e.g., “The therapist practices the target behavior with the parent.”) and the style of the therapist (e.g., “The therapist expresses empathy toward the parent's expressed emotions and messages.”) within the booklets. The original item pool contained 23 items for the TIS-Booklet and 28 items for the TIS-Therapist. Each item was rated on a three-point scale ranging from 0 (not at all) to 2 (extensively), as items were rather broad (comparable to Grikscheit et al., 2015). Both frequency and intensity were considered for the rating. As recommended, rating units were booklets and telephone sessions, as the items aimed at capturing processes across the session as well as of different parts of sessions (Hill & Lambert, 2013).

2.4.2 Therapist Behavior Self-Report (TBSR). The self-developed clinical rating scale TBSR contained three items assessing the directivity, empathy, and acceptance of the telephone counseling on a three-point scale ranging from 0 (not at all) to 2 (extensively). The items were rated by therapists after each of the first eight telephone sessions (psychoeducation phase and intervention phase). Thus, the subscale Directivity consisted of the mean of eight items. Due to their proximity, the items empathy and acceptance were combined into one scale. Thus, the subscale Empathy & Acceptance consisted of the mean of sixteen items. In the present sample, both scales demonstrated good internal consistencies based on McDonald's Omega (1999), with values of 0.88 for the subscale Directivity and 0.94 for the subscale Empathy & Acceptance.

2.5 Data Analysis

Statistical analyses were performed with SPSS (IBM Corp, 2011). Estimates of McDonald's Omega (1999) for internal consistencies as well as Cohen's d (1988) and its confidence intervals for effect sizes were calculated in JASP (JASP Team, 2020). Missing values of the TBSR were imputed using a Bayesian stochastic regression imputation approach for single missing data imputation (Heymans & Eekhout, 2019).

2.5.1 Item Selection and Scale Development of the TIS. On the basis of TIS-Therapist data, an exploratory factor analysis with oblimin rotation was conducted within the per-protocol sample (n = 108)—allowing factors to be correlated (Hair et al., 2014). Only items demonstrating full-scale range (0–2) and sufficient intercorrelations (r°≥°0.30; Hair et al., 2014) were included. As the screen test (Cattell, 1966), the MAP test (Velicer, 1976), and our

theoretical considerations on behavioral and nondirective components pointed to a two-factor solution, and only the parallel analysis (Horn, 1965) pointed to a three-factor solution, we applied the two-factor solution. To increase robustness, items with low factor loadings of $a < 0.30$ in either a principal component analysis or a principal factor analysis were excluded (Hair et al., 2014). The allocation of items to a subscale was based on factor loadings. If items loaded on both factors, potential deletion and allocation were discussed in a group of three clinical and research experts (AT, CH, MD) based on theoretical considerations. Only items with very low interrater reliability values on the item level (intraclass correlation < 0.20) were excluded, as all further analyses were based on the scale level.

2.5.2 Interrater Reliability. Interrater reliability was analyzed using a two-way random effects model of the intraclass correlation (ICC) with absolute agreement (Koo & Li, 2016). For the booklets, average scores were used for further analyses. Consequently, the average measure of the ICC[2,2] was used. For the telephone sessions, ratings of the main rater were used for further analyses. Consequently, the single measure of the ICC[2,1] was used. Following Koo and Li (2016), we used the following interpretation of ICC values: ICC < 0.50 as poor, 0.50 ≤ ICC ≤ 0.74 as moderate, 0.75 ≤ ICC ≤ 0.89 as good, and ICC > 0.90 as excellent.

2.5.3 Internal Consistency. We employed a value of 0.70 as the level of acceptance (Nunnally, 1978) for McDonald's Omega (1999).

2.5.4 Construct Validity. For the analysis of construct validity, both TIS-Therapist subscales were correlated with each other as well as with both subscales of the TBSR (Directivity, Empathy, & Acceptance). We hypothesized that the behavioral subscale would correlate positively with therapist-rated directivity and that the nondirective subscale would correlate positively with therapist-rated empathy and acceptance. Following Cohen (1988), product-moment correlation values between 0.10 and 0.29 were interpreted as small, values between 0.30 and 0.49 as medium, and values above 0.49 as large.

2.5.5 Analysis of Treatment Differentiation. To examine treatment differentiation, we calculated independent samples t-tests for the TIS subscales. We hypothesized that booklets and therapists in the behavioral group would show more behavioral interventions, while booklets and therapists in the nondirective group would show more nondirective interventions. Following Cohen's guidelines (1988), we used the following interpretations for effect sizes: $0.20 \leq d \leq 0.39$ as small, $0.40 \leq d \leq 0.79$ as medium, and $d \leq 0.80$ as large.

3 Results

3.1 Item Selection and Scale Development of the TIS

Based on our predefined criteria, we excluded one item due to limited range (original item 10) and five items due to low intercorrelations (original items 3, 5, 8, 9, 16) before conducting the exploratory factor analyses. We excluded two items due to their low factor loadings (original items 4, 7). For the TIS-Therapist, three items were excluded due to a very low interrater reliability (original items 1, 12, 19). For the TIS-Booklet, only one item was excluded due to a very low interrater reliability (original item 2). The final item sets thus contained 17 items for the TIS-Therapist and 12 items for the TIS-Booklet. The results of the analyses and—if applicable—reason for exclusion are displayed for all items of the original item pool in Table 1. The final item set of both versions of the TIS is displayed in Table 2.

We discovered a clear pattern of the content of both scales: the first scale represented interventions with a focus on specific instructions to solutions for problem situations—therefore titled Guidance & Structures (e.g., "In the booklet, the parent is guided towards the modification of problem-maintaining structures/circumstances of the problematic situation." "The therapist provides a model for the concrete implementation or a precise instruction in regard to the interventions."). The second scale represented interventions with a focus on building relationships and the recognition and expression of feelings—therefore titled Relationship & Emotions (e.g., "The booklet encourages the parent to perceive and understand the feelings of the child." "The therapist appears to interact authentically with the parent."). One item loaded negatively on the second scale (final item 16) and was therefore recorded. Six items showed cross-loadings above $a = 0.30$. As we considered the four items loading positively on the first subscale and negatively on the second subscale (final items 3, 4, 9, 10) to be core concepts of the behavioral intervention, these items were not excluded, and were allocated to the scale Guidance & Structures. As we considered the two items loading positively on both subscales (final items 17, 19) to be core concepts of the nondirective intervention, these items were also not excluded, and were allocated to the scale Relationship & Emotions. The final item allocation based on factor loadings to TIS scales including detailed item statistics can be found in Table 3.

3.2 Interrater Reliability and Internal Consistency

ICC scores on the item level ranged from 0.36 to 1.00 for the TIS-Booklet ($M = 0.73$; $SD = 0.19$) and from 0.24 to 0.84 for the TIS-Therapist ($M = 0.59$; $SD = 0.15$)—thus

demonstrating poor to excellent reliability (Koo & Li, 2016). ICC scores for the scale Guidance & Structures were 0.95 for the TIS-Booklet and 0.91 for the TIS-Therapist—thus demonstrating excellent reliability (Koo & Li, 2016). ICC scores for the scale Relationship & Emotions were 0.81 for the TIS-Booklet and 0.71 for the TIS-Therapist—thus demonstrating moderate to good reliability (Koo & Li, 2016). Omega for the scale Guidance & Structures was 0.89 for the TIS-Booklet and 0.85 for the TIS-Therapist—thus well above the recommended level of acceptance. Omega for the scale Relationship & Emotions was 0.69 for the TIS-Booklet and 0.71 for the TIS-Therapist—thus on the borderline for the recommended level of acceptance.

3.3 Construct Validity

The relation between the two subscales of the TIS-Therapist was $r = -0.26$ ($p = 0.007$)—thus demonstrating a small negative effect. As we wished to gain more insight into this relation, we calculated several additional exploratory analyses. When looking more closely at the data structure, we discovered that the assumption of a linear model was not adequate. Testing a quadratic and a cubic regression model, we found a statistically significant quadratic model with an inverted U-shape.

The correlation between the corresponding TIS-Therapist subscale Guidance & Structures and the TBSR subscale Directivity was large ($r = 0.60$, $p < 0.001$), while the correlation between the corresponding TIS-Therapist subscale Relationship & Emotions and the TBSR subscale Empathy & Acceptance was small and nonsignificant ($r = 0.12$, $p = 0.229$). Comparable to the data structure between the two TIS-Therapist subscales, there was a significant negative correlation between the noncorresponding subscales of the TIS-Therapist and the TBSR ($r = -0.29$ to -0.41; $p < 0.010$).

3.4 Analysis of Treatment Differentiation

Table 4 displays differences on TIS subscales between the two interventions. The behavioral telephone-assisted self-help intervention demonstrated higher scores on the subscale Guidance & Structures, with $d = 1.89$ [0.67, 3.07] for the TIS-Booklet and $d = 1.20$ [0.79, 1.61] for the TIS-Therapist—thus demonstrating a medium to large effect. The nondirective telephone-assisted self-help intervention demonstrated higher scores on the subscale Relationship & Emotions, with $d = 1.72$ [0.53, 2.86] for the TIS-Booklet and $d = 1.34$ [0.92, 1.76] for the TIS-Therapist—thus demonstrating a medium to large effect.

Table 1

Exclusion Criteria of Original Item Pool of the Therapist Intervention Scale (TIS)

Original no.	Final no.	Item	Criteria	1) Range	2) Strongest Intercorrelation	3) PCA[1] Factor 1	3) PCA[1] Factor 2	4) PFA[2] Factor 1	4) PFA[2] Factor 2	*5)* ICC[3] TIS-Booklet	*6)* ICC[4] TIS-Therapist	Exclusion criteria
				0-2	$r \geq 0.30$	$a > 0.30$		$a > 0.30$		ICC > 0.20	ICC > 0.20	
01	01	Problem definition		0-2	0.58	0.58	0.06	0.53	0.04	0.44	0.02	6) (TIS-Therapist)
02	12	Elaboration of relationship between family members' behaviors		0-2	0.36	-0.01	0.56	-0.02	0.48	0.08	0.48	5) (TIS-Booklet)
03	-	Psychoeducation		0-2	< 0.30	-	-	-	-	0.75	0.91	2)
04	-	Focus on resources		0-2	0.43	0.28	-0.02	0.24	-0.03	0.96	0.28	3) 4)
05	-	Cognitive strategies		0-2	< 0.30	-	-	-	-	0.07	0.01	2) 5) 6)
06	03	Guidance on reinforcement		0-2	0.46	0.61	-0.29	0.57	-0.28	0.94	0.58	-
07	-	Guidance on positive interactions		0-2	0.42	0.34	-0.14	0.29	-0.13	0.60	0.49	4)
08	-	Guidance on increases in child resources		0-2	< 0.30	-	-	-	-	0.53	0.66	2)
09	-	Guidance on increases in parental resources		0-2	< 0.30	-	-	-	-	0.76	0.95	2)
10	-	Guidance on being directed by child		0-1	0.42	-	-	-	-	0.90	0.46	1)

Original no.	Final no.	Item	Criteria	1) Range	2) Strongest Intercorrelation	3) PCA[1] Factor 1	3) PCA[1] Factor 2	4) PFA[2] Factor 1	4) PFA[2] Factor 2	*5)* ICC[3] TIS-Booklet	*6)* ICC[4] TIS-Therapist	Exclusion criteria
				0-2	$r \geq 0.30$	$a > 0.30$		$a > 0.30$		ICC > 0.20	ICC > 0.20	
11	13	Guidance on recognition and acceptance of feelings		0-2	0.62	-0.23	0.69	-0.22	0.66	0.78	0.24	-
12	14	Guidance on empathy towards child		0-2	0.47	0.09	0.68	0.07	0.61	0.71	0.07	6) (TIS-Therapist)
13	15	Guidance on support of child in recognition and acceptance of feelings		0-2	0.47	0.08	0.56	0.06	0.48	0.36	0.48	-
14	02	Guidance on stimulus management		0-2	0.45	0.58	-0.21	0.54	-0.19	0.85	0.67	-
15	04	Guidance on negative feedback and consequences		0-2	0.46	0.46	-0.37	0.43	-0.34	0.72	0.58	-
16	-	Guidance on conflict management		0-2	< 0.30	-	-	-	-	0.96	0.67	2)
17	05	Transfer to individual situation		0-2	0.49	0.52	-0.01	0.47	-0.02	0.87	0.84	-

Original no.	Final no.	Item	Criteria	1) Range	2) Strongest Intercorrelation	3) PCA[1] Factor 1	3) PCA[1] Factor 2	4) PFA[2] Factor 1	4) PFA[2] Factor 2	*5)* ICC[3] TIS-Booklet	*6)* ICC[4] TIS-Therapist	Exclusion criteria
				0-2	$r \geq 0.30$	$a > 0.30$		$a > 0.30$		ICC > 0.20	ICC > 0.20	
18	06	Modeling or precise instruction		0-2	0.77	0.80	0.20	0.79	0.20	0.75	0.76	-
19	-	Practice		0-2	0.35	0.36	-0.05	0.32	-0.04	-	0.13	6)
20	07	Guidance on emotional or practical barriers		0-2	0.59	0.71	0.15	0.68	0.14	0.53	0.53	-
21	08	Homework assignment		0-2	0.43	0.61	0.10	0.56	0.08	0.75	0.76	-
22	09	Homework review		0-2	0.39	0.46	-0.35	0.43	-0.32	-	0.63	-
23	10	Use of materials		0-2	0.46	0.38	-0.44	0.36	-0.39	1.00	0.66	-
24	16	Session structure		0-2	0.49	0.31	-0.55	0.29	-0.50	-	0.38	-
25	11	Directivity		0-2	0.77	0.84	0.01	0.85	0.01	-	0.68	-
26	17	Unconditional positive regard		0-2	0.48	0.40	0.45	0.35	0.37	-	0.63	-
27	18	Empathy		0-2	0.62	-0.03	0.78	-0.03	0.75	-	0.63	-
28	19	Authenticity		0-2	0.48	0.55	0.43	0.50	0.37	-	0.43	-

[1] Pattern matrix of principal component analysis with oblimin rotation converged in nine iterations based on TIS-Therapist ratings.

[2] Pattern matrix of principal factor analysis with oblimin rotation converged in ten iterations based on TIS-Therapist ratings.

[3] Two-way random effects model of intraclass correlation (ICC) with absolute agreement, average measure of two raters.

[4] Two-way random effects model of intraclass correlation (ICC) with absolute agreement, single measure.

Table 2

Final Item Set of Both Versions of the Therapist Intervention Scale (TIS)

Item	TIS-Therapist	TIS-Booklet
	Subscale Guidance & Structures	
01 Problem definition	-	In the booklet, the parent is guided towards the definition and analysis of the problem based on a specific situation.
02 Guidance on stimulus management	The therapist guides the parent to modify problem-maintaining structures/circumstances of the problematic situation.	In the booklet, the parent is guided towards the modification of problem-maintaining structures/circumstances of the problematic situation.
03 Guidance on reinforcement	The therapist guides the parent to use positive reinforcement (verbally and nonverbally) in regard to the child's positive behavior or characteristics.	In the booklet, the parent is guided towards the use of positive reinforcement (verbal or nonverbal) in regard to the child's positive behavior or characteristics.
04 Guidance on negative feedback and consequences	The therapist guides the parent to use negative feedback (verbally and nonverbally) or other negative consequences in regard to the child's problem behavior.	In the booklet, the parent is guided towards the use of negative feedback (verbal or nonverbal) or other negative consequences in regard to the child's problem behavior.
05 Transfer to individual situation	The therapist and the parent transfer the content of the booklet to the individual situation of the parent.	In the booklet, the parent is guided towards the transfer of the content of the booklet to the individual situation of the parent.
06 Modeling or precise instruction	The therapist provides a model for the concrete implementation or a precise instruction in regard to the interventions.	The booklet provides a model for the concrete implementation or a precise instruction in regard to the interventions.

Item	TIS-Therapist	TIS-Booklet
	Subscale Guidance & Structures	
07 Guidance on emotional or practical barriers	The therapist discusses potential mistakes or potential emotional/practical barriers regarding the implementation of the intervention with the parent.	In the booklet, potential mistakes or potential emotional/practical barriers regarding the implementation of the intervention with the parent are discussed.
08 Homework assignment	The therapist assigns homework.	In the booklet, homework is assigned.
09 Homework review	The therapist reviews homework assignments.	-
10 Use of materials	The therapist provides materials to facilitate the recollection of the interventions in daily life.	The booklet provides materials to facilitate the recollection of the interventions in daily life.
11 Directivity	The therapist actively directs the parent during the session.	-
	Subscale Relationship & Emotions	
12 Elaboration of relationship between family members' behaviors	The therapist and the parent elaborate the relationship between the characteristics of each family member, the problem behavior of the child, the parental perception, or the parental behavior.	-
13 Guidance on recognition and expression of feelings	The therapist encourages the parent to recognize and express positive and negative feelings towards the child.	The booklet encourages the parent to recognize and express positive and negative feelings towards the child.
14 Guidance on empathy towards child	-	The booklet encourages the parent to perceive and understand the feelings of the child.

Item	TIS-Therapist	TIS-Booklet
	Subscale Relationship & Emotions	
15 Guidance on support of child in recognition and acceptance of feelings	The therapist guides the parent to support the child to recognize and accept his/her own feelings.	In the booklet, the parent is guided towards the support of the child to recognize and accept his/her own feelings.
16 Session structure	The therapist actively structures the session. *(recoded)*	-
17 Unconditional positive regard	The therapist expresses unconditional positive regard and acceptance for the parent.	-
18 Empathy	The therapist expresses empathy towards the parent's expressed emotions and messages.	-
19 Authenticity	The therapist appears to interact authentically with the parent.	-

Table 3

Factor Loadings, Interrater Reliability, Means and SDs on Item Level of the Therapist Intervention Scale (TIS)

Item	PCA[1]		PFA[2]		TIS-Booklet			TIS-Therapist		
	Factor 1	Factor 2	Factor 1	Factor 2	ICC(2,2)[3]	*M*	*SD*	ICC(2,1)[4]	*M*	*SD*
Subscale Guidance & Structures										
01 Problem definition	0.61	< -0.01	0.55	-0.01	0.44	0.91	0.74	-	-	-
02 Guidance on stimulus management	0.54	-0.26	0.50	-0.25	0.85	1.00	0.89	0.67	0.83	0.83
03 Guidance on reinforcement	0.56	-0.35	0.52	-0.33	0.94	0.66	0.89	0.58	0.82	0.87
04 Guidance on negative feedback and consequences	0.43	-0.42	0.40	-0.38	0.72	0.53	0.78	0.58	0.46	0.74
05 Transfer to individual situation	0.53	-0.06	0.47	-0.07	0.87	0.91	0.92	0.84	1.75	0.51
06 Modeling or precise instruction	0.82	0.12	0.80	0.12	0.75	1.44	0.79	0.76	1.39	0.73
07 Guidance on emotional or practical barriers	0.72	0.08	0.68	0.07	0.53	1.22	0.73	0.53	1.27	0.74
08 Homework assignment	0.60	0.05	0.53	0.03	0.75	0.69	0.87	0.76	0.53	0.78
09 Homework review	0.42	-0.40	0.38	-0.37	-	-	-	0.63	0.75	0.88
10 Use of materials	0.32	-0.48	0.29	-0.43	1.00	0.75	1.00	0.66	0.18	0.47
11 Directivity	0.84	-0.08	0.85	-0.07	-	-	-	0.68	1.15	0.81
Subscale Relationship & Emotions										
12 Elaboration of relationship between family members' behaviors	0.06	0.57	0.04	0.48	-	-	-	0.48	1.36	0.70
13 Guidance on recognition and expression of feelings	-0.17	0.71	-0.16	0.69	0.78	0.81	0.75	0.24	1.10	0.86
14 Guidance on empathy towards child	0.12	0.68	0.10	0.61	0.71	0.88	0.74	-	-	-

Item	PCA[1]		PFA[2]		TIS-Booklet			TIS-Therapist		
	Factor 1	Factor 2	Factor 1	Factor 2	ICC(2,2)[3]	*M*	*SD*	ICC(2,1)[4]	*M*	*SD*
Subscale Relationship & Emotions										
15 Guidance on support of child in recognition and acceptance of feelings	0.12	0.56	0.09	0.48	0.36	0.19	0.40	0.48	0.36	0.68
16 Session structure *(recoded)*	-0.26	0.58	-0.24	0.53	-	-	-	0.38	0.88	0.79
17 Unconditional positive regard	0.42	0.42	0.36	0.34	-	-	-	0.63	1.30	0.52
18 Empathy	0.03	0.79	0.03	0.77	-	-	-	0.63	1.38	0.56
19 Authenticity	0.59	0.38	0.53	0.32	-	-	-	0.43	1.20	0.51

[1] Pattern matrix of principal component analysis with oblimin rotation converged in three iterations based on TIS-Therapist ratings.

[2] Pattern matrix of principal factor analysis with oblimin rotation converged in eleven iterations based on TIS-Therapist ratings.

[3] Two-way random effects model of intraclass correlation (ICC) with absolute agreement, average measure of two raters.

[4] Two-way random effects model of intraclass correlation (ICC) with absolute agreement, single measure.

Table 4

Differences on Therapist Intervention Scale Between Telephone-Assisted Self-Help Interventions

	M (*SD*)				95% CI for *d*	
Subscale	Behavioral intervention	Nondirective intervention	Test statistic	*d*	Lower	Upper
Guidance & Structures						
Booklets	1.32 (0.58)	0.48 (0.24)	$t(14) = -3.78^{**}$	1.89	0.67	3.07
Therapists	1.17 (0.46)	0.68 (0.36)	$t(94) = -6.15^{***}$	1.20	0.79	1.61
Relationship & Emotions						
Booklets	0.31 (0.33)	0.94 (0.40)	$t(14) = 3.44^{**}$	1.72	0.53	2.86
Therapists	0.85 (0.33)	1.29 (0.33)	$t(106) = 6.96^{***}$	1.34	0.92	1.76

Note. *n* (booklets per intervention) = 8; *n* (therapists in behavioral intervention) = 51; *n* (therapists in nondirective intervention) = 57.

$^{**}p < 0.01$. $^{***}p < 0.001$.

4 Discussion

The present study extended the research on treatment differentiation by developing and evaluating the TIS measuring the content of booklets as well as therapist behavior and assessing treatment differentiation in a behavioral and a nondirective telephone-assisted self-help intervention for parents of children with externalizing behavior problems. The analyses suggest that the TIS is a reliable and valid rating measure (first aim). Additionally, the behavioral and the nondirective telephone-assisted self-help intervention demonstrated distinct treatment patterns (second aim).

When comparing the two final TIS subscales with existing observational scales, an overlap with several subscales is apparent. Most items of the subscale Guidance & Structures are comparable to items of the CBT subscales of McLeod et al. (2015), Midgley et al. (2018), and Watzke et al. (2008). The only scale containing a nondirective subscale, by McLeod et al. (2015), focuses on therapist style (validation, empathy, positive regard). While the TIS subscale Relationship & Emotions contains these treatment components, it also contains more specific interventions, such as elaboration of relationships between family members' behaviors, guidance on expressions of feelings, or guidance on empathy towards the child. Taken together, the subscale Guidance & Structures mainly contains cognitive-behavioral treatment

components, while the subscale Relationship & Emotions mainly contains nondirective treatment components.

Our analyses suggest that the TIS can be used as a reliable measure for rating treatment components of a behavioral and a nondirective telephone-assisted self-help intervention. While the interrater reliability was in the moderate to excellent range, we found slightly higher interrater reliability scores for the booklet version of the TIS compared to the therapist version. This can be explained by the methodology used for scoring as well as calculating the scores: First, there is less information included in a text than in an audiotape, which makes it easier to score (Hill & Lambert, 2013). Second, we used average ICC scores for the booklets, which typically result in higher values (Koo & Li, 2016). The internal consistency of the subscale Guidance & Structures was far above our predefined level in both TIS versions, while the internal consistency of the subscale Relationship & Emotions was slightly below for the booklet version. This is most likely due to the small number of only three items, as the internal consistency is strongly influenced by the number of items (Cho & Kim, 2015). Keeping this and the proximity to the level in mind, we would deem the internal consistency of the subscale Relationship & Emotions to be acceptable. Interestingly, we found slightly lower scores for the subscale Relationship & Emotions regarding both interrater reliability and internal consistency. This finding is comparable to the results of the corresponding client-centered versus behavioral subscale of McLeod et al. (2015). We suggest that the differences between the subscales might arise from the nature of their content: The more specific the content, the easier it is to reach agreement on a rating (Hill & Lambert, 2013). Thus, it might have been easier to reliably rate the specific behavioral interventions as compared to the slightly broader categories on relationships and emotions.

Our analyses suggest that the TIS can be used as a valid measure for a behavioral and a nondirective telephone-assisted self-help intervention. We found a medium negative correlation between the two TIS-Therapist subscales. When looking at the data in more detail, we discovered an inverted U-shaped model to be more adequate. We did not have a predefined hypothesis regarding the direction of the correlation, as we were unable to identify any comparable previous studies. Our resulting quadratic model suggests that the treatment components of the two scales are compatible up to a certain level, and might be incompatible beyond this level. To the best of our knowledge, the present study is the first to analyze this specific model, and we, therefore, suggest that the effect should be analyzed in further studies to test its replicability.

In line with expectation, we found a strong, positive relationship between the implementation of behavioral interventions rated by the observer and the therapist. Contrary to our expectation, only a small and nonsignificant correlation emerged between the implementation of nondirective interventions rated by the observer and the therapist. This discrepancy might be explained by three factors. First, compared to the therapist-ratings, the observer-ratings included a broader spectrum of content. Second, therapists rated themselves to be more empathetic and accepting than did observers. Social desirability might have had a stronger influence on this subscale of the TBSR, as therapists of both intervention groups might perceive these general attitudes towards the client to be significant. Third, an observer rating may not be able to assess the degree of empathy felt towards the client, but might rather assess the degree of empathy expressed towards the client.

As hypothesized, the behavioral telephone-assisted self-help intervention showed higher scores on the TIS subscale Guidance & Structures, while the nondirective telephone-assisted self-help intervention showed higher scores on the TIS subscale Relationship & Emotions. Thus, the two interventions displayed distinct intervention profiles: Therapists and booklets in the behavioral intervention supported parents by focusing on problem analysis, structural modification, contingency management, and transfer to daily life, while therapists and booklets in the nondirective intervention supported parents by focusing on elaborating the frame of reference, parents' and children's feelings, and parent-child communication. The booklets and therapists not only demonstrated a high treatment differentiation by employing the intended treatment components significantly more, but also by employing treatment components of the respective other intervention significantly less.

Some limitations of the present study should be noted. First, all therapists were in training to become behavioral therapists. As such, effects may have arisen due to a stronger expertise in behavioral treatment. To prevent these effects, we took numerous actions to ensure treatment integrity, as described above. In addition, therapists were still in training and did not have extensive experience in the implementation of behavioral therapy. The advantage of using the same therapists for both interventions lay in the prevention of therapist effects—therefore further increasing the comparability of the two interventions, in addition to comparable samples, treatment duration, and dose.

Second, we only rated one session per family, comparable to similar studies (e.g., Grikscheit et al., 2015). Some authors argue that more sessions across the therapy process should be rated to capture more variance (e.g., Weck et al., 2011). McLeod et al. (2015) were

able to demonstrate that time in treatment accounted for a significant proportion of the variance in the use of treatment components. With the aim of capturing as much variance during the therapy process as possible, we layered the randomized selection of sessions by treatment phases. Future research should analyze treatment sessions across the therapy process to derive conclusions regarding the effects of time on strategy use.

Third, in the factor analysis for the development of the TIS subscales, six items displayed cross-loadings above the threshold of 0.30—four of them with comparably low loadings below 0.50. By allowing factors to correlate and formulating items independently of their therapeutic approach, we intended to include treatment components that were either used in both interventions (for positive cross-loadings) or were typical for one and atypical for the other intervention (for negative cross-loadings). Additionally, all six items were considered as core concepts for either intervention by clinical and research experts. Each of the remaining 13 items demonstrated loadings above 0.50 and no cross-loadings. Considering the general factorial validity, the above-described construct validity as well as the content validity, we consider the TIS to be a valid measure.

5 Conclusions

While we know that psychotherapy with children and adolescents works, we do not know precisely why it does so. Indeed, the specific treatment process remains largely unclear. The present study describes the development and evaluation of a reliable and valid measure for treatment differentiation of a behavioral and a nondirective intervention for parents of children with externalizing behavior problems. With this measure, we are able to assess not only what therapists do, but also to what extent treatments can be differentiated and thus ensure that conclusions about the efficacy of different treatments are valid. The measure may also help to resolve the question of whether different therapeutic approaches operate through the same or through different mechanisms by analyzing the impact of treatment components on outcomes. In this study, we have already revealed that therapists as well as booklets showed distinct intervention patterns. The next step toward gaining more insight into mechanisms of change is to analyze therapeutic behavior as potential mediating process. Almost equally complex as psychotherapy itself is the path to understanding how psychotherapy works.

3 Mediators of Change in Behavioral and Nondirective Guided Self-Help

Treier, A.-K., Hautmann, C., Christina, D., Nordmann, L., Katzmann, J., Pinior, J., Scholz, K. K., & Doepfner, M. (2022). Process mechanisms in behavioral versus nondirective guided self-help for parents of children with externalizing behavior. *Child Psychiatry & Human Development*. Advance online publication. https://doi.org/10.1007/s10578-022-01400-0

The following publication corresponds to the published manuscript. However, to facilitate the readability of the text, we adapted the numbering of the tables. Additionally, we have incorporated the references of this publication into one reference list for the thesis – thus unifying reference styles.

Please cite the reference stated above when referring to the publication.

Introduction

Efficacy of Parent Training

Parent training has been shown to be effective in the treatment of externalizing behavior disorders in children and adolescents (Coates et al., 2015; Lundahl et al., 2006). This pertains to both behavioral and nonbehavioral parent training approaches, with neither demonstrating superiority over the other across different outcomes and observers (Lundahl et al., 2006; Weisz et al., 2013). Parent training is usually implemented face to face, but if there are barriers to face-to-face parent training, e.g., fear of stigma, lack of time, waiting time, or a lack of local treatment options (Reardon et al., 2017), self-help interventions might be a viable treatment alternative (Tarver et al., 2014). Self-help treatments are psychotherapeutic interventions delivered in written format or via multimedia (O'Brien & Daley, 2011), and range from completely self-administered interventions to guided interventions with additional therapist contact. Especially during the COVID-19 pandemic, self-help interventions were recommended to improve access to psychotherapy (Cortese et al., 2020).

In the treatment of externalizing behavior problems, self-help parent management training has demonstrated significant effects on parent-rated parenting behavior, parental wellbeing, child symptoms, and child functional impairment (Bennett et al., 2019; Dose et al., 2017; Tarver et al., 2014). Notably, the effects on child outcomes emerged despite no direct contact with the child. For blind/observer ratings of child symptoms, the evidence is mixed, with some studies demonstrating effects and others reporting no effects (Bennett et al., 2019; Tarver et al., 2014). Additional minimal therapist contact seems to improve the efficacy at least regarding particular outcomes (Bennett et al., 2019; Tarver et al., 2014). Guided self-help interventions have demonstrated nearly equivalent effects to face-to-face treatments, but may have the additional advantage of easier accessibility (Bennett et al., 2019).

Regarding different therapeutic approaches, a recent randomized controlled trial compared the efficacy of guided self-help parent training with a behavioral versus a nondirective basis for parents of children with externalizing behavior problems (Hautmann et al., 2018). In both conditions, parents received self-help booklets and telephone consultations. The therapeutic approaches were implemented both through differential contents of the self-help booklets (specific behavior modification strategies in the behavioral group versus focus on parent–child communication in the nondirective group) and through differential instructions for therapeutic behavior in the additional telephone counseling (directive focus on behavior modification in the behavioral group versus reflective focus without specific advice in the

nondirective group). Child symptom improvements were found in both groups (e.g., blind-rated ADHD, parent-rated functional impairment), and group differences emerged for specific outcomes in favor of the behavioral group (e.g., blind-rated ODD). However, in line with results on face-to-face parent training, no consistent superiority of either treatment was detected across different outcomes and informants. Moreover, at 12-month follow-up, there were no group differences at all.

Process Mechanisms of Parent Training

Despite evidence for the efficacy of (self-help) parent training, little is known about the processes responsible for the observed changes. We do not know whether parent training approaches based on different theoretical foundations (e.g., behavioral vs. nondirective approaches) vary in how they induce changes. Understanding these processes is important from a theoretical perspective, and may also help to optimize treatment components (Kazdin, 2007). To elucidate mechanisms of change, mediation analyses are typically employed. Mediators are intervening variables that account for the relationship of a dependent variable such as child outcome and an independent variable such as treatment group (Kazdin, 2007). In the context of parent training in child and adolescent psychotherapy, the majority of recent mediation studies concentrated on aspects of parent-child interactions, especially facets of parenting behavior, as putative mediators of change (Fagan & Benedini, 2016; Forehand et al., 2014; Patel et al., 2017).

Therapist Behavior as a Mediator of Change

However, little attention has been paid to process-related mediators of change, and knowledge about differential mechanisms of change of behavioral and nondirective parent training is limited. When examining potentially different mechanisms of change between therapeutic approaches, therapist behavior might be of particular interest, as different approaches conceptualize the role and behavior of the therapist in different ways. Several studies highlighted the role of therapist behavior in predicting treatment outcomes in parenting interventions: In a systematic review, Leitao et al. (2021) found therapeutic fidelity, structuring of treatment sessions, and positive behavior such as praise to be positively related to parent and child outcomes. In a meta-analysis on behavioral parent management training, Dekkers et al. (2022) found that interventions focusing on antecedents of child behavior were positively related to parenting outcomes and psychoeducation was negatively related to parenting

outcomes. Barnett et al. (2014) even demonstrated a mediation effect of responsive coaching in a behavioral parent training intervention on change in parenting outcomes, while no mediating effect of directive coaching emerged.

While we identified studies showing that therapist behavior in parenting interventions is predictive of treatment outcomes, to our knowledge, there are no mediation studies in the context of parent training based on different therapeutic approaches (e.g., behavioral versus nondirective treatment). Comparing two active intervention groups enables us to investigate differential mechanisms of change. We would expect therapists across all therapeutic approaches to employ basic interpersonal skills such as being empathetic, accepting, and genuine (Lambert & Ogles, 2013). For behavioral interventions, we would additionally expect a stronger focus on directivity and structures, including contingency management using directive methods such as modeling or homework assignments (Lundahl et al., 2006; McKee et al., 2008). For nondirective interventions, we would additionally expect a stronger focus on relationships and emotions, such as guidance on parent-child communication and using interpersonal methods such as facilitating emotional expression (Cuijpers et al., 2012; Lundahl et al., 2006).

The Present Study

This study aimed to examine therapist behavior as a mediator of the effects of the self-help intervention with a behavioral versus a nondirective basis (see Hautmann et al., 2018) for parents of children with attention-deficit/hyperactivity disorder (ADHD) and oppositional defiant disorder (ODD) on child symptoms of ADHD and ODD, and child functional impairment. We considered these outcome variables since ADHD and ODD are the most important outcome domains for our sample, and functional impairment is a main reason for referral (Daley et al., 2018). In particular, we sought to detect differential mediating processes for the two intervention groups. Assuming that parent training exerts its effects on child outcomes indirectly through therapist behavior, we developed and tested the following parallel mediation model (see Fig. 3a–c):

As therapists in the behavioral intervention were instructed to focus directively on teaching the parents specific strategies to deal with the child's behavior problems, we predicted that they would demonstrate greater guiding and structuring therapist behavior. Even though therapists in both interventions were instructed to counsel in a supportive way, we predicted that the therapists in the nondirective intervention would demonstrate greater emotion- and relationship-focused behavior, as they were specifically instructed to mainly

support the parents in reflecting of their feelings and behaviors. Based on previous studies (Barnett et al., 2014; Dekkers et al., 2022; Leitao et al., 2021), we hypothesized that, in turn, high levels of both guiding and structuring therapist behavior and sensitive, emotion- and relationship-focused behavior would lead to a reduction in blind-rated ADHD and ODD symptom severity, and parent-rated functional impairment.

Parental Adherence as a Potential Sequential Mediator

In recent years, most studies have considered parallel mediators (cf. Fagan & Benedini, 2016; Forehand et al., 2014). However, the complexity of the process may be better reflected by extending the focus to sequential mediation (e.g., study condition affects mediator A, which then influences mediator B, which in turn affects the outcome; Forehand et al., 2014; Schmidt & Schimmelmann, 2015). Therefore, we were additionally interested in extending our first model to a sequential mediation model. Although first studies have analyzed sequential mediations in the field of child and adolescent psychotherapy (Dekovic et al., 2012; McClain et al., 2010), to our knowledge, sequences of mediators have not yet been analyzed in the field of parent training for children with externalizing behavior problems. In parent training, parents' willingness to actively take part in the intervention and implement the strategies in daily life— parental adherence— might be an essential sequential mediator for the effectiveness of interventions. Common terms for parental adherence are parent involvement or parent (participation) engagement (Haine-Schlagel & Walsh, 2015). For our sample, we defined parental adherence as the comprehension of the contents of the self-help booklets and telephone consultations and the implementation of the parenting interventions of the respective treatment group at home. Previous studies found a potential influence of therapist behavior on parental adherence: Leitao et al. (2021) reported that empathetic and engaged therapist behavior predicted increased parental adherence (Giannotta et al., 2019; Orrell-Valente, 1999), while teaching and confronting therapist behavior predicted decreased parental adherence (Patterson, 1985). In a mediation study, Martinez et al. (2017) demonstrated that psychoeducation mediated the effect of different treatment approaches on parental adherence. Moreover, there is evidence of a positive relation between parental adherence and treatment outcomes. In their review, Haine-Schlagel and Walsh (2015) found consistent evidence of an association of parental adherence with child impairment and inconsistent evidence for child symptoms. Regarding externalizing behavior problems, Kling et al. (2010)

showed that the effects of behavioral parent training on child symptoms were mediated by homework fidelity.

Considering these previous findings on parental adherence, we developed and tested the following sequential mediation model from an exploratory perspective (see Fig. 4a–c): As in the previous model, we predicted that therapists in the behavioral intervention would demonstrate a higher level of guiding and structuring therapist behavior, while therapists in the nondirective intervention would demonstrate a higher level of emotion- and relationship-focused behavior. We predicted that, in turn, high levels of both therapist behaviors would lead to increased parental adherence. Finally, we predicted that a higher level of parental adherence would lead to a reduction in blind-rated ADHD symptom severity, blind-rated ODD symptom severity, and parent-rated functional impairment. Due to our limited sample size, this extension of the model was considered as exploratory.

Method

Study Design

Data were taken from the randomized controlled trial by Hautmann et al. (2018). Families were allocated to a guided self-help intervention with either a behavioral or a nondirective basis using block randomization. Parents in both treatment groups received eight self-help booklets fortnightly by mail, and ten fortnightly telephone consultations with a therapist, each scheduled to last about 20–30 min. The final two consultations were booster sessions. The telephone consultations were audiotaped if permitted by the parents (permission granted by 108 of 110 families). Data were collected before the beginning of the intervention (pre-treatment), during treatment (mediators), and after the 5-month intervention period (post-treatment). For details of the full procedure, see Hautmann et al. (2018).

Participants

Families. Families were recruited through institutions of the local health care systems (e.g. pediatricians, counseling services) throughout Germany. The institutions registered the families, who were then contacted by the researchers. Inclusion criteria were child age of 4–11 years and a child diagnosis of ADHD and/or ODD according to the DSM-IV (American Psychiatric Association, 2000) based on clinical interview (Disorder-specific diagnostic checklists of the Diagnostic system for psychiatric disorders in children and adolescents according to ICD-10 and DSM-IV [DISYPS-II]; Döpfner et al., 2008) with the parent(s) conducted by telephone. Exclusion

criteria encompassed an indication of an intellectual disability (clinical evaluation by local health provider) or a diagnosis of an autism spectrum disorder (telephone screening interview), indication of the need for more intensive treatment, an existing psychotherapy with a focus on parent training, a planned change in medical treatment, insufficient motivation to participate in the study, and insufficient German language skills. The study was approved by the Medical Ethics Committee of the University Hospital of Cologne. Informed consent was obtained from all parents prior to inclusion in the study.

While 149 parents were randomized (intention-to-treat sample), 51 parents in the behavioral and 59 parents in the nondirective intervention completed the treatment (i.e., received eight booklets and participated in ten telephone consultations; per-protocol sample). For parents who dropped out prior to completion, no or only partial mediator and outcome data were available. Therefore, the present study focused on the per-protocol sample. Two families did not provide permission to audiotape the telephone consultations, resulting in a final sample of 108 parents.

Therapists. The telephone consultations were performed by five therapists (degree in psychology or pedagogy) who were in training to become child and adolescent behavioral psychotherapists. All therapists treated parents in both treatment arms. To promote treatment integrity, several measures were implemented: Therapists received intensive training in both interventions and supervision was conducted regularly by experienced psychotherapists with specific training in the behavioral or nondirective treatment approach, integrating samples of audiotaped sessions.

Self-help Booklets

The self-help booklets for the behavioral intervention were developed based on a behavioral self-help book (Döpfner & Schürmann, 2017) addressed at parents of children with externalizing behavior problems (Döpfner et al., 2010). The booklets contained psychoeducational information about externalizing behavior problems, guidance on problem definition, the analysis of specific behavior problems and guidance on behavioral interventions such as promoting of positive parent-child interactions, reviewing and implementing family rules, effective commands, positive and negative consequences, and promoting the child's strengths. For the implementation of the interventions in daily life, the behavioral booklets contained worksheets, "memo cards" with the most important take-home messages, and homework assignments.

The self-help booklets for the nondirective intervention were based on a nondirective self-help book (Gordon, 2019) targeting challenging situations for parents in general (Arbeitsgruppe des Forschungsprojektes angeleitete Selbsthilfe, 2011). The booklets contained psychoeducational information about parent–child interactions, guidance on demonstrating acceptance towards the child, and information on nondirective interventions such as active listening, I-messages and joint conflict resolution.

Measures

Therapist Behavior. The extent to which therapists demonstrated (1) guiding and structuring behavior and (2) relationship- and emotion-focused behavior in the audiotaped counseling sessions was rated by blinded clinicians using the *Therapist Intervention Scale – Therapist Behavior* (TIS-Therapist; Treier, Hautmann, Katzmann, et al., 2022). The rating scale comprises the subscales *Guidance & Structures* (10 items) and *Relationship & Emotions* (7 items). The first subscale contains items on guiding and structuring therapist behavior, including guidance for the management of specific problem situations (e.g. “The therapist defines or analyzes the problem based on a specific situation together with the parent”, “The therapist guides the parent to use positive reinforcement (verbally and nonverbally) in regard to the child’s positive behavior or characteristics” or “The therapist assigns homework”). The second subscale contains items on therapeutic interventions with a focus on exploring and expressing feelings, and building relationships (e.g. “The therapist encourages the parent to recognize and express positive and negative feelings towards the child”, “The therapist encourages the parent to perceive and understand the feelings of the child”, “The therapist expresses unconditional positive regard and acceptance for the parent”). All items were rated on a 3-point Likert-type scale ranging from 0 (*not at all*) to 2 (*extensively*).

For each family, one audiotaped telephone counseling session was randomly selected, stratified by treatment phases in the ratio of 2:6:2 to ensure that all intervention periods were represented according to the number of sessions (Weck et al., 2011): psychoeducation (sessions 1–2), intervention (sessions 3–8), booster (sessions 9–10). For the analyses, the mean item score per subscale was calculated. In the present sample, the TIS-Therapist demonstrated good to excellent interrater reliability based on 20 randomly selected double-rated audiotaped sessions, with values of 0.91 and 0.71 for the subscales *Guidance & Structures* and *Relationship & Emotions*, respectively (ICC[1,2]; Treier, Hautmann, Katzmann, et al., 2022). Furthermore, based on McDonald’s Omega (1999), both subscales demonstrated an acceptable to good

internal consistency, with values of 0.85 and 0.71 for the subscales *Guidance & Structures* and *Relationship & Emotions*, respectively (Treier, Hautmann, Katzmann, et al., 2022).

Parental Adherence. The therapist-rated parental adherence was measured with the self-developed 2-item clinical rating scale *Parental Adherence (P-ADH)* after each telephone consultation. One item assessed the comprehension of the information given in the booklets and by the therapists ("On an overall basis, to what extent did the parent comprehend the content?") and one item assessed the implementation of the treatment components in the parents' daily practices ("To what extent did the parent implement the interventions?"). Both items were rated on a 3-point Likert-type scale ranging from 0 (*poor*) to 2 (*good*). The rating was based on the clinical impression during the counseling sessions and the information given by the parent: Therapists were instructed to ask parents during each session how well they comprehended the instructions, how helpful the strategies were, and how often they implemented the strategies. Therapists completed the scale after each of the first eight telephone sessions, in which parents had received new input through the booklets.

As we aimed to include ratings of therapist behavior from all treatment phases (i.e. sessions one–ten), for the exploratory sequential mediation model, we were therefore unable to assess the mediators chronologically for all families. However, to incorporate the idea of the hypothesized sequential model, we chose to use only the last four rated sessions of parental adherence. Thus, we calculated the mean item score of sessions five to eight. In the present study, the P-ADH demonstrated good internal consistency, with a value of 0.87 based on McDonald's Omega (1999).

Externalizing Behavior. ADHD and ODD symptom severity were rated by blinded clinicians using the *Diagnostic Checklist for Attention Deficit/Hyperactivity Disorder (DCL-ADHD)* and, due to the age range of the sample, the oppositional-aggressive subscale of the *Diagnostic Checklist for Disruptive Behavior Disorders (DCL-DBD ODD)*, which are part of the German diagnostic system *DISYPS-II* (Döpfner et al., 2008). Ratings were based on audiotaped semi-structured clinical interviews by the respective therapists. To ensure blinding, any information referring to intervention group or time of assessment was erased prior to the blinded rating. The DCL-ADHD comprises 18 items while the DCL-DBD ODD comprises eight items. All items were rated on a 4-point Likert-type scale ranging from 0 (*age-appropriate*) to 3 (*extensively*). Blinded clinicians completed the checklists at pre-treatment and post-treatment. For the analyses, the mean item score per scale was calculated. The DCL-ADHD and DCL–DBD ODD have demonstrated excellent interrater reliabilities of 0.94 and 0.98, respectively (ICC[2,2]; see

Hautmann et al., 2018). In the present study, both scales demonstrated good internal consistencies, with values of 0.85 and 0.80 for the DCL-ADHD and values of 0.78 and 0.79 for the DCL-DBD ODD at pre- and post-treatment, respectively, based on McDonald's Omega (1999).

Functional Impairment. Children's functional impairment was rated by parents using a German adaptation of the parent form of the *Weiss Functional Impairment Rating Scale* (WFIRS-P; Canadian Attention Deficit Hyperactivity Disorder Resource Alliance, 2011; Dose et al., 2019). The total scale comprises functional impairment in the domains of family, learning and school, life skills, child's self-concept, and social activities. The 40 items were rated on a 4-point Likert-type scale ranging from 0 (*not at all*) to 3 (*extensively*). Parents completed the scale at pre- and post-treatment. For the analyses, the mean item score was calculated. In the present study, the WFIRS-P demonstrated excellent internal consistency, with values of 0.92 and 0.95 at pre- and post-treatment, respectively, based on McDonald's Omega (1999).

Statistical Analyses

We applied a Bayesian stochastic regression imputation approach for single missing data, as this approach is able to account for uncertainty of the predicted values by considering error variance (Heymans & Eekhout, 2019). For the imputation, we considered sociodemographic variables, baseline data, process variables, and data at post-treatment as predictors. Missing data was 13% maximum for all variables except for adherence, with a higher percentage of 33%. Missing data analyses with Little's MCAR test (1988), including all variables relevant for the mediation models, indicated that data were missing completely at random: $\chi^2(61) = 64.54$; $p = .354$.

To test for baseline group differences, demographic and baseline data were compared between the treatment groups using Chi-square tests for categorical variables and independent samples *t*-tests for continuous variables. To examine whether the effects of the behavioral versus the nondirective self-help intervention on ADHD symptom severity, ODD symptom severity, or functional impairment, respectively, were mediated by therapist behavior and parental adherence, we performed mediation analyses. For this purpose, we employed the PROCESS macro for SPSS (IBM Corp, 2011) developed by Hayes (2018), which uses ordinary least squares regression to estimate the model parameters.

In a simple mediation model, an independent variable *X* exerts its effects on a dependent variable *Y* indirectly through a mediating variable *M*. The total effect (*c*) of *X* on *Y*

comprises a direct effect (*c*') and an indirect effect through *M* (*ab*; Preacher & Hayes, 2008). The direct effect is the effect of *X* on *Y* when controlling for *M* (Hayes, 2018). The indirect effect is the product of the effect of *X* on *M* – *a* – and of the effect of *M* on *Y* – *b* – (Preacher & Hayes, 2008).

When considering several possible mediators, it is recommended to examine them together in a multiple mediation model (Hayes, 2018). If mediators are assumed to not causally influence each other, they can be modeled as parallel mediators. In a sequential multiple mediator model, on the other hand, one mediator is assumed to cause changes in another mediator (Hayes, 2018). Thus, in a sequential mediation model with two mediating variables M_1 and M_2, there is an indirect effect through M_1 and M_2 (*adb*) in addition to the direct effect (*c*') and the specific indirect effects of M_1 and M_2 (ab; Preacher & Hayes, 2008).

In the present study, we examined the hypothetical model that the treatment group would lead to different levels of guiding and structuring as well as emotion- and relationship-focused therapist behavior, which would then cause changes in treatment outcomes (i.e., ADHD symptom severity, ODD symptom severity, or functional impairment). Thus, we considered treatment condition as independent variable and treatment outcome as dependent variable and modeled the aforementioned aspects of therapist behavior (as captured by the two TIS-Therapist scales) as parallel mediators (model number 4 in PROCESS, see Fig. 3a–c). For the additional analysis of the sequential models, we examined, from an exploratory perspective, whether therapist behavior would cause changes in parental adherence, which would in turn lead to changes in the treatment outcomes (model number 80 in PROCESS, see Fig. 4a–c).

We tested the model separately for each outcome measure (post-treatment ADHD symptom severity, post-treatment ODD symptom severity, post-treatment functional impairment). It should be noted that contrary to earlier recommendations (Baron & Kenny, 1986), the current literature does not consider a non-significant main effect to be an obstacle to mediation analyses (Hayes, 2018). Following Hayes (2018), we included the pre-treatment score of the respective outcome variable as covariate. As there was a higher percentage of single parents in the nondirective treatment arm than in the behavioral treatment arm (see Table 5), we included this variable as an additional covariate in the model. The inclusion of this variable might be of special importance in the sequential mediation model, as the adherence to a self-help program might me more challenging for single-parent families.

For the interpretation of indirect effects, we focused on the product of the effects constituting these indirect effects instead of considering the significance of the single paths defining them (Hayes, 2018). That is, we considered the products a_1b_1 and a_2b_2 to evaluate the presence of mediation effects in the parallel mediator model and the products $a_1d_1b_3$ and $a_2d_2b_3$ to evaluate the presence of sequential mediation effects. As recommended, we report unstandardized regression coefficients and used bias-corrected bootstrapping with 5000 resamples to estimate confidence intervals (Hayes, 2018). Effects were classified as significant if the 95% confidence intervals did not include zero. Moreover, we considered partially standardized coefficients for the mediation effects (effects relative to the standard deviation of the dependent variable) to gain an impression of the effect size, and considered the proportion of outcome variance explained by each model (R^2) to examine its particular goodness of fit.

Results

Sample Characteristics

Sample characteristics are displayed in Table 5. The children's mean age was 7.19 years (*SD* = 1.98) and 80% were male. 75% met the diagnostic criteria for ADHD and 79% met the diagnostic criteria for ODD. Thus, 54% met the criteria for both diagnoses. The mean age of the participating parents was 38.44 years (*SD* = 6.91) and 97% were female. There were no significant differences between the groups regarding age and gender of the child or the participating parent, the problem behavior of child, the functional impairment of the child, or the number of years of education of the participating parent. However, significantly more single parents participated in the nondirective self-help intervention (see Table 5).

Parallel Mediation Models

The results for the parallel mediation models (including ADHD symptom severity, ODD symptom severity, or functional impairment as dependent variable) are presented in Fig. 3a–c. We identified a significant indirect effect of group on post-treatment ADHD symptom severity and functional impairment through emotion- and relationship-focused therapist behavior in favor of the nondirective group (a_2b_2). That is, the nondirective treatment was associated with a higher level of emotion- and relationship-focused therapist behavior, which was in turn associated with lower levels of post-treatment ADHD symptom severity and post-treatment functional impairment. The respective significant partially standardized indirect effects through emotion- and relationship-focused therapist behavior were 0.41 in the model considering

ADHD symptom severity as outcome and 0.19 in the model considering functional impairment as outcome. The non-significant partially standardized indirect effect in the model using ODD symptom severity as outcome was 0.07. In other words, on average, two patients from different treatment groups differ by about 41%, 19%, and 7% of a standard deviation in their ADHD, functional impairment, and ODD scores, respectively, because of the indirect effects through relationship- and emotion-focused behavior.

Moreover, guiding and structuring therapist behavior could not be established as a mediator. The non-significant partially standardized effects were 0.07 for ADHD symptom severity, − 0.08 for ODD symptom severity, and 0.04 for functional impairment.

The parallel mediation models comprising the treatment group, the mediators, and the covariates explained 29% of the variance in ADHD symptom severity, 25% of the variance in ODD symptom severity, and 42% of the variance in functional impairment.

Exploratory Analysis of Sequential Mediation Models

The results for the sequential mediation models (including ADHD symptom severity, ODD symptom severity, or functional impairment as dependent variable) are presented in Fig. 4a–c. We identified a significant sequential indirect effect of group on post-treatment ADHD symptom severity and functional impairment through emotion- and relationship-focused therapist behavior and parental adherence ($a_2d_2b_3$). That is, the nondirective treatment was associated with a higher level of emotion- and relationship-focused therapist behavior, which was in turn associated with increased parental adherence, and finally led to reduced post-treatment ADHD symptom severity and functional impairment. The respective significant partially standardized indirect effects lay at 0.10 for the model including ADHD symptom severity as outcome and 0.11 for the model considering functional impairment as outcome. The non-significant partially standardized indirect effect in the model using ODD symptom severity as outcome was 0.08.

Guiding and structuring therapist behavior could not be established as part of a sequential mediating process. The partially standardized effects were − 0.04 for ADHD symptom severity, − 0.03 for ODD symptom severity, and − 0.05 for functional impairment.

The models including the sequential mediation comprising the treatment group, the mediators, and the covariates explained 33% of the variance in ADHD symptom severity, 27% of the variance in ODD symptom severity, and 48% of the variance in functional impairment.

Table 5

Demographic and Clinical Characteristics at Pre-Treatment and Tests for Between-Group Differences

variable	behavioral self-help intervention (n = 51)			nondirective self-help intervention (n = 57)			test statistic
	M	*SD*	%	*M*	*SD*	%	
child variables							
age (years)	7.06	1.89		7.32	2.07		$t(106) = 0.67$
gender (male)			82.4			77.2	$\chi^2(1) = 0.44$
ADHD	1.47	0.48		1.42	0.58		$t(106) = 0.49$
ODD	1.40	0.61		1.42	0.50		$t(106) = 0.17$
FI	0.89	0.40		0.95	0.43		$t(106) = 0.79$
parent variables							
age (years)	38.14	7.40		38.72	6.49		$t(106) = 0.44$
gender (female)			96.1			98.2	$\chi^2(1) = 0.47$
education (years)	12.75	2.61		12.91	2.89		$t(106) = 0.31$
single-parent status			9.8			24.6	$\chi^2(1) = 4.04$*

Note. Years of education were calculated based on the ISCED-97 classification.

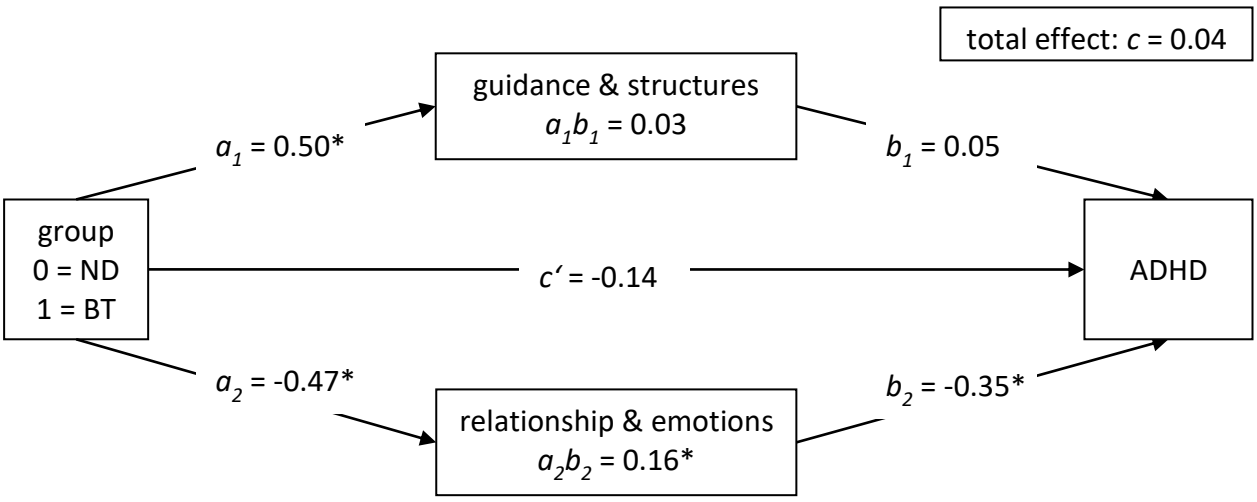
ADHD = symptoms of attention-deficit/hyperactivity disorder (rated by blinded clinician), ODD = symptoms of oppositional defiant disorder (rated by blinded clinician). FI = functional impairment (parent-rated).

*$p < .05$ (not adjusted)

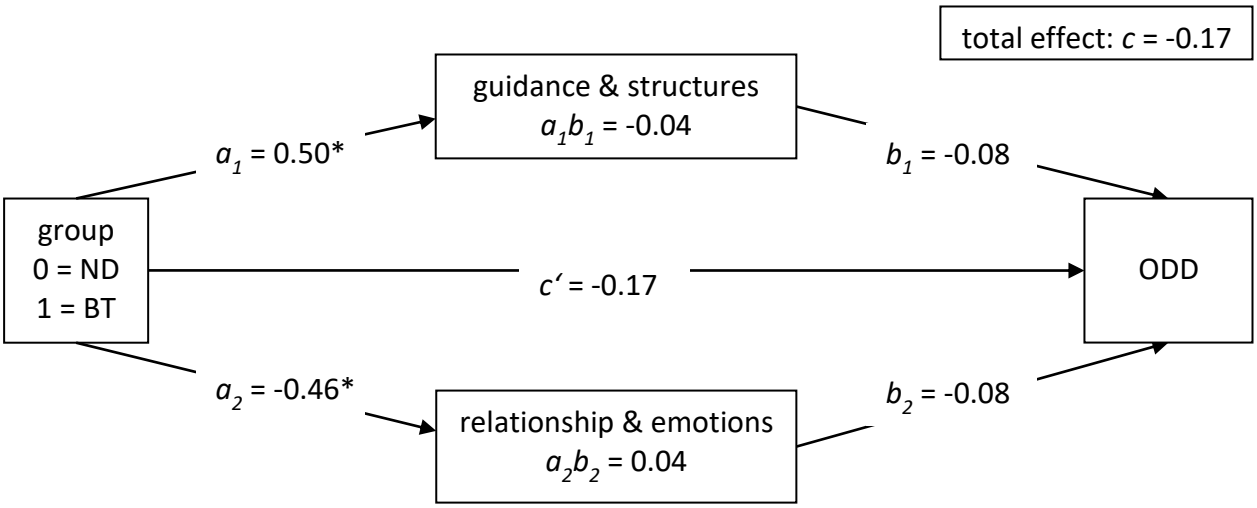
Figure 3

*Parallel Mediation Model for the Effects of a Nondirective Versus a Behavioral Self-Help Intervention Through Therapist Behavior (n=108) on **a** ADHD Symptom Severity **b** ODD Symptom Severity **c** Functional Impairment*

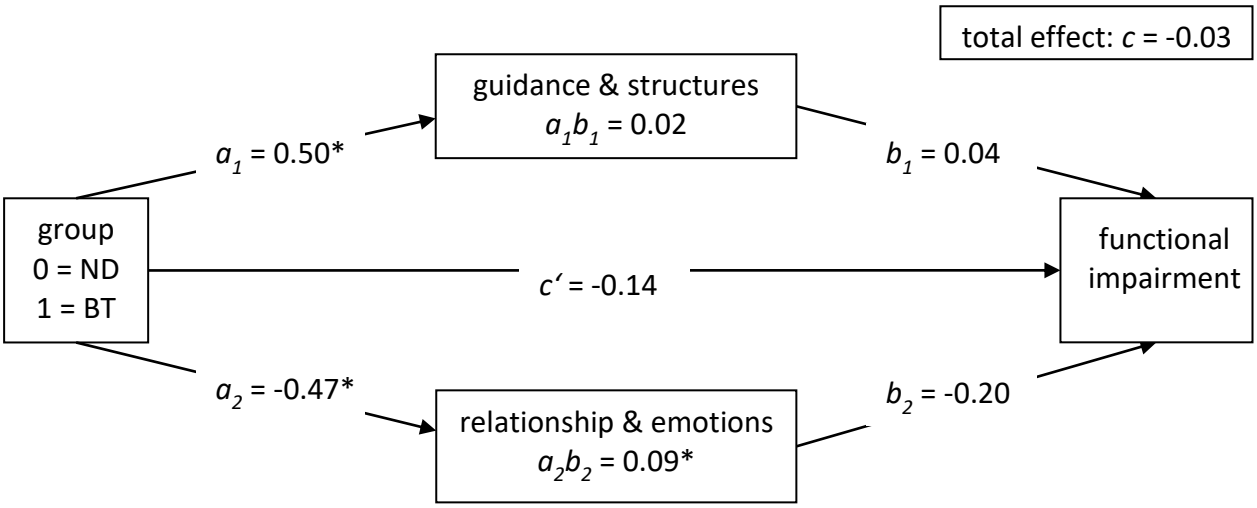
A



B



C

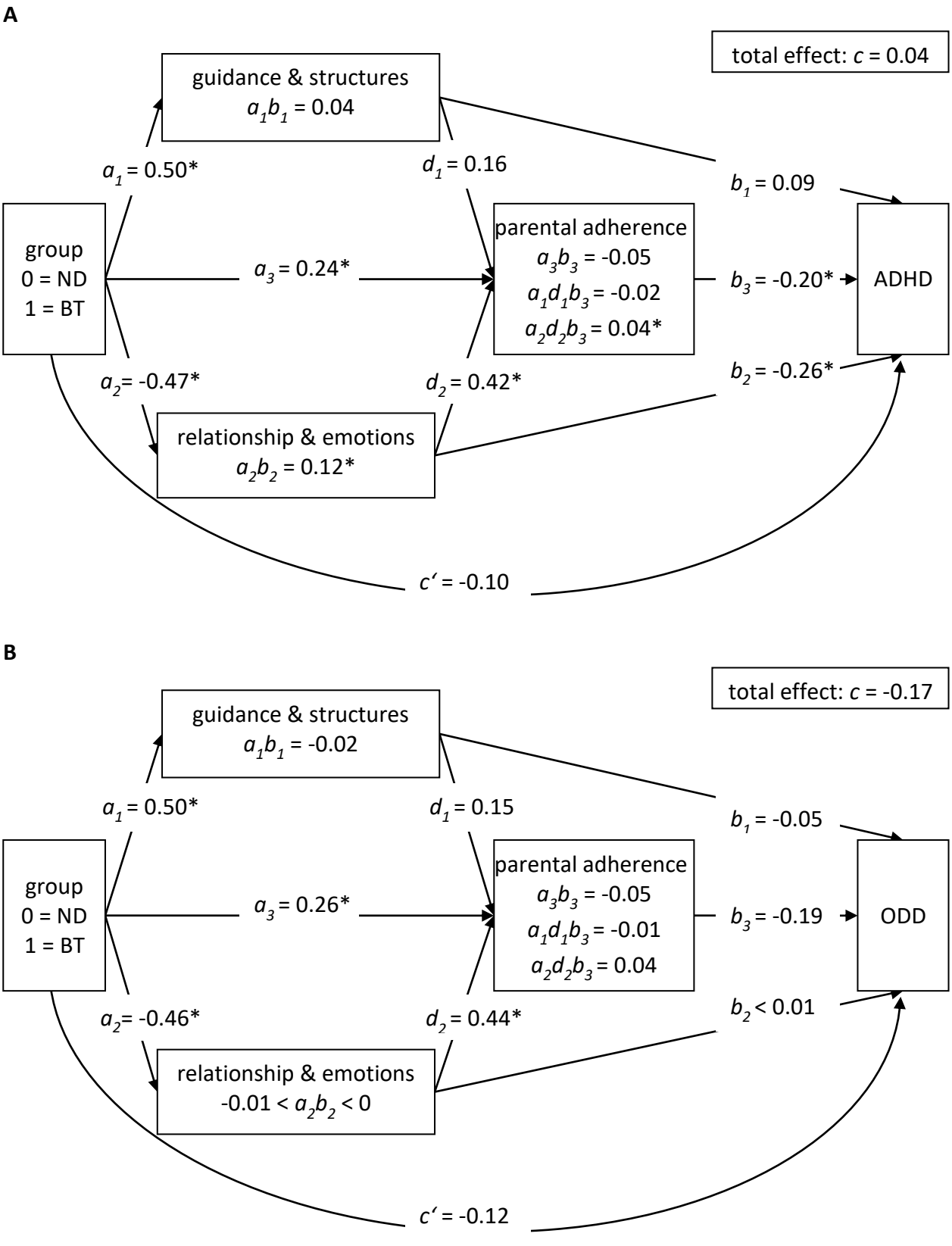


Note. Pre-treatment scores of outcomes and single-parent status were included as covariates in the models but are not depicted for the sake of clarity. BT=behavioral intervention. ND=nondirective intervention. ADHD=attention-deficit/hyperactivity disorder. ODD=oppositional defiant disorder. *a*=unstandardized regression coefficient for the effect of the intervention on a mediator. *b*=unstandardized regression coefficient for the effect of a mediator on the outcome. *c*'=unstandardized regression coefficient for the direct effect of treatment on outcome, controlling for putative mediators. *ab*=mediation effect.

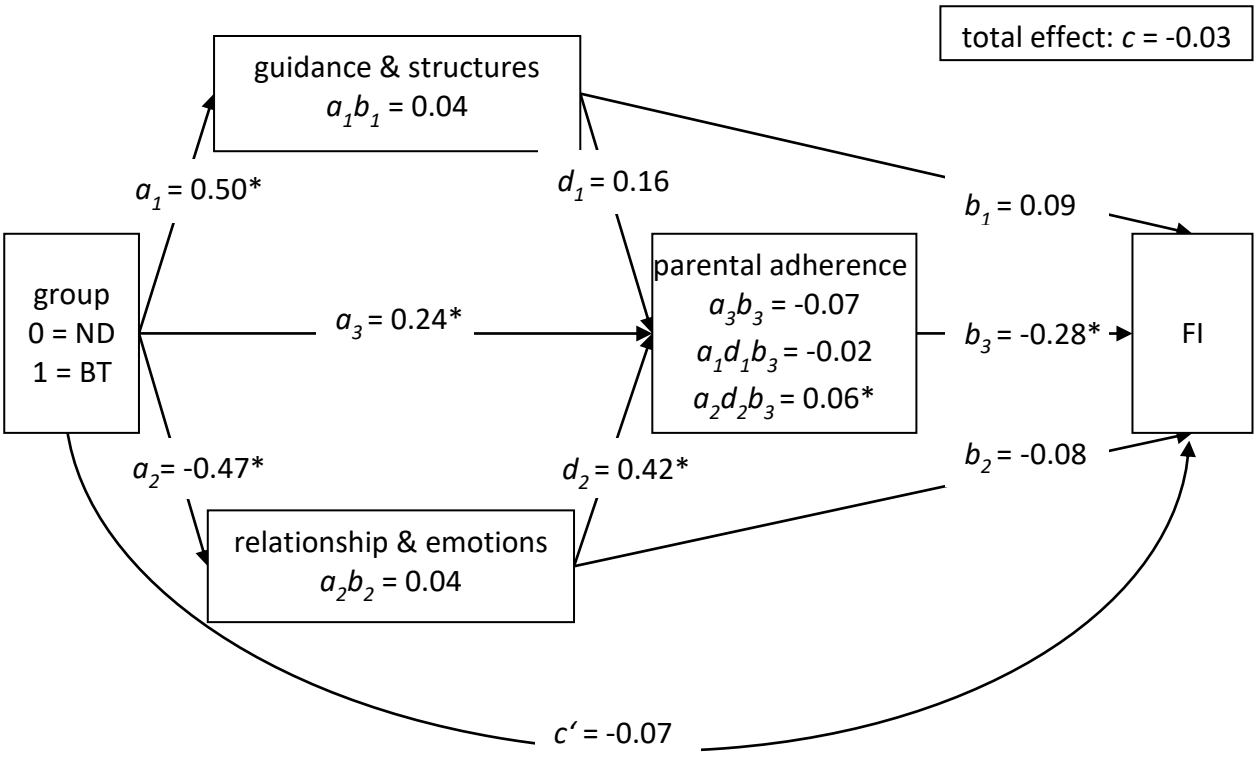
* significant effect.

Figure 4

*Sequential Mediation Model for the Effects of a Nondirective Versus a Behavioral Self-Help Intervention Through Therapist Behavior (n=108) on **a** ADHD Symptom Severity **b** ODD Symptom Severity **c** Functional Impairment*



C



Note. Pre-treatment scores of outcomes and single-parent status were included as covariates in the models but are not depicted for the sake of clarity. BT = behavioral intervention. ND = nondirective intervention. ADHD = attention-deficit/hyperactivity disorder. ODD = oppositional defiant disorder. FI = functional impairment. *a* = unstandardized regression coefficient for the effect of the intervention on a mediator. *b* = unstandardized regression coefficient for the effect of a mediator on the outcome. *c*' = unstandardized regression coefficient for the direct effect of treatment on outcome, controlling for putative mediators. *ab* = simple mediation effect. *abd* = sequential mediation effect.

* significant effect.

Discussion

The present study extends the research on process mechanisms by analyzing differential mediating mechanisms in a guided self-help intervention for parents of children with externalizing behavior disorders with a behavioral versus a nondirective basis. When controlling for baseline levels, we found a significant indirect effect on both child ADHD symptoms and functional impairment through emotion- and relationship-focused therapist behavior in favor of the nondirective intervention. Additionally, we found a sequential mediation effect through emotion- and relationship-focused therapist behavior and parental adherence in the models for these outcomes in our exploratory analyses.

Previous literature reported a link between positive or responsive therapeutic behavior and improved treatment outcomes (Barnett et al., 2014; Leitao et al., 2021). In accordance with these findings, our results revealed a significant mediation effect through emotion- and relationship-focused behavior. However, this effect only emerged for the nondirective intervention. As mentioned above, we expect therapists across different therapeutic approaches to employ basic interpersonal skills such as being empathetic, accepting, and genuine (Lambert & Ogles, 2013). Nevertheless, therapists in nondirective interventions tend to address these interventions in a more intensive and sustained manner, both in their behavior and in the therapeutic content, e.g., by giving guidance on supportive parent-child communication (Cuijpers et al., 2012; Lundahl et al., 2006). Therefore, in line with our hypotheses, therapists in the nondirective group demonstrated more emotion- and relationship-focused behavior than therapists in the behavioral group. Consistent with the theory underlying the nondirective approach, emotion- and relationship-focused behavior was associated with improved symptoms and impairment. To induce change, therapists might therefore have to focus more intensively and more explicitly on emotion- and relationship-focused behavior.

Contrary to our expectations, we found no evidence for the role of guiding and structuring behavior as a mechanism of change in favor of the behavioral intervention group as compared to the nondirective group. Our expectations were based on previous findings that structuring behavior and a focus on antecedents were related to improved treatment outcomes (Dekkers et al., 2022; Leitao et al., 2021). However, in line with the current results, Barnett et al. (2014) only demonstrated a mediation effect through responsive behavioral coaching but not through directive behavioral coaching. Interestingly, the authors also provided an explanation for this pattern of parents' skills demonstrated within the session, reporting that

parents with fewer skills were coached in a more directive manner. Thus, directive therapist behavior might be confounded with parental skills. Future research might therefore assess and analyze parental skills as a covariate of the proposed mediation model.

Our additional exploratory analyses suggest that there might even be a sequential mediation process in the models for ADHD and functional impairment. In particular, a more emotion- and relationship-focused behavior of the nondirective therapist might have improved parents' ability and willingness to engage in therapy, which might then have led to a symptom reduction in the child. This finding is in line with previous research demonstrating that empathetic and engaged therapist behavior predicted parental adherence (Giannotta et al., 2019; Orrell-Valente, 1999) and that parental adherence predicted at least some treatment outcomes (Haine-Schlagel & Walsh, 2015; Kling et al., 2010). As this is the first study to suggest a sequential mediation model for the mediation of the effects of parent training on externalizing behavior, future research should further analyze and potentially replicate the effect. If the proposed sequential mediation effect can be replicated, this may imply that emotion- and relationship-focused therapist behavior in nondirective interventions is particularly helpful for parents at risk of low parental adherence, such as those with lower socioeconomic status or parental mental health problems (Haine-Schlagel & Walsh, 2015), to improve both adherence and treatment outcomes. Furthermore, it would be interesting to extend the definition of parental adherence to the attendance of sessions. As we focused on parents who fully completed the intervention, we were unable to include this factor in our analyses.

Interestingly, the specific mediation effect through emotion- and relationship-focused behavior was stronger in the parallel mediation model considering ADHD symptoms as an outcome than in the parallel mediation model considering functional impairment as an outcome. This was surprising given previous suggestions that environmental factors might play a more pronounced role in the development of functional impairment and ODD symptoms than in the development of ADHD symptoms (Azeredo et al., 2018; Tarver et al., 2015). Therapists' empathetic and accepting behavior, combined with the encouragement to express feelings, might have led to relief and an acceptance of negative feelings and behaviors both in the parents and in their child. Additionally, parents in the nondirective intervention might have communicated with their child more empathetically and supportively. ADHD core symptoms potentially result from a motivational dysfunction, and children with ADHD respond particularly strongly to social rewards (Kohls et al., 2009). Thus, parents' more supportive communication

with their children following therapists' emotion- and relationship-focused behavior in the nondirective intervention might have contributed to the stronger mediation effect in the ADHD model.

To gain an impression of the model fit of our models, we analyzed the proportion of variance in the outcome variables explained by the treatment group, the covariates, and the mediators together. We were able to explain a substantial proportion of the variance at post-assessment with our parallel mediation models that is a quarter to a third of the variance in ADHD and ODD symptom severity and between 42% and 48% of the variance in functional impairment. Thus, although our models explained a considerable amount of variance, there is still scope to examine further process mechanisms. In our models, pre-treatment scores of functional impairment seemed to be particularly important for post-treatment scores as compared to ADHD and ODD symptom severity, indicating that functional impairment might have been more stable than child symptoms. This finding is in line with previous research demonstrating that the assessment of improvements in child externalizing symptoms during treatment might fail to consider continued problems in functioning (Coghill et al., 2019). The higher stability of functional impairment might therefore indicate that some contributing factors were not targeted within our interventions. Since both interventions focused on parent–child interactions, impairment such as in school or with peers, or impairment due to comorbidities, might consequently not have improved as much.

Analyzing the same data as in the present study, Katzmann et al. (2017) found a mechanism of change specific to the behavioral program, and showed that the behavioral program exerted its positive effects on child behavior problems through an improvement in parental attributions. The present findings and those from Katzmann et al. (2017) can be seen in a complementary fashion, with one analysis showing a specific mediating mechanism in favor of the behavioral program and the other in favor of the non-behavioral program. This corresponds to the idea of different or even opposing mediation effects leading to similar outcomes in both treatment approaches. To interpret the present findings, it is important to emphasize that our study design does not allow us to identify shared processes, as we did not include an untreated control group. These shared processes might have played a role, as there were several similarities across the two interventions, such as the focus on improving parent–child interactions or the instruction for therapists to counsel in a supportive way.

Some limitations to the present findings should be mentioned. First, all therapists were in training to become behavioral therapists, but counseled families in both interventions.

Accordingly, therapists might have shown greater expertise in the behavioral treatment and, additionally, might have identified themselves more with the behavioral program (allegiance effect; Dragioti et al., 2015). To promote a comparable treatment integrity in the two groups, we took numerous actions, such as intensive training, regular supervision with experts in their field, or sample audiotapes to monitor therapist behavior. Through therapists performing therapies in both intervention groups, we intended to minimize the influence of unique therapist characteristics, thereby making the interventions more comparable (Goldbeck, 2011).

The second limitation lies in our implementation of the blinded rating. As mentioned above, blinded ratings were based on structured interviews with the participating parent(s), and no direct exploration or observation of the child was conducted. Instead of depicting actual changes in child behavior, the ratings of post-treatment ADHD symptoms may rather reflect a change in the parents' evaluation of their child's behavior. Direct observation of child behavior should be used in future studies to test the validity of our findings.

Third, the parents in our sample had a rather high level of education (almost 13 years). The ability to structure the learning process and the implementation of changes at home might be especially crucial for self-help interventions. Thus, parents with higher levels of education might be more willing to participate in and complete self-help interventions. This notion is in line with studies indicating a higher likelihood of early treatment termination for parents with lower education in face-to-face training (Danko et al., 2016). Our results might therefore not be generalizable to parents with lower educational levels.

Fourth, there are some limitations specific to the sequential mediation model. As mentioned above, due to our limited sample size, the analysis of the sequential mediation model was considered exploratory in nature. For the parallel mediation model, the required sample size to detect moderate or small to moderate mediation effects is between 77 and 115 (Fritz & Mackinnon, 2007). However, for a more complex model such as a sequential mediation model, a larger sample size is needed to be able to detect the same effects.

Furthermore, in order to draw causal inferences, it is important to determine a timeline for the components of the mediation process (Kazdin, 2007). As stated above, in some families, a chronological assessment of the mediators in correspondence with their chronological appearance in the sequential models could not be established. To examine the possibility of a reverse order of the mediator sequence, we calculated a mediator model with parental adherence as the first mediator and therapist behavior as a subsequent mediator, and the results indicated no sequential mediation. This finding, in combination with our theoretical

model and previous studies demonstrating that therapist behavior predicted parent engagement (Leitao et al., 2021; Martinez et al., 2017), increases the likelihood of the assumed causal order.

Additionally, there was a high percentage of missing data for the adherence ratings. However, when analyzing only cases without any missing data, the effect sizes of the detected sequential mediation effects were at least comparable. Even though the sample size was smaller, the effect was still significant in the model including functional impairment as an outcome, while this was not the case in the model including ADHD as the dependent variable. Taken together, these limitations of the sequential models indicate that the associated findings should be interpreted with caution.

Our findings contribute to the understanding of which mechanisms of change are unique and effective to a particular treatment approach. To our knowledge, this is the first study to analyze differential aspects of therapist behavior as well as sequential mediation in the context of parent training for child externalizing problem behavior. Our results indicate that the stronger focus on emotion- and relationship-focused therapist style in the nondirective intervention might have led to a reduction in ADHD symptom severity and functional impairment in the child, potentially by encouraging parents to adhere to the treatment. This highlights the role of emotion- and relationship-focused behavior in the induction of changes. No specific mechanism of change was revealed for the intervention with a behavioral basis. However, this might be due to the sample size and the limited scope of the mediators under investigation. Previous findings have demonstrated mechanisms of change unique to the behavioral program as compared to the nondirective intervention (Katzmann et al., 2017). Further research could integrate the different results into a more general model with a larger sample size. We consider these findings, particularly important and potentially generalizable given that the interrelations were established across domains rated by different informants. In sum, the study proposes potential mediating mechanisms unique to the nondirective intervention. To gain a deeper understanding of how interventions with different theoretical foundations vary in how they induce change, further research is needed. Only if we understand the processes responsible for change can we optimize treatment components adequately.

4 Discussion

4.1 Summary and Interpretation of Results

The present thesis extended the research in this field by developing and evaluating an observational instrument for measuring treatment components – the Therapist Intervention Scale (TIS) – and by analyzing treatment components in telephone-assisted self-help parent management training with a behavioral basis and a nondirective basis for child externalizing behavior problems (cf. Treier, Hautmann, Katzmann, et al., 2022). Furthermore, the thesis examined potential parallel and sequential mediators of change in the two examined self-help interventions (cf. Treier, Hautmann, Dose, et al., 2022). Our results suggest an acceptable to strong reliability and validity of the TIS subscales and a significant difference between the behavioral intervention and the nondirective intervention regarding both the self-help booklets and the therapist behavior (Treier, Hautmann, Katzmann, et al., 2022). Furthermore, our results suggest that therapists' emphasis on emotions and relationships might be a relevant mediator of the nondirective intervention for reductions in ADHD severity as well as functional impairment (Treier, Hautmann, Dose, et al., 2022). Our exploratory analyses suggest an additional sequential mediation effect of therapist behavior followed by parental adherence in these models.

The TIS was developed based on a combined inductive and deductive approach (Mayring, 2015), thus extending the existing observational rating scales and reviews on treatment elements with the specific information on interventions implemented in our studies. In addition, we applied predefined psychometric criteria and exploratory factor analysis for item selection and scale allocation. To assess the reliability of the TIS, we analyzed the interrater reliability and the internal consistency of the subscales. Interrater reliabilities were performed on both the item and the scale level. For the item level, interrater reliabilities were poor to excellent (Treier, Hautmann, Katzmann, et al., 2022). Interestingly, similar findings emerged for other existing observational measures for child psychotherapy (e.g., Hurlburt et al., 2010; McLeod et al., 2015), whereas some measures for adult or adolescent psychotherapy demonstrated at least moderate interrater reliabilities on the item level (e.g., Diamond et al., 2007; Watzke et al., 2008). For the scale level, we found excellent reliability for the subscale Guidance & Structures and moderate to good reliability for the subscale Relationship & Emotions (Treier, Hautmann, Katzmann, et al., 2022). Compared to other measures, we found similar (Grikscheit et al., 2015; McLeod et al., 2015; Midgley et al., 2018) or higher interrater

reliability scores (Hurlburt et al., 2010) for our scales. Taking these results together, we decided to perform all subsequent analyses with the TIS on the scale level.

The internal consistency of our scales was on the borderline for the recommended level of acceptability to well above this level (Treier, Hautmann, Katzmann, et al., 2022). One potential reason for the borderline acceptability might be the low number of items on the particular scale (Cho & Kim, 2015). Unfortunately, most other studies analyzing observational measures did not report internal consistency as a second indicator of reliability. However, compared to the Therapeutic Behavior Rating Scale of Watzke et al. (2008), our scales showed a higher average level of internal consistencies, without any scales falling well below the level of acceptability. Watzke et al. (2008) provided another potential explanation for the scales with low internal consistency – which might also apply to our finding: Since the items consist of rather narrow descriptions of therapeutic behaviors, in clinical reality it is unlikely that all of the behaviors will be employed within one session.

To assess the validity of the TIS, we analyzed the association between the two subscales and the associations of the TIS scales with therapists' ratings of their directivity as well as empathy and acceptance. The association between the TIS scales was negative and small to moderate – indicating that the behavior assessed in the two scales might be of limited compatibility (Treier, Hautmann, Katzmann, et al., 2022). The effect size is comparable to previously reported associations between scales assessing behaviors of different therapeutic approaches (e.g., Diamond et al., 2007; McLeod et al., 2015). To interpret the direction of the association, the scales of McLeod et al. (2015) are barely comparable, as they encompass a behavioral, a client-centered, and a combined family scale. However, the Therapist Behavior Rating Scale used by Diamond et al. (2007) contains several at least partially overlapping items with the two TIS scales. Interestingly, Diamond et al. (2007) also found mostly negative correlations between items assessing behavioral therapist behaviors (e.g., behavioral intervention, homework assignments) and items similar to those of the emotion- and relationship-focused TIS scale (e.g., affect, vulnerable emotions).

As hypothesized, the rating of therapist behavior was comparable between observer and self-ratings (Treier, Hautmann, Katzmann, et al., 2022): We found a negative association between the scale assessing behavioral interventions and the scale assessing nondirective interventions both in observer ratings and in therapists' self-ratings. Furthermore, observer and therapist ratings were strongly associated for the respective scale assessing behavioral interventions. The only exception was the small but nonsignificant association between

observer and therapist ratings for the respective scale assessing nondirective interventions. The stronger deviation on the scales with a nondirective focus might be explained by the broader range of contents of the scale. Furthermore, some of the behaviors on the scale, such as the empathy of the therapist, are not immediately visible to the observer but can rather be inferred by the empathy that is expressed toward the parents.

In summary, the evaluation of the TIS mostly met our predefined criteria and is at least comparable to existing measures regarding reliability and validity, particularly when focusing on the scale level (Treier, Hautmann, Katzmann, et al., 2022). Thus, we argue that the TIS is a reliable as well as a valid observational measure. As such, we have extended existing research by providing an observational measure for the classification of approach-specific therapist behavior in behavioral and nondirective parent management training for child externalizing behavior problems.

To analyze the differentiation of treatment components, we compared the components of the self-help booklets as well as the therapist behavior during the telephone counseling between the behavioral and the nondirective intervention (Treier, Hautmann, Katzmann, et al., 2022). We found that compared to the nondirective intervention, the components of the behavioral intervention showed a stronger cognitive behavioral focus with components such as behavioral analysis, modification of family structures, guidance on contingency management, and homework assignments (Treier, Hautmann, Dose, et al., 2022; Treier, Hautmann, Katzmann, et al., 2022). Moreover, compared to the behavioral intervention, the components in the nondirective intervention showed a stronger nondirective focus with components such as support in the expression of and reflection on parental and child emotions, guidance in increasing empathy in parent-child communication, and participation of all family members in conflict solution. Thus, our analyses indicate a strong differentiation between the interventions according to the self-help booklets and the therapist behavior. The stronger use of behavioral components in the behavioral intervention and the stronger use of nondirective components in the nondirective intervention may additionally suggest a high treatment adherence of the booklets and therapists.

The effect sizes between the two interventions indicate medium to large effects when considering the confidence intervals on both TIS subscales (Treier, Hautmann, Katzmann, et al., 2022). When comparing our results with the few studies that reported effect sizes, these effects were comparable to or even slightly higher than those reported by Diamond et al. (2007), who compared a cognitive behavioral intervention to an attachment-based family

intervention and a multidimensional family intervention. As we would expect due to their lower theoretical proximity, the effect sizes reported by Watzke et al. (2008), who compared a cognitive behavioral intervention and a psychodynamic intervention, were slightly higher or comparable to our effect sizes.

Our investigation of potential mediators of change for the behavioral and the nondirective intervention comprised the analysis of two therapist behaviors in a parallel mediation model and the analysis of parental adherence following therapist behavior in a sequential mediation model. Specifically, we were interested in whether differential process mechanisms would be found between the interventions. In the nondirective intervention, therapists' emphasis on emotions and relationships mediated the group effect on child ADHD severity as well as functional impairment (Treier, Hautmann, Dose, et al., 2022). Accordingly, compared to the behavioral intervention, the therapists showed more empathetic and supportive behavior and focused more strongly on the perception and expression of emotions in the nondirective intervention, which was associated with a decline in child ADHD severity as well as functional impairment (Treier, Hautmann, Dose, et al., 2022). As such, therapists' emphasis on emotions and relationships might be a unique process mechanism of the nondirective intervention.

In addition to this parallel mediation model, our results indicate a sequential mediation of parental adherence following therapists' emphasis on emotions and relationships (Treier, Hautmann, Dose, et al., 2022). In the nondirective intervention, therapists' stronger focus on emotions and relationships was associated with increased parental adherence, which was then associated with improved child behavior (Treier, Hautmann, Dose, et al., 2022). While this finding should be treated with caution due to the exploratory nature of our sequential analyses, if it can be replicated in future research, it may suggest that therapists' emphasis on emotions and relationships might be a promising component to increase parental adherence. This effect might be especially helpful for tailoring the treatment more specifically to the patient. Previous research suggests a potential moderating effect of familial or intervention characteristics and of the treatment phase on parental adherence: First, families with certain characteristics, such as lower parental mental health or socioeconomic status, might be less likely to actively participate in treatment (Haine-Schlagel & Walsh, 2015). Second, characteristics of the intervention might be associated with parental adherence: In self-help parent management training, parental adherence might be particularly challenging as parents have to self-regulate the therapeutic process by themselves, for example by organizing the time to work through

reading materials or by motivating themselves to implement strategies. In accordance with this, Kling et al. (2010) found that self-help parent management training without regular therapist contact led to lower parental adherence (defined as homework assignments completed) compared to face-to-face group parent management training. Third, the treatment phase might be associated with parental adherence, with research suggesting higher parental adherence at the start and after a longer period of an intervention and lower adherence in the middle phase (Haine-Schlagel & Walsh, 2015). Due to the analysis of only one treatment session per family and the limited sample size, we were not able to analyze these potential moderating effects in our models. However, by analyzing moderated mediation models, future studies might yield a greater understanding of both how, and under which conditions, the interventions work. Considering our finding that the differential approach-specific therapist behaviors are only moderately compatible, greater comprehension of differential treatment responses might be particularly relevant.

When looking at the effect sizes and the variance explained in the significant mediation models, it emerged that the mediation effect was stronger for ADHD symptoms than for functional impairment (Treier, Hautmann, Dose, et al., 2022). In contrast, for the total model, functional impairment explained a larger amount of variance than did ADHD symptoms, due to a stronger association between pretreatment and posttreatment scores. These findings indicate potentially higher stability of functional impairment compared to ADHD symptoms. As mentioned above, children with symptoms of ADHD, ODD, or CD often suffer from a lower quality of life and high impairments, even into adulthood (Dey et al., 2012; Gadow et al., 2007; Szentiványi & Balázs, 2018). Thus, most therapeutic interventions – like ours – aim at reducing not only symptom severity but also impairments due to these symptoms. As such, our finding of a potentially higher stability of functional impairment compared to ADHD symptoms seemed surprising. However, there might be further factors contributing to child impairment that were not targeted in our interventions. For instance, previous research found that emotional or somatic symptoms, difficulties in peer relationships, family health problems, or premature birth were also important risk factors for increased functional impairment in children with ADHD (Coghill et al., 2006). Both the behavioral and the nondirective intervention focused strongly on parent-child interactions to reduce externalizing child behavior, and may therefore not have improved impairment with peers or in school, general family factors, or impairment due to other comorbidities.

Surprisingly, we did not find any mediation effect for guiding and structuring therapist behavior (Treier, Hautmann, Dose, et al., 2022). Barnett et al. (2014) found a similar pattern in their simple mediation analyses, demonstrating a mediation effect for responsive therapist behavior but not for directive therapist behavior. The authors explained this finding by the association of lower parental skills with more directive therapist behavior. Potentially, at least in some families in our study, a more guiding and structuring behavior of the therapist might have reflected a lack of parenting skills, similar to the findings reported by Barnett et al. (2014). Furthermore, the competence level of the therapist might be an important factor as well. As mentioned above, competence can be seen as the third facet of treatment integrity (Goense et al., 2014; McLeod et al., 2013). McLeod et al. (2018) found a positive but only moderate association between therapists' adherence and competence in a cognitive behavioral intervention. Thus, adherence or treatment differentiation demonstrated by the therapist does not necessarily imply competence. An additional assessment of therapists' competence might lead to new insights into the relationship between therapist behavior and outcome measures.

Finally, while we were unable to identify therapist-related mediators of change in the behavioral intervention (Treier, Hautmann, Dose, et al., 2022), Katzmann et al. (2017) found that improvements in parental dysfunctional responsibility attributions were a potential process mechanism of the behavioral intervention analyzed in their study. This finding might be seen as complementary to our results, as both studies demonstrated mediation effects for one of the two interventions. Accordingly, the findings suggest differential pathways leading to improvements in child outcomes for the two interventions. Furthermore, the two interventions may have shared or common process mechanisms, which our study design did not allow us to analyze. Common factors are shared processes across different therapeutic approaches (Cuijpers et al., 2019), and some of the most frequently researched common factors in psychotherapy, in general, include therapeutic alliance or empathy (Castonguay et al., 2015; Lambert & Ogles, 2013). While the particular strategies might differ, all therapeutic approaches in parent management training aim at de-escalating coercive cycles of parent-child interactions (Mingebach et al., 2018). Potentially, the detailed monitoring of parent-child interactions might also be considered a common factor in child psychotherapy. Interestingly, some research groups have attempted to integrate the unique mechanisms of the different therapeutic approaches and common factors into one intervention model (e.g., David et al., 2018; Frank, 2020). However, since research on process mechanisms is still rare – particularly in child psychotherapy – these models are mostly conceptual and not yet evidence-based (Leichsenring

et al., 2019). In line with our finding that therapists' emphasis on emotions and relationships is only moderately compatible with therapists' emphasis on guiding and structuring (Treier, Hautmann, Katzmann, et al., 2022), there is a need to develop treatment protocols that instruct the therapist in detail on how to combine specific therapist behavior of different theoretical foundations (Castonguay et al., 2015; Leichsenring et al., 2019). Only then can the efficacy of an integrated intervention be tested (Castonguay et al., 2015).

4.2 Strengths and Limitations

A major strength of this thesis is that – to our knowledge – the self-developed TIS is the first observational instrument focusing on treatment differentiation in parent management training for child externalizing behavior problems (Treier, Hautmann, Katzmann, et al., 2022). We chose an observational measure to facilitate an objective and independent rating (Herschell et al., 2019; Weck et al., 2011). In line with recommendations, we analyzed both prescribed and proscribed therapist behaviors to investigate treatment differentiation between the two interventions (McLeod et al., 2015; McLeod et al., 2013). Item development and scale construction were based on theoretical considerations (deductive approach), audiotapes and brochures (inductive approach), and statistical analyses. Furthermore, to our knowledge, we were the first to analyze therapist behavior as a potential process mechanism in the comparison of treatment approaches for child externalizing behavior problems (Treier, Hautmann, Dose, et al., 2022). Sequential mediator models are particularly scarce in this field of research. As recommended, we analyzed all potential mediators in a multiple mediator model (Hayes, 2018). Finally, we examined outcome variables from two perspectives – the blinded clinician rating and the parent rating.

However, besides the strengths of the thesis, our findings should be interpreted with several limitations in mind. Due to the detailed discussion of limitations in the two publications, we will focus only on the most important limitations here. The first limitation pertains to both publications: The therapists treated families in both interventions and were in training for cognitive behavioral therapy (Treier, Hautmann, Dose, et al., 2022; Treier, Hautmann, Katzmann, et al., 2022). Therefore, they might have been more experienced in the behavioral intervention and may have identified more strongly with this intervention (allegiance effect; Dragioti et al., 2015; cf. Treier, Hautmann, Dose, et al., 2022). Nevertheless, as they were in training, the therapists did not have extensive experience in this field. Moreover, we implemented numerous measures to prevent these effects, such as extensive training in both

interventions or the supervision by experts in the respective fields, including audiotapes of the sessions (Treier, Hautmann, Dose, et al., 2022; Treier, Hautmann, Katzmann, et al., 2022). Employing the same therapists in both interventions enabled us to increase the comparability between the interventions (Goldbeck, 2011).

Second, in terms of the requirements proposed by Kazdin (2007), the replication of the model across different studies and samples has yet to be examined for our mediation models. However, the parallel mediation model does meet all of the other requirements: There is a strong association between the intervention and the therapist behavior and between the therapist behavior and the child outcomes. Moreover, there is a specific association with only one of the two mediators. The experimental manipulation influenced the therapist behavior, and the mediator was assessed before the child outcomes. Furthermore, the stronger the therapist behavior, the stronger the change in child outcomes, and the associations were based on the theoretical models of the therapeutic approaches. Although the sequential mediation model also meets most of the requirements, the coherent timeline that is important for drawing causal inferences could not be established in all families: Specifically, while child outcomes were assessed after the mediators in all families, the two mediators were assessed in reverse order in some families (Treier, Hautmann, Dose, et al., 2022). When examining the possibility of a mediator model with a reverse order (changes in parental adherence followed by changes in therapist behavior), we found no sequential mediation effect. In accordance with Hayes (2018), we argue that our model was a tool to approximate reality. The likelihood of the proposed model is increased by the fulfillment of the other requirements and the fact that our theoretical model was based on previous research findings. However, the sequential mediation effect needs to be interpreted with caution and future studies should replicate this model in a longitudinal design to validate the assumed order.

Third, compared to the other variables, a relatively high percentage of data was missing for parental adherence (33%; Treier, Hautmann, Dose, et al., 2022). Fortunately, the missing data were completely at random. Therefore, we also assessed the models for cases without missing data and found at least comparable effect sizes. Despite the smaller sample size, the model was still significant for functional impairment. To account for the uncertainty of the estimated data, we applied the Bayesian stochastic regression imputation of Heymans and Eekhout (2019) for single missing data (Treier, Hautmann, Dose, et al., 2022). This approach accounts for uncertainty by adding error variance in the predicted values as well as in the estimation of regression coefficients in the imputation model (Heymans & Eekhout, 2019). As

mentioned above, our sequential mediation model has to be interpreted with caution and should be seen as the first indication of a potential sequential mediation effect.

Fourth, employing the TIS is rather time- and labor-intensive due to its observational nature, especially when compared to therapist self-ratings. However, previous research comparing therapist and observational measures found striking differences between the outcomes (e.g., Herschell et al., 2019; Hurlburt et al., 2010). To date, direct observational measures seem to capture therapist behavior most objectively and precisely. Future studies might aim at measuring therapist behavior more objectively and more resource-efficiently at the same time. One solution might lie in intensive rater training of therapists – comparable to those implemented for observational raters – and video feedback to improve therapists' self-ratings (Herschell et al., 2019). In the future, there might be technical solutions to assess and categorize verbal (e.g., proportion of speaking time, use of keywords) and nonverbal (e.g., eye contact, body language) therapist behavior.

4.3 Conclusion

Considering the large proportion of children and adolescents who are affected by externalizing disorders, it is clear that specific and effective interventions are needed. Self-help parent management training might be a viable solution with comparatively low barriers. By gaining an understanding of the process mechanisms underlying their efficacy, we might be able not only to validate the theoretical basis of the interventions but also to identify effective treatment components. Therefore, this thesis aimed at developing a measure for, and analyzing treatment components of self-help parent management training for child externalizing behavior problems with a behavioral basis and a nondirective basis (cf. Treier, Hautmann, Katzmann, et al., 2022). Additionally, the thesis sought to analyze the potential mediating effects of the interventions (cf. Treier, Hautmann, Dose, et al., 2022).

We developed a reliable as well as a valid measure for the assessment of self-help booklets and therapist behavior in the behavioral and the nondirective intervention (Treier, Hautmann, Katzmann, et al., 2022). The analysis of self-help booklets and therapist behavior revealed that treatment components were implemented in accordance with their theoretical basis and also sufficiently differentiated from one another. Furthermore, in the nondirective intervention, we found that therapists' stronger emphasis on emotions and relationships might have led to reductions in child ADHD severity as well as functional impairment, potentially by increasing parental adherence (Treier, Hautmann, Dose, et al., 2022). Our findings highlight that

therapists' stronger focus on the empathetic behavior and emotions of the parents or the child might be particularly important to bring about change. The therapists' behavior did not emerge as a relevant process mechanism in the behavioral intervention. However, this is likely due to the limited number of process mechanisms examined in the investigation. For instance, parental skills or therapist competence might be further relevant facets in parent management training. Moreover, more comprehensive models should include both moderators and mediators in one model. Ultimately, the aim of analyzing process mechanisms should be to approximate the complex therapeutic process with each step. In this way, we might deepen our understanding of the process mechanisms of treatment approaches and increase their effectiveness by tailoring interventions to each individual.

5 Summary

5.1 Summary in English

Although self-help parent management training represents an effective form of treatment with low barriers for families, little is known about how change is induced. The present thesis analyzed treatment components and process mechanisms of telephone-assisted self-help parent management training with a behavioral basis and a nondirective basis for child externalizing behavior problems.

In a randomized controlled trial, parents of children aged 4 to 11 years with externalizing behavior problems were allocated to telephone-assisted self-help parent management training with a behavioral basis or a nondirective basis, including self-help booklets and therapist consultations via telephone. The per-protocol sample included 108 families. Based on existing measures and predefined psychometric criteria, the Therapist Intervention Scale (TIS) was developed to analyze treatment components in the self-help booklets and the audiotaped telephone consultations. Furthermore, a potential mediating effect of therapist behavior on child outcomes was examined. From an exploratory perspective, parental adherence was analyzed as a potential sequential mediator following therapist behavior.

Exploratory factor analyses suggested the formation of the TIS scales Guidance & Structures as well as Relationship & Emotions. Reliability indices were acceptable to excellent. Indices for construct validity were mostly in line with the hypotheses. As expected, therapists and booklets showed a stronger emphasis on guidance and structures in the behavioral intervention and a stronger emphasis on the emotions and relationships in the nondirective intervention. Furthermore, the findings suggest that the group effect on child attention-deficit/hyperactivity disorder severity and functional impairment was mediated by therapists' emphasis on emotions and relationships in the nondirective intervention. The exploratory sequential mediation analyses indicated a potential sequential mediation effect of parental adherence following therapist behavior. We did not find a mediation effect for therapists' emphasis on guiding and structuring or for the behavioral intervention.

In conclusion, the analyses support the reliability as well as the validity of the self-developed TIS scales. In accordance with their theoretical basis, the two interventions showed distinct treatment profiles. The findings underline the importance of therapists' emphasis on emotions and relationships for change in child outcomes as a potential unique process

mechanism in the nondirective intervention and complement findings on process mechanisms of the behavioral intervention. Future research might analyze additional mediators of change and include potential moderators in one model, which might deepen our understanding of the process mechanisms underlying treatment approaches.

5.2 Summary in German

Obwohl Selbsthilfe-Elterntrainings eine wirksame Behandlungsform mit geringen Barrieren für Familien darstellen, ist nur wenig darüber bekannt, wie sie Veränderungen bewirken. Die vorliegende Dissertation beschäftigt sich mit der Analyse von Behandlungskomponenten und Prozessmechanismen eines telefonassistierten Selbsthilfe-Elterntrainings mit einer behavioralen und einer nichtdirektiven Basis für externalisierende Verhaltensprobleme von Kindern.

In einer randomisierten, kontrollierten Studie wurden Eltern von Kindern zwischen 4 und 11 Jahren mit externalisierenden Verhaltensproblemen einem telefonassistiertem Selbsthilfe-Elterntraining mit einer behavioralen Basis oder einer nichtdirektiven Basis zugeteilt. Beide Interventionen umfassten Selbsthilfebroschüren und therapeutische Beratungen via Telefon. Die Per-Protokoll-Stichprobe umfasste 108 Familien. Auf Grundlage bestehender Messinstrumente und vordefinierter psychometrischer Kriterien wurde die Therapist Intervention Scale (TIS) entwickelt, um Behandlungskomponenten in den Selbsthilfebroschüren und den aufgezeichneten telefonischen Beratungen zu analysieren. Darüber hinaus wurde ein möglicher Mediationseffekt von therapeutischem Verhalten auf das Verhalten des Kindes untersucht. Explorativ wurde zudem elterliche Adhärenz als potentieller sequentieller Mediator nach dem therapeutischen Verhalten geprüft.

Auf Grundlage von explorativen Faktorenanalysen wurden die TIS-Skalen Anleitung & Strukturen und Beziehung & Emotionen gebildet. Die Reliabilitätsindizes waren akzeptabel bis ausgezeichnet. Die Indizes für die Konstruktvalidität waren überwiegend hypothesenbestätigend. Wie erwartet, zeigten das therapeutische Verhalten und die Selbsthilfebroschüren einen stärkeren Fokus auf Anleitung und Strukturen, während das therapeutische Verhalten und die Selbsthilfebroschüren in der nichtdirektiven Intervention einen stärkeren Fokus auf Emotionen und Beziehungen zeigten. Darüber hinaus deuten die Ergebnisse darauf hin, dass das emotions- und beziehungsorientierte therapeutische Verhalten in der nichtdirektiven Intervention den Gruppeneffekt auf den Schweregrad der Aufmerksamkeitsdefizit-/Hyperaktivitätsstörung und die Funktionsbeeinträchtigung des Kindes

mediierte. Die explorativen sequentiellen Mediationsanalysen wiesen auf einen potentiellen sequentiellen Mediationseffekt der elterlichen Adhärenz als zweiten Mediator nach dem therapeutischen Verhalten hin. Ein Mediationseffekt von anleitendem, strukturierendem therapeutischen Verhalten oder der behavioralen Intervention konnte nicht gefunden werden.

Zusammenfassend stützen die Analysen die Reliabilität und Validität der beiden selbstentwickelten TIS-Skalen. In Übereinstimmung mit deren theoretischer Grundlage zeigten die beiden Interventionen differenzielle Behandlungsprofile. Die Ergebnisse unterstreichen die Wichtigkeit des therapeutischen Fokus auf Emotionen und Beziehungen für die Veränderung der Symptomatik des Kindes als potenziellen spezifischen Wirkmechanismus der nichtdirektiven Intervention. Damit komplimentieren die Ergebnisse vorherige Forschungsbefunde zugunsten der behavioralen Intervention. Künftige Studien könnten zusätzliche Mediatoren der Veränderungen und potenzielle Moderatoren in ein Modell einbeziehen. Dadurch könnten wir in der Lage sein, die den therapeutischen Ansätzen zugrunde liegenden Prozessmechanismen noch besser verstehen.

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psychological therapy: a multilevel meta-analysis and implications for science and practice. *Am J Psychol, 72*(2), 79-117. https://doi.org/10.1037/a0040360

7 Curriculum Vitae

Education

2015 - 2023	Interdisciplinary Program Health Sciences | Cologne, NRW Philosophiae doctor
2014 – 2019	School for Child and Adolescent Cognitive Behavior Therapy | Cologne, NRW Cognitive behavioral child and adolescent psychotherapist
2013 – 2014	Freiburg Institut | Freiburg, BW Marte Meo Practitioner
2012 - 2014	Albert-Ludwigs-University | Freiburg, BW M. Sc. Cognition, Educational and Occupational Psychology
2009 - 2012	Albert-Ludwigs-University | Freiburg, BW B. Sc. Psychology
2008 - 2009	Union County College | Cranford, NJ, USA Exchange student
2008	High school "Integriertes Berufliches Gymnasium" | Lahr, BW High school diploma

Practical Experience

since 2017	Department of Child and Adolescent Psychiatry, Psychosomatics and Psychotherapy | Cologne, NRW Research coordinator in multicenter studies inter alia ESCA *(Evidence-Based, Stepped Care of ADHD along the Life-Span)*, ADOPT (*Affective Dysregulation in Childhood – Optimizing Prevention and Treatment*)
2015 - 2017	Department of Child and Adolescent Psychiatry, Psychosomatics and Psychotherapy | Cologne, NRW Research associate in the multicenter study ESCA
2014	University Hospital | Freiburg, BW Research assistant
2011 - 2014	Albert-Ludwigs-University | Freiburg, BW Research assistant

Publication List

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9 Declaration

Hiermit versichere ich an Eides statt, dass ich die vorliegende Dissertationsschrift selbstständig und ohne die Benutzung anderer als der angegebenen Hilfsmittel angefertigt habe. Alle Stellen - einschließlich Tabellen, Karten und Abbildungen -, die wörtlich oder sinngemäß aus veröffentlichten und nicht veröffentlichten anderen Werken im Wortlaut oder dem Sinn nach entnommen sind, sind in jedem Einzelfall als Entlehnung kenntlich gemacht. Ich versichere an Eides statt, dass diese Dissertationsschrift noch keiner anderen Fakultät oder Universität zur Prüfung vorgelegen hat; dass sie - abgesehen von unten angegebenen Teilpublikationen - noch nicht veröffentlicht worden ist sowie, dass ich eine solche Veröffentlichung vor Abschluss der Promotion nicht ohne Genehmigung der / des Vorsitzenden des IPHS-Promotionsausschusses vornehmen werde. Die Bestimmungen dieser Ordnung sind mir bekannt. Die von mir vorgelegte Dissertation ist von Univ.-Prof. a.D. Dr. Manfred Döpfner betreut worden.

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