To prompt or to praise?
Hornstra, Rianne

DOI:
10.33612/diss.247441176

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version
Publisher's PDF, also known as Version of record

Publication date:
2022

Link to publication in University of Groningen/UMCG research database

Citation for published version (APA):

Copyright
Other than for strictly personal use, it is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license (like Creative Commons).

The publication may also be distributed here under the terms of Article 25fa of the Dutch Copyright Act, indicated by the “Taverne” license. More information can be found on the University of Groningen website: https://www.rug.nl/library/open-access/self-archiving-pure/taverne-amendment.

Take-down policy
If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Downloaded from the University of Groningen/UMCG research database (Pure): http://www.rug.nl/research/portal. For technical reasons the number of authors shown on this cover page is limited to 10 maximum.
Chapter 1.

General introduction
Attention-deficit/hyperactivity disorder (ADHD) is one of the most commonly diagnosed mental disorders in childhood, with an estimated prevalence of 5-7% worldwide (Thomas, Sanders, Doust, Beller, & Glasziou, 2015). The Diagnostic and Statistical Manual of Mental Disorders (DSM-5; American Psychiatric Association, 2013) defines ADHD as being characterized by age-inappropriate attention problems and/or impulsivity and hyperactivity that impair with or reduce the quality of social, academic, or occupational functioning. ADHD is associated with problematic family functioning; a conflicted parent-child relationship, greater stress within the family, and high rates of parental psychopathology (Deault, 2010). Furthermore, children with ADHD experience more academic difficulties relative to their peers without ADHD (Jangmo et al., 2019) and encounter more social problems (Gardner & Gerdes, 2015). Children who are diagnosed with ADHD also often display (symptoms of) comorbid disorders such as oppositional defiant disorder (ODD) or conduct disorder (CD) (Mohr-Jensen & Steinhausen, 2015). ADHD is a heterogeneous disorder in terms of etiology, expression of the symptom domains, impairment, and long-term developmental trajectories (Luo, Weibman, Halperin, & Li, 2019).

**Behavioral parent training**

Behavioral parent training as a treatment for children with ADHD has been found effective in numerous studies (Evans, Owens, Wymbs, Ray, Evans, Owens, Wymbs, Ray, et al., 2018; Groenman et al., 2021) and is recommended by clinical practice guidelines as a first line treatment for children with mild-to-moderate ADHD (NICE guidelines and Dutch guidelines; Akwa, 2019; National Collaborating Centre for Mental Health [NICE], 2018). Behavioral parent training programs are based on social learning theory and principles of instrumental learning and classical conditioning (Shaffer et al., 2001). The aim of these programs is to positively change parenting behaviors and, ultimately, change child behavior via the parents. In these programs, clinicians train parents in different behavioral techniques aimed at increasing desirable behaviors and preventing or diminishing undesirable behaviors of their child (Antshel & Barkley, 2008). Parents learn to manipulate antecedents of child behaviors to support their child to control its behavior (stimulus-control techniques or antecedent-based techniques).
Also, they learn how to react in a controlled, consequent, and consistent way to the behavior of their child (contingency management techniques or consequent-based techniques).

Originally, behavioral parent training programs were developed for children with generic behavioral problems (Shaffer, Kotchick, Dorsey, & Forehand, 2001), but later these were also applied to specific groups, such as children with ADHD. Meta-analyses have shown that behavioral parent training reduces children’s ADHD symptoms and conduct problems and improve parenting skills and parental self-esteem (Coates, Taylor, & Sayal, 2015; Groenman et al., 2021; Mulqueen, Bartley, & Bloch, 2015; Rimestad et al., 2019). However, effect sizes are moderate at best, and usually decrease to small at longer-term follow-up (Lee, Niew, Yang, Chen, & Lin, 2012). Also, over the past decades, effectiveness of psychosocial therapy for children with ADHD has not improved (Weisz et al., 2019). Therefore, calls are rising to improve the effectiveness of parent training programs for ADHD (Schatz et al., 2020; Van der Oord & Tripp, 2020).

**What works in behavioral parent training?**

One way to improve behavioral parent training programs is to investigate what exactly makes these programs effective. Identifying the components of interventions that drive desired effects, and those that do not, could help develop new, shorter, or more cost-efficient programs (Leijten, Weisz, & Gardner, 2021). So far, studies into behavioral parent training specifically for children with ADHD have examined the effectiveness of programs as a whole, whilst studies about the efficacy of the different components of these programs are limited (Daley et al., 2018). With regard to behavioral parent training in general (not specifically aimed at children with ADHD), there is a significant overlap in content between the different programs. For example, most programs include principles of effective limit setting, some form of positive reinforcement, or punishment techniques (Garland, Hawley, Brookman-Frazee, & Hurlburt, 2008). Nonetheless, programs differ substantially as well. For example, some programs focus more on management of antecedents of problem behavior (e.g., *First Step to Success Intervention*; Seeley et al., 2009) while others emphasize reinforcement of desired behavior (e.g., *Helping the noncompliant Child*; Abikoff et al., 2015).
Thus far, two meta-analyses examined the effectiveness of components of behavioral parent training in the broader group of children with disruptive behaviors (Kaminski, Valle, Filene, & Boyle, 2008; Leijten et al., 2019). Programs that were associated with larger treatment effects included positive reinforcement techniques, providing natural/logical consequences (Leijten et al., 2019), promoting positive parent-child interactions, emotional communication skills, time-out, parental consistency, and practicing with parents and children during the sessions (Kaminski et al., 2008). It remains unclear if these components are also associated with treatment effectiveness in children with ADHD. Specific adaptations may be necessary for children with ADHD, due to their ADHD symptomatology and proposed underlying deficits (Antshel & Barkley, 2008; Chacko, Kofler, & Jarrett, 2014; Van der Oord & Tripp, 2020). For example, some studies have demonstrated that executive functioning deficits may be more pronounced in children with ADHD as compared to those with ODD or CD (Ezpeleta & Granero, 2015; Salum et al., 2019). Also, differences in motivational processes between children with ADHD and children with ODD or CD (e.g., Fairchild et al., 2019; Luman, Sergeant, Knol, & Oosterlaan, 2010; Luman, Tripp, & Scheres, 2010), such as altered punishment and reward sensitivity, may result in differential effects of specific components of behavioral parent training (Van der Oord & Tripp, 2020). Therefore, in the current thesis two meta-analyses were performed that specifically focused on children with ADHD. My aim was to examine which behavioral techniques in behavioral parent and teacher training programs are associated with treatment effectiveness (Chapter 2 and Chapter 3).

While meta-regression analyses can give a first indication of which components in complete programs for children with ADHD appear most effective, knowledge on the effects of components of behavioral parent training in isolation is limited. Empirical research that examines the two main types of techniques separately (i.e., antecedent-based and consequent-based techniques) is scarce. There have been experimental studies that focused on distinct parenting techniques for children with disruptive behaviors (not specifically children with ADHD). Regarding consequent-based techniques, Owen and colleagues (2012) reviewed the literature on praise, positive and negative nonverbal responses and reprimands on child non-compliance and misbehavior at home. Interventions involving reprimands and negative nonverbal responses resulted in greater compliance of children, whereas praise and positive
nonverbal responses showed mixed results. For example, in experimental studies praise and nonverbal responses resulted in greater compliance in non-clinical samples (Rheingold, Cook, & Kolowitz, 1987; Wahler and Meginnis, 1997), while studies with clinical samples did not demonstrate a direct link between these techniques and compliance (Filcheck, McNeil, & Herschell, 2001; Roberts, 1985). With respect to antecedent-based techniques, most noticeably is a study that examined the effects of providing verbal instructions or commands. Experiments revealed that instructions that were unambiguous and direct were more effective than indirect and vague instructions (Kalb & Loeber, 2003). However, to our knowledge, no study has examined the efficacy of consequent-based or antecedent-based techniques specifically in children with ADHD.

One way to examine components of an intervention is with a randomized controlled microtrial (Leijten et al., 2021). Randomized controlled microtrials can be used to draw causal conclusions about the efficacy of components of interventions by offering these in isolation from other components (Howe, Beach, & Brody, 2010; Leijten et al., 2021; Sloboda, Petras, Robertson, & Hingson, 2019). In the current thesis I tested the efficacy of the two main types of techniques (i.e., antecedent-based and consequent-based techniques), as compared to a waitlist control group and to each other with such a microtrial (Chapter 4). One question that cannot be answered by a microtrial is what one component exactly adds to the other (i.e., implementing the consequent-based techniques after the antecedent-based techniques). Single-case experiments are an excellent way to examine the added efficacy of components of an intervention within an individual participant (Tanious & Onghena, 2019). Therefore, I conducted a series of replicated single-case experiments to assess the added value of the consequent-based techniques on top of antecedent-based techniques (Chapter 5).

What works for whom?

Another step towards the improvement of behavioral parent training programs for ADHD is to adapt programs to specific subgroups (Ng & Weisz, 2016). To tailor interventions to the needs of children and their families, it is of importance to understand who benefits from components of these interventions, and who does not. As ADHD is a highly heterogeneous disorder (Luo et al., 2019), it is relevant to examine which subgroups of children with ADHD and their parents benefit most. Up until
now, potential moderators of specific behavioral parent training components in samples of children with ADHD have not been studied. Some studies examining moderators of treatment of full programs have been conducted, but evidence is inconsistent (Daley et al., 2018). A meta-analysis showed that older age in children was negatively related to the effectiveness of behavioral treatment for children with ADHD (Daley et al., 2014). However, other meta-analyses did not find age to be related to effects of behavioral treatment (Fabiano et al., 2009; Mulqueen et al., 2015), including behavioral parent training (Lee et al., 2012). Also, in one meta-analysis presence of comorbidities such as ODD and other behavioral problems were found to be associated with smaller treatment effects of behavioral parent training programs (Lee et al., 2012), whereas another meta-analysis did not find these moderating effects (Fabiano et al., 2009). Moderators of behavioral parent training for the broad group of children with externalizing behavior problems have been studied more extensively, but findings in this field are not conclusive either (see for an overview Deković & Stoltz, 2015). For example, one meta-analysis found that younger children benefit more from parent training (Deković et al., 2011), but again, another meta-analysis did not find an effect of age (Lundahl, Risser, & Lovejoy, 2006). A third meta-analysis even found a positive effect of older age on the effectiveness of parent training (Serketich & Dumas, 1996).

Potentially, these demographic characteristics are too distal and unrelated to the intervention to predict why some children benefit from behavioral parent training interventions, while others do not (Weeland, Helmerhorst, & Lucassen, 2021). Relationship-related factors, however, may moderate behavioral parent training effectiveness as they directly have an influence on how effective the implemented parenting techniques are in influencing child behavior (Bosmans, 2016; Bosmans et al., 2022). For example, in a recent review on parent training for children with conduct problems (Dedousis-Wallace, Drysdale, McAloon, & Ollendick, 2021), the strongest predictors of treatment success were relationship-related factors, such as a positive parent-child relationship and parent-child interaction.

**Attachment in children with ADHD**

Attachment is an underexplored but potentially relevant factor in the context of ADHD and behavioral parent training. The child’s attachment to the caregiver can be seen as an important
component of the parent-child relationship (Allen, 2016). According to attachment theory, children’s trust in the support and protection of their caregivers during distress guides the development of internal working models of attachment, i.e., the cognitive representations of caregiving experiences (Bowlby, 1969; Bowlby, 1988). It is believed that when a child forms an internal working model of the attachment figure as competent and predictable, this results in a secure attachment to that figure (Bowlby, 1980). A lack of trust in the availability of the caregiver when the child needs protection and support can lead to insecure attachment, including ambivalent or avoidant attachment (Ainsworth, 1978). Children with a disorganized attached display disoriented or contradictory behaviors, not representing a coherent attachment strategy (Main & Cassidy, 1988).

Recently, it has become apparent that attachment is an important new field to consider in relation to ADHD (Wylock, Borghini, Slama, & Delvenne, 2021). Children with ADHD often grow up under disadvantageous family conditions. In families of children with ADHD parenting stress is higher, parents have higher rates of psychopathology, and there are more conflicted parent-child relationships (Deault, 2010; Johnston & Mash, 2001). Also, children with ADHD often present a challenge to everyday family life, through behaviors associated with the three symptom domains of ADHD (i.e., inattention, hyperactivity and impulsivity) (Kissgen & Franke, 2016). ADHD behaviors may interfere with the attempts of the caregiver to react sensitively to children’s signals, and therefore can have a negative influence on the development of a secure attachment between parent and child.

Despite these possible links between attachment and ADHD, the role of attachment remains understudied. Some studies demonstrated a relationship between insecure or disorganized attachment and ADHD (Wylock et al., 2021), and a recent meta-analysis found an association between attention problems and insecure and disorganized attachment styles (Pallini et al., 2019). Differences between studies could be the result of differing methods used to assess attachment representations (Wylock et al., 2021). Three different methods can be distinguished to measure attachment: observational measures, representational measures, and questionnaires. In the 1970s, attachment quality was first assessed through direct observations between the mother and the child (the Strange Situation Procedure; Ainsworth, 1978). Although this method of measuring attachment is considered a gold standard, the age range is restricted to infancy. Attachment research has developed other, non-observational methods
such as representational methods (e.g., story stems and narrative techniques) and questionnaires (Madigan, Brumariu, Villani, Atkinson, & Lyons-Ruth, 2016). Representational methods use dolls and narratives to enact a story, to capture the child’s mental representation of attachment, while questionnaires focus on self-report of attachment dimensions (Bosmans & Kerns, 2015). Often, correlations between these different methods are small to moderate, potentially reflecting that, for example, questionnaires and representational measures do not necessarily assess the same constructs (e.g., explicit strategic processes with questionnaires versus more implicit automatic processes with representational measures) (Madigan et al., 2016). Still, the exact nature of the link between ADHD and attachment remains unclear. Most studies investigated the link between attachment and ADHD symptoms in samples of typically developing children, or in children at risk for attachment problems (Pallini et al., 2019). Also, several studies suggested that the relation between attachment and ADHD symptoms may be better explained by comorbidities such as conduct problems and contextual factors such as parental stress (Forslund, Brocki, Bohlin, Granqvist, & Eninger, 2016; Forslund, Peltola, & Brocki, 2020; Franke, Kissgen, Krischer, & Sevecke, 2017; Lavigne, Gouze, Hopkins, & Bryant, 2016). Nonetheless, it seems that children with ADHD differ from their typically developing peers with regard to attachment. In this thesis I therefore examined attachment representations in two different samples of children with and without ADHD, using different methods to assess attachment (i.e., questionnaires in Chapter 6, and a representational method in Chapter 7).

Furthermore, attachment representation could be an important moderator of component effectiveness for children with ADHD. Proposed underlying deficits of ADHD could have significant implications for their susceptibility to parenting strategies (Van der Oord & Tripp, 2020). Motivational problems, such as altered reward and punishment sensitivity, can impede learning from parenting behaviors. Also attentional difficulties can make it more challenging for children with ADHD to recognize sensitive parenting. Along the same lines, parents of children with ADHD often have motivational and attentional problems, which may influence how responsive they can be to children’s needs and thus attachment development (Faraone & Larsson, 2019; Johnston, Mash, Miller, & Ninowski, 2012). Attachment may have an influence on the effects of (changes in) parenting strategies on child behavior. A lack of trust of the child in the parents related to insecure and disorganized
attachment may reduce the chance that a shift in parenting behavior leads to improvements in behaviors of the child (Bosmans, 2016). Therefore, in this thesis, I examined attachment as a moderator of effectiveness of components of behavioral parent training (Chapter 8).

Outline of the current thesis

In this thesis I explored the question: ‘What works for whom in behavioral parent training for children with ADHD?’ The first part focuses on which behavioral techniques and intervention characteristics of existing behavioral parent training programs are related to program effectiveness. Two meta-regression analyses to examine which behavioral techniques and intervention characteristics of behavioral parent training and behavioral teacher training for children with ADHD are related to effectiveness on parental outcomes (Chapter 2), and child behavioral outcomes (Chapter 3) were conducted. After that, the studies examining the effectiveness of different types of behavioral techniques (i.e., antecedent-based and consequent-based) are described. I compared the effects of antecedent-based techniques and consequent-based techniques to each other and to a waitlist control condition, making use of a randomized controlled microtrial (Chapter 4). To take a closer look at the added efficacy of consequent-based techniques on top of the antecedent-based techniques, I conducted a replicated single-case experimental study with six children (Chapter 5). In the second part of this thesis, I explored attachment in children with ADHD. I examined attachment and trust in children with ADHD, compared to typically developing children, using questionnaires (Chapter 6). After that, I examined attachment representations of the children in my microtrial sample, compared to typically developing children, with a story stem procedure (Chapter 7). Chapter 8 describes the moderating effects of attachment representation on antecedent-based versus consequent-based techniques in my randomized controlled microtrial. Finally, in Chapter 9 I summarize the main findings of this thesis, viewed in the context of the broader literature, and discuss limitations, implications, and recommendations for future research.