The background of the cover features a repeating pattern of stylized, elongated leaves. Each leaf is outlined in a dark blue color and filled with a yellow-to-teal gradient. The leaves are arranged in a vertical, slightly overlapping manner, creating a sense of growth and movement. The overall color palette is vibrant, with teal, yellow, and dark blue.

**NEW USES OF SYSTEMIC INTERVENTIONS FOR THE TREATMENT
OF SEVERE BEHAVIOURAL PROBLEMS OF ADOLESCENTS**
ANNEMARIEKE BLANKESTEIN

Behavioural
Science
Institute

New Uses of Systemic Interventions for the Treatment of
Severe Behavioural Problems of Adolescents

Annemarieke Blanckstein

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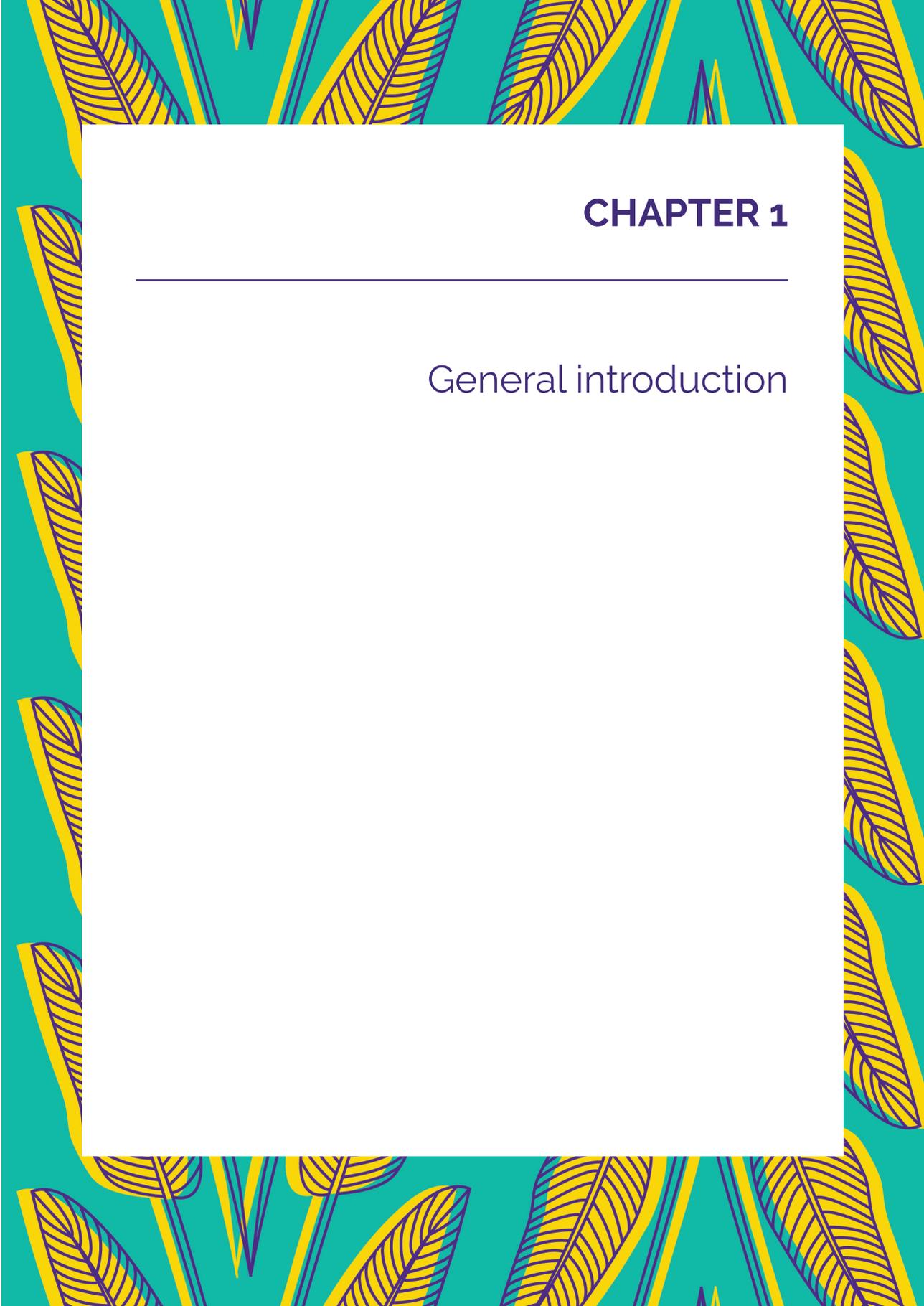
*Voor Metje Versteeg
en voor alle meisjes en vrouwen die niet verder konden of mochten.
De erkenning en kansen die jullie onterecht niet kregen, komen jullie in veelvoud toe.*



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CHAPTER 1

General introduction

Severe behaviour problems

Severe behaviour problems and their risk factors in adolescence have been a focal point of scientific studies for decades. An often used categorisation of behaviour problems is that of internalizing and externalizing behaviour problems. Internalizing behaviour problems refer to problems within the self (such as anxiety or depression) and externalizing behaviour problems refer to problems that involve conflicts with other people or the outside world (such as aggressive or antisocial behaviour). The current thesis focuses primarily on interventions aimed at externalizing behaviour problems of adolescents.

As the treatment of severe behaviour problems of adolescents has developed over time, research and clinical practice have increasingly voiced a need for treatments that are not exclusively focused on the adolescent, but rather also target the systems surrounding them (i.e., the nuclear and extended family, school, and community). More specifically, the notion that adolescents with severe behaviour problems cannot be treated without considering the surrounding systems in treatment has gained common ground. That is, the problems of these adolescents are increasingly viewed from a systemic perspective.

Multiplesystems – including the individual, the family, the school, and the community system – influence the development and maintenance of severe behaviour problems. This systemic view on behaviour problems forms the basis of Bronfenbrenner's (1979) Ecological Systems Theory (see Figure 1). This theory posits that reciprocal interactions between the individual and different systems influence human development and has been translated to the development of adolescent behaviour problems. While the theory continued developing until 2005, from the 1990s, it placed more emphasis on the reciprocal interaction between a person and other persons, objects, and symbols in their immediate environments (read, the other systems). These interactions take place on a regular basis and over an extended period of time and are referred to as *proximal processes*, which play an important part in the development of adolescent behaviour (Bronfenbrenner & Morris, 1998; Tudge et al., 2009).

Bronfenbrenner's theory (1979) states that when adolescents develop, they are influenced by the systems surrounding them. The most immediate of these systems, that is the microsystem, influences adolescents and their behaviours the most. In short, the microsystem comprises the home environment, school, peer group, and community environment of adolescents. The mesosystem includes interactions between the different microsystems surrounding adolescents. These are interactions between for example the peer group and family or between the school and parents. The exosystem comprises the social network of a family. The macrosystem includes social and cultural values of families. Finally, the chronosystem comprises changes over time (Bronfenbrenner, 1986).

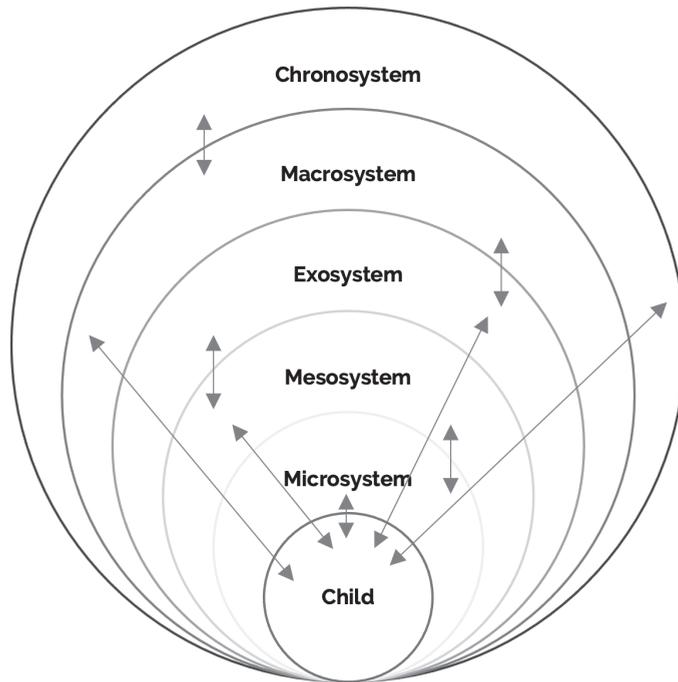


Figure 1

Visualisation of Bronfenbrenner's (1979) Ecological Systems Theory (Ettekal & Mahoney, 2017)

Note. The arrows represent the proximal processes. While they have not been depicted between all different variations of systems for legibility, all of the mentioned systems can interact reciprocally.

Risk factors for severe behaviour problems of adolescents are most commonly identified in the microsystem and the mesosystem. Problems in the parent-child relationship, poor parental monitoring or supervision, serious family conflicts, inconsistent or inappropriate parental rewarding or punishing, and high levels of parenting stress can all increase the risk of development of adolescents' severe behaviour problems (Harder et al., 2017; Harder, 2018; Merritts, 2016; Van Dam et al., 2010; Van der Put et al., 2014). Community risk factors include living in disadvantaged neighbourhoods, which provide greater access to potential criminal activity and greater exposure to socialization processes promoting violent behaviour over normative behaviour (Gottfredson & Hirschi, 1990; Vogel & Van Ham, 2018). Additionally, living in disadvantaged neighbourhoods predicts poor parental supervision and inconsistent disciplining (Biglan et al., 2004) which in turn may contribute to severe behaviour problems in adolescents.

A number of protective factors for severe behaviour problems of adolescents also exist across different systems. Individual protective factors include adequate social skills (Figge et al., 2017), an internal locus of control, functional coping strategies,

and easy temperament (Carr, 2015). In the interpersonal domain, increased parental or family involvement, low parental stress, parental monitoring, parental resilience and empowerment processes can moderate adolescents' severe behaviour problems (Biglan et al., 2004; Liebenberg, 2020; Stouthamer-Loeber et al., 2004). Community protective factors include school safety (Figge et al., 2017), good social support networks, positive educational placement, high socioeconomic status, and peer support (Carr, 2015).

Adolescents with severe behaviour problems frequently come from families that are often characterised by having a long history of receiving (youth) care (De Lange et al., 2017), financial debts, and housing problems (Tausendfreund et al., 2016). Child neglect or maltreatment, mental health problems, and substance or physical abuse are also seen in these families (Henggeler et al., 2009; Knorth et al., 2015; Tausendfreund et al., 2016). Since the multiplicity of problems seen in families of adolescents with severe behaviour problems interacts with the development and continuation of severe behaviour problems of adolescents, treatments centring families as a whole are preferred over individual, child-centred treatments (Litschge et al., 2010).

Systemic interventions

Interventions that target the multiple systems that influence severe behaviour problems are called systemic interventions. Systemic interventions cover a wide range of interventions consisting of family therapy and family-based treatments, which engage family members or members of the wider network in order to resolve problems of adolescents until the age of 18 years (Carr, 2019). Meta-analyses have shown modest but long-lasting effects for family-based treatments for severe behaviour problems of adolescents (Dopp et al., 2017; Litschge et al., 2010).

In most systemic interventions, therapists work together with parents and adolescents, and involve school staff, neighbours, or other members from the social network where necessary and in varying degrees. By addressing not only individual problems, but also family problems, and problems in the wider network, behaviour problems of adolescents can be reduced while also addressing co-occurring problems across systems (Carr, 2015). In the Netherlands, various systemic interventions can be used to treat adolescents with severe behaviour problems and their families. The best-known systemic interventions for the reduction of severe behaviour problems in adolescents are Functional Family Therapy (FFT), Multidimensional Family Therapy (MDFT), Multisystemic Therapy (MST), and Relational Family Therapy (RGT). Probably, the largest body of research has assessed the effects of MST (e.g., Asscher et al., 2013; Butler et al., 2011; Ogden & Hagen, 2006; Vidal et al., 2017).

MST is an intensive home and community-based treatment which typically takes 3 to 5 months. It targets 12- to 18-year-old adolescents at risk of out-of-home placement due to their severe problem behaviour, their parents, and the systems surrounding the family. MST is based on the premise that adolescent problem behaviour is driven by the interplay of risk factors in various systems such as the family, friends, school, and the neighbourhood. Therapeutic techniques and interventions used in MST focus on helping improve parenting skills, improving family relationships, improving pro-social peer contact, decreasing contact with negative peers, realising school going or work for the adolescent, and empowering the social network of families. During treatment, therapists and supervisors evaluate if the therapeutic techniques sufficiently help combat the problem behaviours. A rigorous quality assurance system monitors whether therapists deliver the treatment as intended (i.e., treatment fidelity), includes supervision and intervision structures in which the degree to which engagement with families is being achieved (i.e., the alliance between parents and therapists) is discussed (Schoenwald, 2016).

As mentioned briefly, a large body of research has considered the effectiveness of MST. Studies carried out in the United States of America and in Norway, showed that when compared to treatment as usual, the number of out-of-home placements was reduced until 2 years after MST (Ogden & Hagen, 2006; Vidal et al., 2017). These results were not seen in similar studies in England, considering the number of out-of-home placements until 18 months after MST (Butler et al., 2011; Fonagy et al., 2018). In Canada, Cunningham (2002) concluded that MST showed no distinguishable treatment outcomes, which McIntosh (2015) later refuted, showing clinically significant treatment improvements for families receiving MST treatment. A relatively recent study (Dopp et al., 2014) considered the cost-effectiveness of MST and showed that reductions in criminality after MST when compared to individual therapy saved \$5.04 for every \$1.00 spent on MST. In the Netherlands, studies on MST have shown that the intervention reduces externalizing problem behaviour and improves parenting competence until 36 months after treatment (Asscher et al., 2013, 2014).

Systemic interventions and intellectual disability

Given the effectiveness of MST, its multisystemic nature, and its structured manner of targeting and monitoring specific behaviours, it was hypothesised that this intervention could also be useful for families of adolescents with an intellectual disability. In fact, over the years a large body of research has shown that severe behaviour problems present much more frequently in adolescents with an intellectual disability than in adolescents without an intellectual disability; these adolescents are 3-4 times more likely to develop

severe behaviour problems than adolescents without an intellectual disability (De Ruiter et al., 2007; Emerson et al., 2011).

The identification of the presence of intellectual disabilities, however, is problematic. More specifically, intellectual disabilities are not always recognised and, as a result, families with members with an intellectual disability do not always receive the necessary treatment or treatment tailored to their skills and needs (De Wit et al., 2012). A meta-analysis showed that the prevalence of intellectual disabilities (intelligence quotient [IQ] score < 70) is 1% worldwide (Maulik et al., 2011). A more recent study showed that 10% of parents from families in the child protection system have an intellectual disability (based on clinical diagnosis; Slayter & Jensen, 2019). The Dutch Knowledge Centre for Child & Adolescent Psychiatry (2020) has estimated the number of persons with an intellectual disability (an IQ score between 50 and 85) at between 655,000 – 955,000 in the Dutch population. It is important to note here that not only is the identification of the presence of intellectual disabilities problematic, but also does the definition of intellectual disability vary internationally. In the Netherlands and in this thesis, the definition of intellectual disability encompasses IQ scores of 50–70 (mild intellectual disability) and IQ scores of 70–85 (borderline intellectual functioning) with co-occurring deficits in adaptive functioning and symptoms that have started manifesting in the developmental period.

In terms of family-functioning, a body of research has shown that parents of children with an intellectual disability, when compared to parents of typically developing children, report higher levels of psychological distress, (parenting) stress, worry and depression, and lower levels of well-being. The higher rate of parental stress is related to the higher rate of behaviour problems seen in children with an intellectual disability (Osborn et al., 2020). In some families, both the adolescent and their parent(s) have an intellectual disability. In these families, the multiplicity of problems often include financial problems or mental health problems. Also, these families often lack problem-solving skills and have a limited social network (Llewellyn & Hindmarsh, 2015) to help them solve problems.

The multiplicity of problems seen in families with members with an intellectual disability necessitates a systemic treatment approach. Without addressing problems such as debt, unemployment, or other financial problems, families of adolescents with an intellectual disability and severe behaviour problems are unlikely to achieve lasting treatment results. Since these families also often have a limited social network to call on when needs arise, treatment should ideally include network mapping and involvement of the network. In fact, research has suggested that families with multiple problems, including families with family members who have an intellectual disability, are best treated with flexible, home-based, and multicomponent services (Tausendfreund et al., 2016).

Henceforth, MST was adapted to the needs of families of adolescents with an intellectual disability (ID) in the Netherlands, resulting in the development of MST-ID. Home-based and systemic treatments such as MST-ID are aimed at reducing severe behaviour problems of adolescents and empowering their families to ultimately prevent or postpone impending out-of-home placements.

Out-of-home placements in secure residential youth care

Sometimes out-of-home placements of adolescents (with or without an intellectual disability) are inevitable (i.e., when the adolescent's behaviour problems affect society or when the adolescent is considered to be in need of protection). The court order required for an out-of-home placement is given by a judge. Decisions pertaining to out-of-home placement are complex and greatly impact the adolescent, parents, and professionals involved (De Haan et al., 2019). Adolescents with severe behaviour problems who have been placed out of home are either placed in juvenile justice institutions under criminal law or in so called Youth Care Plus ["JeugdzorgPlus" in Dutch] institutions under civil law. This thesis will focus on Youth Care Plus, from here on referred to as 'secure residential youth care'.

Between 2013 and 2020, yearly, 1651 to 1924 adolescents were placed in secure residential youth care in the Netherlands (Jeugdzorg Nederland, 2020). While the percentage of placements with a duration of over a year was 20% in 2015, this percentage had reduced to 12% in 2019 (Jeugdzorg Nederland, 2016; Jeugdzorg Nederland, 2020). The average duration of adolescents' placements in secure residential youth care currently is 6 months. After placement in secure residential youth care institutions, the majority of adolescents return to an open residential facility or to a home or family situation (Jeugdzorg Nederland, 2020).

Adolescents placed in secure residential youth care institutions almost exclusively present with multiple problems. These multiple problems of adolescents and their families include, but are not restricted to, externalizing behaviour problems (seen in 85%–99% of the population), police contact (70%–72%), antisocial peer affiliations (45%–60%), below average intelligence quotient (> 50%), substance abuse (> 50%; Vermaes et al., 2014), or traumatic life events (> 50%; Van Dam et al., 2010). The adolescents often come from malfunctioning families with multiple problems (Simons et al., 2016) who have a long history of receiving (youth) care (De Lange et al., 2017).

The severity of the problems experienced by either these adolescents or their networks resulted in their out-of-home placement. While the guideline out-of-home placement (commissioned and financed by the Dutch Ministry of Health, Welfare and Sport) explicitly aims to achieve a reduction in the number of out-of-home placements of adolescents (De Lange et al., 2017), out-of-home placements are sometimes inevitable

and offer important treatment to some of the most vulnerable adolescents (Harder et al., 2020). Meta-analyses have shown small to moderate effect sizes for improvements in adolescents' emotional problems and reductions of externalizing behaviour problems at the end of placement (De Swart et al., 2012; Knorth et al., 2008). These improvements are, however, not retained long-term (Knorth et al., 2008; Leipoldt et al., 2019) and not all research agrees that out-of-home placement is beneficial (Verbruggen et al., 2018).

Family-centered care in secure residential youth care

Historically, secure residential youth care has been largely child-centered. Treatment was focused on the individual child and neither care nor research focused on family functioning (Knorth et al., 2008); a systemic approach in residential care was not always embraced. Programmes used to focus exclusively on the young person placed in the residential setting and parental involvement was not viewed as a necessary component of treatment (Merritts, 2016). Meanwhile, this is changing. Higher levels of parental involvement have been shown to be related to lower levels of adolescent externalizing behaviour problems (Hoeve et al., 2009). Considering the large number of familial risk factors for severe behaviour problems of adolescents, it should come as no surprise that giving parents a clearer role in the treatment of their child increases the chance of achieving positive residential treatment outcomes and leads to an increased likelihood of the ability of families to maintain treatment outcomes (De Lange et al., 2017; Slot & Spanjaard, 2009). In fact, studies published between 2008 and 2016 have shown that parental involvement is a consistent predictor of positive outcomes of adolescents in and after residential placement (Geurts et al., 2012; Hatton & Brooks, 2008; Merritts, 2016).

Adolescents in secure residential youth care stay in residential groups where they receive care and psychosocial treatment 24 hours a day (De Swart et al., 2012; Eenshuistra et al., 2019). Staff members who interact most with adolescents are the group care workers. Therefore, it is likely that their attitudes and behaviours towards involving the family as a system in treatment are particularly important in achieving what has been termed family-centered care.

The conceptual model of family-centered care is depicted in Figure 2. In short, family-centered care in secure residential youth care consists of the components 'parental involvement' and 'staff family-centered attitude and behaviour' during the residential placement. Family-centered care is not a new treatment, but rather a different way of working, through shifting focus to a systemic perspective. In other words, being constantly aware of the relevance and importance of how the family influences adolescents' ([problem]

behaviours) to help prevent adolescents relapsing into severe problem behaviour (Simons et al., 2017). Parental involvement is measured in terms of the level of contact between parents and their children and contact between parents and group care workers. Staff family-centered attitude and behaviour is measured using a self-developed self-measure questionnaire, with questions pertaining to group care workers' views on and practice of family-centered care.

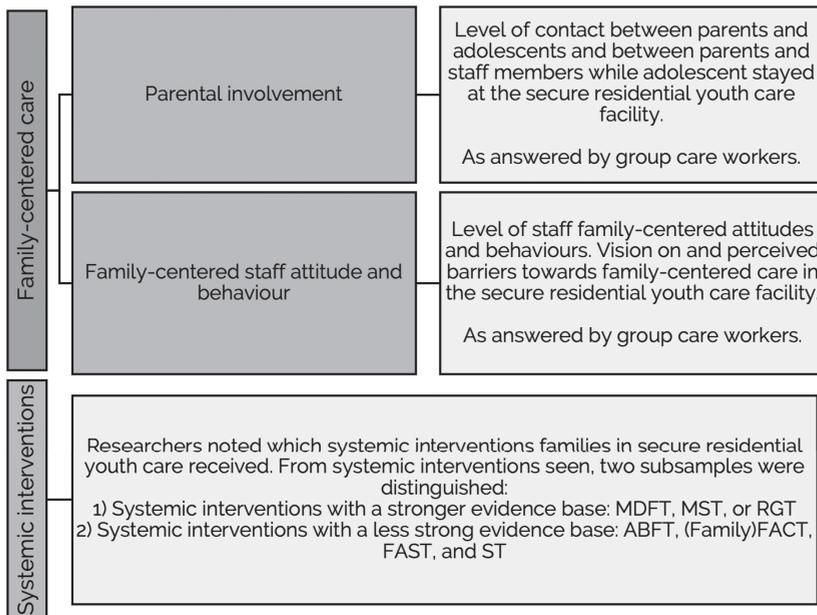


Figure 2
Operationalisation of family-centered care and systemic interventions

As can be seen in Figure 2, the use of systemic interventions is an optional component which can be added to family-centered care in secure residential youth care. Systemic interventions can either start while an adolescent is placed at a secure residential youth care facility or thereafter (Simons et al., 2017).

According to recent research, the benefit of using systemic interventions is that they are able to achieve greater changes in severe behaviour problems because they are delivered within the social-ecological context of adolescents and lead to a retention of behavioural changes achieved during treatment (Dopp et al., 2017). This is noteworthy, because the retention of improvements achieved during placement is problematic. Various

studies have shown that adolescents leaving residential care are at higher risk of poorer outcomes – in terms of for example education, well-being, and social exclusion – than their peers (Harder et al., 2020). Because residential treatment has not focused enough on family functioning and rebuilding of family relationships (Knorth et al., 2008), the transition to the home environment or to independent living can be difficult. Using systemic interventions to smoothen the transition to the home environment or to independent living could potentially help improve outcomes of adolescents leaving secure residential care.

Family-centered care is increasingly being implemented in (secure) residential youth care facilities worldwide (Geurts et al., 2012; Merritts, 2016; Sharrock et al., 2013). While some family-centered approaches focus on increasing parental involvement, others focus more on staff training or implementing evidence-based practices such as systemic interventions combined with (secure) residential youth care.

One example of a combination of secure residential youth care and a systemic intervention is a programme known as HomeBest [ThuisBest in Dutch]. This approach combines placement in secure residential youth care averaging 6 – 8 weeks with the ambulant systemic intervention MST. As soon as the adolescent is placed residentially, the parent(s) start(s) with MST at home. The aim of ThuisBest is for the out-of-home placement to be as short as possible and as long as necessary, to limit the separation between adolescents and caregivers. The shortened residential stay provides caregivers with a time-out from the parenting stress often experienced by these families, while offering a safe, structured, and supervised environment for adolescents (De Swart et al., 2012; Knorth et al., 2008). Since ThuisBest is a fairly new programme combining secure residential youth care with MST, no data on its effectiveness existed before the start of this thesis.

The present thesis

The treatment of severe behaviour problems of adolescents is steadily becoming more systemic, through employing family-centered approaches or by using systemic interventions. One promising systemic intervention for the treatment of severe behaviour problems in adolescents and their families with multiple problems is MST. The use of MST and other systemic interventions in different populations was assessed in this thesis.

The aim of the thesis was fivefold: 1) to assess outcomes of adolescents with severe behaviour problems and an intellectual disability receiving multisystemic therapy for adolescents with an intellectual disability (MST-ID), 2) to assess MST-ID outcomes up to 18-month follow-up and the role of parental intellectual disability in outcomes, 3) to assess outcomes of a combination of MST and secure residential youth care for

adolescents with severe behaviour problems and their families (ThuisBest), 4) to assess which families receive higher levels of family-centered care and systemic interventions in secure residential youth care, and 5) to assess the outcomes of families receiving family-centered care in secure residential youth care combined with systemic interventions.

In order to achieve the aim, five sets of research questions were formulated and various research designs were used. In **Chapter 2**, the outcomes of MST-ID are compared to the outcomes of standard MST for adolescents with an intellectual disability and their parents, until 6-month follow-up. Consequently, it addresses the question *'Does MST-ID achieve better treatment outcomes until 6-month follow-up for adolescents with intellectual disabilities and their parents than standard MST?'* This is followed by **Chapter 3** in which the longer-term follow-up outcomes of MST-ID are assessed. The following research questions are assessed: *'Are treatment results of MST-ID maintained until 18-month follow-up?'* and *'Does parental intellectual disability relate to these treatment outcomes?'* **Chapter 4** pertains to a programme in which secure residential youth care and MST are combined, ThuisBest, which aims to shorten the duration of the secure residential youth care placement. In this chapter, the following research questions are addressed: *'What are the adolescent and familial treatment outcomes of ThuisBest?'* and *'To what extent are these predicted by adolescent and familial characteristics?'* **Chapters 5 and 6** look at family-centered care and the use of systemic interventions combined with secure residential care. More specifically, **Chapter 5** assessed the predictors of family-centered care and the use of systemic interventions. In order to do so, the following research questions were addressed: *'Which adolescent and familial characteristics predict the level of family-centered care in secure residential youth care?'* and *'Which adolescent and familial characteristics and levels of family-centered care in secure residential youth care predict the use of systemic interventions?'* Next, in **Chapter 6**, the relationship between family-centered care during secure residential youth care and the outcomes of families who received a systemic intervention were assessed using the research questions: *'Do levels of family-centered care predict adolescent and family outcomes in families receiving a systemic intervention and secure residential youth care?'*, *'Do levels of family-centered care predict placement duration and the duration of the systemic intervention in families receiving a systemic intervention and secure residential youth care?'* In addition, the evidence base of systemic interventions was considered and addressed using the research question: *'Are these relations different in subsamples of systemic interventions with a strong evidence base and systemic interventions with a less strong evidence base?'* Finally, **Chapter 7** provides a summary of the main and key findings of this thesis as well as its general conclusion.



CHAPTER 2

Evaluating the effects of multisystemic therapy for adolescents with intellectual disabilities and antisocial or delinquent behaviour and their parents

This chapter was published as:
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Abstract

Background: An adaptation of multisystemic therapy (MST) was piloted to find out whether it would yield better outcomes than standard MST in families where the adolescent not only shows antisocial or delinquent behaviour, but also has an intellectual disability. **Method:** To establish the comparative effectiveness of MST-ID ($n = 55$) versus standard MST ($n = 73$), treatment outcomes were compared at the end of treatment and at 6-month follow-up. Pre-treatment differences were controlled for using the propensity score method. **Results:** Multisystemic therapy-ID resulted in reduced police contact and reduced rule-breaking behaviour that lasted up to 6 months post-treatment. Compared to standard MST, MST-ID more frequently resulted in improvements in parenting skills, family relations, social support, involvement with pro-social peers and sustained positive behavioural changes. At follow-up, more adolescents who had received MST-ID were still living at home. **Conclusions:** These results support further development of and research into the MST-ID adaptation.

Introduction

Adolescents with intellectual disabilities¹ and their families are predisposed to a variety of problems. Severe behaviour problems are seen three times as often in adolescents with borderline intellectual functioning or mild intellectual disabilities as in individuals without intellectual disabilities (De Ruiter et al., 2007; Emerson et al., 2011; Wallander et al., 2003). Adolescents with intellectual disabilities are at increased risk of engaging in offending behaviour, of re-offending and of becoming involved with the juvenile justice system (McReynolds et al., 2010; Thompson & Morris, 2016). More specifically, research has shown that 10%–30% of youths in detention have intellectual disabilities (Kaal et al., 2014; Thompson & Morris, 2016). Without intervention, the behaviour problems of adolescents with intellectual disabilities often persist (Emerson et al., 2011).

Parents of adolescents with intellectual disabilities often report higher levels of parenting stress than parents of typically developing adolescents (Patton et al., 2018). High levels of parenting stress can lead to negative child outcomes such as insecure attachment, neglect and abuse in children and are associated with negative parenting styles (Meppelder et al., 2015; Neece & Lima, 2016; Powell & Parish, 2017). A combination of academic-related disability or intellectual disability, abuse and co-occurring mental health problems substantially increases the risk of youth delinquency. As a result, some adolescents get stuck in an offending recidivism cycle which places them at risk of incarceration (Mallett, 2014; Thompson & Morris, 2016).

In some cases, both the adolescents and their parent(s) have intellectual disabilities. Such families often experience multiple problems, such as financial problems or mental health problems (Schuiringa et al., 2015), and frequently lack problem-solving skills, which may, for instance, lead to care re-entry. Moreover, transgenerational transmission of psychosocial and socioeconomic problems has been observed in these families (Tausendfreund et al., 2016). One of the biggest challenges for these families is that they have a limited social network. This may be worrisome because a (larger) social network can serve as a buffering mechanism to parenting stress (Llewellyn & Hindmarsh, 2015; Meppelder et al., 2015).

Because of the accumulation of risk factors for adolescents with intellectual disabilities and their families, these families are often involved with youth care. Research has shown that adolescents from families involved with youth care are twice more likely to be placed out of home than are adolescents from families not involved with youth

¹ The definition of intellectual disabilities varies across countries. In the Netherlands, intellectual disability generally encompasses intelligence quotient (IQ) scores of 50–70 (mild intellectual disability) and IQ scores of 70–85 (borderline intellectual functioning in the Diagnostic and Statistical Manual IV-TR, American Psychiatric Association, 2000) with co-occurring deficits in adaptive functioning. Symptoms of intellectual disabilities must have begun during the developmental period (American Psychiatric Association, 2013).

care (Lightfoot et al., 2011). Though out-of-home placement is sometimes inevitable and necessary to avoid further escalation of problems or to guarantee child safety, it leads to high emotional and societal financial costs (Allen et al., 2007; Lee et al., 2014; Vermeulen et al., 2017). Research suggests that families experiencing a multitude of difficulties, such as families with members who have an intellectual disability, are best treated with home-based, flexible, integrated and multicomponent services (Tausendfreund et al., 2016). Through home-based treatment, out-of-home placement may be prevented or postponed.

A home- and community-based intervention known to reduce the number of out-of-home placements, and recidivism amongst juveniles with antisocial or delinquent behaviour is multisystemic therapy (MST; Henggeler et al., 2009). MST targets 12- to 18-year-old adolescents at risk of out-of-home placement due to their severe problem behaviour. Based on Bronfenbrenner's (1979) social-ecological model, MST assumes that the adolescent's antisocial behaviour is driven by the interplay of risk factors in the systems surrounding the adolescent, such as family, friends, school and neighbourhood. Because of its multisystemic nature, MST seems a promising intervention for the prevention of impending out-of-home placement and incarceration of adolescents with intellectual disabilities and antisocial or delinquent behaviour. To our knowledge, however, the effectiveness of MST has not been evaluated in a sample consisting of only adolescents with intellectual disabilities. In addition, although one of the MST treatment principles states that interventions should be appropriate to the youth's age and developmental needs (Henggeler et al., 2009), the treatment manual does not include any specific guidance on how to deliver MST to family members with intellectual disabilities. In fact, it seems that MST therapists have some difficulty treating adolescents with intellectual disabilities, since a previous pilot study showed that, after standard MST, adolescents with intellectual disabilities were placed out of home more frequently than adolescents without intellectual disabilities. In addition, keeping or getting adolescents with intellectual disabilities at school or work seemed more difficult (Lange & Van der Rijken, 2012). As a consequence, standard MST was hypothesized to not optimally suit the needs and characteristics of adolescents with intellectual disabilities and their families and an adaptation of standard MST, MST-ID², was piloted.

The present study's aim was to evaluate the effects of MST-ID in a sample of adolescents with intellectual disabilities and antisocial or delinquent behaviour, and their parents. The present authors hypothesized that (a) MST-ID would show positive treatment outcomes and sustain these up to 6-month follow-up and that (b) treatment outcomes would be better for MST-ID compared to standard MST.

² Per the MST Services publication, "Multisystemic Therapy ® (MST®) Adaptations: Pilot Studies to Large-Scale Dissemination," the work presented in this manuscript would be classified as "Model/Adaptation Development Research."

Method

Participants and procedure

Table 1 displays the baseline characteristics of the 128 families included in the study. It shows that 43.6% and 35.6% of the adolescents receiving MST-ID and standard MST, respectively, were female, that the average ages were 15.2 and 14.9 years, respectively, and that 94.5% and 95.9% of the adolescents were born in the Netherlands.

Multisystemic therapy-ID was provided by two teams from one organization (specializing in care for people with intellectual disabilities) in the Netherlands. Standard MST was offered by 24 teams from seven Dutch organizations (offering clinical inpatient and outpatient care). Participants were not randomly assigned to the treatment conditions. Randomization was not used because the teams offering standard MST were not allowed to change their inclusion criteria to only treat adolescents with intellectual disabilities. Therefore, MST-ID and standard MST were studied in their everyday clinical practice settings. Dutch referral agencies referring families to standard MST and MST-ID include primary healthcare providers, the Child Protection Council, juvenile judges and referral institutions at the council level. Additionally, as the organization offering MST-ID specializes in intellectual disability care, families are also referred to this treatment by other intellectual disability care agencies.

All MST therapists had completed higher education in social sciences. They also completed the 5-day MST training, participated in weekly supervision and expert consultation meetings, and attended quarterly booster sessions (Henggeler et al., 2009). Between March 2014 and October 2015, all teams were asked to refer adolescents with a known IQ score between 50 and 85 (i.e., intellectual disabilities) and their primary caregivers (from here on referred to as parents) to the research team. If IQ scores were unknown, therapists could refer adolescents based on an educational level of *vmbo-t* (the Dutch equivalent of vocational education) or lower, because adolescents with this level of education are much more likely to have intellectual disabilities than adolescents with higher educational levels (Kaal et al., 2015). To verify the presence of intellectual disabilities in adolescents who were referred based on their educational level, their IQ was tested using the Dutch Wechsler Intelligence Scale for Children III—Short Form (Wechsler, 2005) or the Dutch Wechsler Adult Intelligence Scale III—Short Form (Wechsler, 2000) depending on their age. To participate in the research, adolescents and their parents had to have sufficient proficiency in the Dutch language. That is, an interpreter did not need to be present in order for parents to be able to answer the questionnaires.

Families referred to the research team were asked to sign consent in order to take part in the study. The study was approved by the Committee Scientific Research Participation

Table 1 Baseline differences between MST-ID and standard MST and standardised bias in full sample (N = 128)

Variable	MST-ID (N = 55)		Standard MST (N = 73)		Test Statistic t test	Standardised Bias	
	Mean	SD	Mean	SD		Before PS application	After PS application
Age	15.20	1.73	14.90	1.38	-963	.158	.138
CBCL							
Internalising problems	61.10	9.49	61.30	8.22	.148	-.025	-.156
Externalising problems	65.40	8.85	68.80	7.78	2.321*	-.388	.017
Total behavioural problems	64.20	9.74	67.00	6.46	1.826	-.285	-.061
YSR							
Internalising problems	52.70	9.01	52.80	9.52	.033	-.006	-.226
Externalising problems	57.20	11.22	60.50	8.42	1.76	-.297	-.006
Total behavioural problems	54.30	10.91	57.10	8.01	1.478	-.248	-.077
OBVL							
Total parenting stress	66.70	11.14	69.90	8.60	1.834	-.287	.068
SCIL							
SCIL score primary caregiver	17.50	5.37	21.20	4.40	4.139**	-.685	-.149
WISC/WAIS							
TIQ score youth	73.90	6.70	75.10	7.21	.936	-.177	-.021
	%		%		Chi-Square		
Gender							
Female	43.6		35.6		.848	.160	-.075
Country of birth							
Netherlands	94.5		95.9		1.351	-.029	.000
Western country	0.0		1.4			-.030	.000
Non-Western country	5.5		2.7			.059	.000
Living situation adolescent							
Together with one parent	56.4		61.6		2.824	-.092	.127
Together with multiple parents	40.0		38.4			.029	-.127
Other	3.6		-			.063	.000
Living situation adolescent							
Lived at home	96.4		100.0		2.697	-.192	.000
Level of education							
None/primary/special/ polytechnic education	74.5		50.0		7.870**	.558	-.124
Lower secondary education (vmbo/mavo/mbo)	25.5		50.0			-.558	.124
Higher secondary education (havo/vwo)	-		-			.000	.000

Variable	MST-ID (N = 55)		Standard MST (N = 73)		Test Statistic t test	Standardised Bias	
	Mean	SD	Mean	SD		Before PS application	After PS application
Previous treatment	90.7		93.2		.249	-.082	-.030
Engagement in school or work	70.4		56.9		2.378	.291	.005
Court order	32.7		53.4		5.524	-.270	.065
	41.8		27.4			.188	.101
	25.5		19.2			.082	-.166
Police contacts up to six months prior to treatment	49.1		54.2		.322	-.101	.189
Relation father	80.0		93.2		4.960*	-.326	-.011
Relation mother	98.2		98.6		.041	-.033	.000
Relation siblings	90.9		95.9		1.328	-.172	-.140
Relation peers	100.0		98.6		.759	.000	.000
Country of birth primary caregiver	76.4		76.4		.305	.000	.020
	3.6		5.6			-.024	-.160
	20.0		18.1			.024	.140
Level of education primary caregiver	34.5		12.3		9.935**	.328	-.025
	50.9		60.3			-.138	-.005
	14.5		27.4			-.190	.030
Employment primary caregiver	41.8		43.1		.02	-.025	-.189
Partner primary caregiver	78.8		70.0		1.207	.215	.055

*p < .05. **p < .01. ***p < .001.

of one of the participating mental health care agencies and complied with the American Psychological Association's ethical principles regarding research with human participants. Of the 247 families who were referred to the research team, 33 families were excluded for one of the following reasons: The adolescent was too young (aged <12 years) ($n = 1$), families had insufficient knowledge of the Dutch language ($n = 2$), the adolescent did not have intellectual disabilities according to the results of the IQ test ($n = 15$), the presence of intellectual disabilities could not be assessed because the adolescent refused testing ($n = 5$), or the adolescent received other treatments simultaneously with MST ($n = 10$). Of the 214 families who met the inclusion criteria, 128 families (60%) gave written informed consent. The final sample consisted of 55 families receiving MST-ID and 73 families receiving standard MST. When families did not give consent, baseline data were not collected. Therefore, analyses comparing families giving and not giving consent were not conducted.

A set of questionnaires was filled in by therapists and by parents at the start of the treatment, at the end of the treatment and 6 months after finishing the treatment (follow-up). Home visits were conducted by the research team at the start and at the end of the treatment to administer the questionnaires. Six months after the treatment, the parents were contacted by the independent call centre "Kwestion" for a telephone interview entailing a set of follow-up questionnaires. Six months after treatment, 11 families could not be reached (MST-ID $n = 4$, standard MST $n = 7$). Of the 117 families (91%) that could be contacted at follow-up, 87 families gave consent for the interview (74%). Eight families did not want to take part (7%), 20 families were unavailable at the time (17%), and two families could not take part for other reasons (2%).

Interventions

Multisystemic therapy is aimed at adolescents aged 12–18 years who display antisocial or delinquent behaviour and are at risk of out-of-home placement. It is a multisystemic intervention with a duration of three to 5 months (Henggeler et al., 2009). In MST, caregivers are key to achieving and sustaining long-term outcomes in the reduction in juvenile externalizing behaviour. Therefore, the development of parental skills and empowerment of parents are main components of MST. Ultimately, MST aims to create a supportive context that encourages adaptive behaviour in adolescents and parents, while mobilizing or strengthening support systems for the family (Henggeler & Schaeffer, 2016)

Studies evaluating the effectiveness of MST compared to treatment as usual (TAU), and including follow-up data, show a reduction in out-of-home placements up until 2 years after treatment for adolescents receiving MST in the United States of America and Norway (Ogden & Hagen, 2006; Vidal et al., 2017). Different results were found in England,

where Butler and colleagues (2011) and Fonagy and colleagues (2018) reported that at 18-month follow-up, no differences existed between the number of out-of-home placements. In Canada, Cunningham (2002) concluded that MST showed no distinguishable treatment outcomes, which McIntosh (2015) later refuted, showing clinically significant treatment improvements for families receiving MST treatment. Thus, research suggests that results of MST vary across contexts (Van der Stouwe et al., 2014).

In the Dutch context, MST has been shown to lead to a reduction in externalizing problem behaviour and higher parenting competence lasting until 3 years after treatment (Asscher et al., 2013, 2014).

Over the years, adaptations of standard MST have been developed and scientifically evaluated to suit the needs and characteristics of a number of different target populations (for an overview, see <https://msts-services.com/target-populations/target-populations>). Adaptations of MST follow a standardized procedure of development as described in detail in Schoenwald (2014).

In the current study, a new adaptation of MST, MST-ID, was piloted. Research has shown that the needs of families with intellectual disabilities are different from families whose members do not have intellectual disabilities (Neece & Lima, 2016; Schuiringa et al., 2017; Soenen et al., 2016). Therefore, the Dutch Knowledge Centre on MID has provided guidelines on how to adapt interventions to the strengths and needs of individuals with intellectual disabilities (De Wit et al., 2012). For MST-ID, incorporating these guidelines has resulted in training of therapists in the identification of an intellectual disability, the identification of parental stress and how this is affected by the intellectual disabilities of the adolescent, techniques to motivate families to enter the treatment and engage them in the treatment, promoting active involvement of the social network and paying special attention to generalization of acquired knowledge or skills. Furthermore, it has led to a specific focus on adaptations made to the use of language (i.e., using easier language), adding visual cues and simplification of content of treatment sessions by focusing on one assignment.

As in any MST treatment, therapist adherence to the treatment principles was independently monitored using monthly telephone interviews with parents. Parents scored the 28 items of the Therapy Adherence Measure—Revised (TAM-R; Henggeler et al., 2006) on a scale of 1–5 with a score of 1 meaning “not at all” and a score of 5 “very much.” The average therapist adherence scores were 4.35 ($SD = .56$) for MST-ID and 4.38 ($SD = .62$) for standard MST. These scores are similar to TAM-R scores seen in American research on standard MST ($M = 4.41$; $SD = .49$, Letourneau et al., 2002) as well as in a Dutch RCT that evaluated the effectiveness of standard MST in individuals without intellectual disabilities ($M = 4.36$; $SD = .51$, Manders et al., 2011). In the present study, the level of therapist

adherence did not differ between MST-ID and standard MST ($t(125) = .304, p = .76$). Standard MST and MST-ID therapists thus adhered to the treatment principles equally well. MST-ID mean treatment duration was 5.1 months (range: 2–8 months) and the mean duration of standard MST was 4.4 months (range: 2–7 months).

Instruments

SDI

A set of background variables was measured at the start of the treatment using the SDI questionnaire (Sociodemographic Information; MST-NL, 2012). Therapists reported a variety of family demographics detailed in Table 1.

Wechsler IQ tests

IQ was assessed using a short form of the Dutch Wechsler Intelligence Scale for Children (WISC-III-NL; Wechsler, 2005) in adolescents up until the age of seventeen. For adolescents aged 17–18, the Wechsler Adult Intelligence Scale—Short Form (WAIS-III-NL; Wechsler, 2000) was used. The short form of the WISC-III-NL included the subtests picture completion, information, block design, symbol search and vocabulary. For the WAIS-III-NL, the subtests included were vocabulary, similarities, block design and matrix reasoning. The short form of the WISC-III-NL has been validated for use in individuals with intellectual disabilities with a high internal consistency ($r = .96$; De Ruiter et al., 2008). The short form of the WAIS-III-NL has been shown to have a high correlation ($r = .89$) with the total IQ score within a Dutch population of individuals with intellectual disabilities (Van Duijvenbode et al., 2016).

SCIL

Parents were asked to complete the Dutch Screener for Intelligence and Learning Disabilities 18+ (SCIL 18+; Kaal et al., 2015) to screen for the presence or absence of intellectual disabilities. The screener consists of 14 questions that result in a total SCIL score that can range from 2 to 28. A total SCIL score of 20 and above indicates the absence of intellectual disabilities. A total SCIL score of 19 and below indicates the presence of intellectual disabilities. The screener gives a valid indication of whether or not a person's IQ is below 85 and shows a good test-retest reliability of $r = .92$ (Nijman et al., 2018).

CBCL and YSR

Adolescents' problem behaviour was measured using the Child Behaviour Checklist (CBCL 6–18; Achenbach & Rescorla, 2001) as completed by the parents and the Youth Self Report

(YSR; Achenbach & Rescorla, 2001) as completed by the adolescents. The subscales internalizing, externalizing and rule-breaking behaviour were measured as well as the total problem behaviour scale. Answers were given on a three-point scale ranging from 0 "Never" to 2 "Often." *T* scores were computed and used for analyses. Higher *T* scores indicate that adolescents experienced more problems or were believed to experience more problems by the parents. The test-retest reliability of the CBCL (sub)scales ($r = .91$ for internalizing behaviour; $r = .92$ for externalizing behaviour; $r = .94$ for total problem behaviour; $r = .91$ for rule-breaking behaviour) and the YSR (sub)scales ($r = .80$ for internalizing behaviour; $r = .89$ for externalizing behaviour; $r = .87$ for total problem behaviour) used in this study is good. Research has shown that Cronbach's alphas for the CBCL 6–18 were higher for parents of children with intellectual disabilities than for parents of children without intellectual disabilities (Dekker et al., 2002).

OBVL

Parenting stress was assessed using the Opvoedingsbelasting Vragenlijst (OBVL, Burden of Parenting Questionnaire; Vermulst et al., 2012). Parents completed this self-report instrument which consists of 34 items. Answers range from 1 "Not at all true" to 4 "Completely true." Scores on all items were summed up to compute a *T* score for total parenting stress. A higher *T* score indicates a higher level of parenting stress. The reliability of total parenting stress measured by the OBVL is good, with a Cronbach's alpha of .89 (Vermulst et al., 2012).

Primary treatment outcomes

The three main outcomes of the MST quality assurance system were measured at the end of treatment and at 6-month follow-up: (a) The adolescent is living at home (yes/no); (b) the adolescent attends school or works for at least 20 hours a week (yes/no); and (c) the adolescent has not been involved with the police since the start of treatment (measured at the end of treatment)/the adolescent has not been involved with the police in the previous 6 months (measured at follow-up) (yes/no). At the end of treatment, therapists reported the outcomes using the SDI questionnaire (MST-NL, 2012). These reports are discussed with the team supervisor and the MST consultant from MST-NL. This means that the treatment outcomes are monitored by multiple parties. At follow-up, parents reported on the aforementioned primary outcomes in the telephone interview.

Secondary treatment outcomes

In addition to the primary treatment outcomes, MST's "instrumental outcomes" were assessed. These instrumental outcomes include six items that identify skills which are "instrumental" to achieving positive treatment outcomes and are reported by therapists. The instrumental

outcomes measure whether or not families show (a) improved parenting skills, (b) improved family relations and (c) improved social support, and whether or not the adolescent (d) obtained success in an educational or vocational setting, (e) is involved with pro-social peers and (f) obtained changes in problem behaviour that sustained for 3–4 weeks (MST-NL, 2012).

In addition to the instrumental outcomes, the subscales externalizing problem behaviour and rule-breaking behaviour from the CBCL and total parenting stress measured with the OBVL were used as secondary treatment outcomes at the end of treatment. At follow-up, only the CBCL subscale rule-breaking behaviour was used and the OBVL was not re-administered to minimize the number of questions parents had to answer. The CBCL subscale rule-breaking behaviour was considered the most relevant to our target population.

Statistical analyses

Analyses of MST-ID treatment outcomes

In order to evaluate the results of MST-ID up to 6 months post-treatment, pre-test–post-test–follow-up differences were analysed within the MST-ID group. Two-sided Friedman ANOVAs and resulting chi-squares were used for dichotomous variables and repeated measures ANOVAs for continuous variables. Analyses were performed in IBM SPSS Statistics version 23.

Comparative treatment effects

Because families were not randomly assigned to one of the treatments, adolescents assigned to either MST-ID or standard MST could differ on pre-treatment variables. If differences existed, the propensity score (PS) method would be used to adjust for this allocation bias. The PS is a balancing score which can be used to achieve a balanced distribution of the observed covariates of the intervention and the control group, while also balancing the missingness on these variables. The PS represents the probability for a given adolescent of being allocated to MST-ID or standard MST, based on all pre-treatment variables. Adolescents with a similar PS are assumed to be comparable on the distribution of the pre-treatment variables. After estimation of the PS, this score can be used to balance the two treatment conditions in order to allow for a comparison on the treatment outcomes (Austin, 2011; Rubin, 2001). It was assumed that balance was achieved when standardized biases did not exceed .25 (Harder et al., 2010; West et al., 2014). The PS was estimated in a univariate logistic regression function with the treatment groups (MST-ID or standard MST) as the dependent variable. All observed pre-treatment variables, as well as missing indicators for all pre-treatment variables with missing data, were included as predictors in the PS model

(Ali et al., 2014; Austin, 2011; Brookhart et al., 2006; Stuart, 2010). The inclusion of missing indicators enabled us to also include families with missing data in the PS estimation, as well as include the missing data patterns in the PS estimation (Cham & West, 2016; Harder et al., 2010).

Application of the PS by weighting

The PS was applied by weighting the groups by the odds of their estimated PS scores (Stuart, 2010). With this procedure, individuals in standard MST best matching individuals in MST-ID are "upweighted," whereas individuals whose covariate values are dissimilar from treated individuals are "downweighted." As a result of the weighting procedure, the average treatment effect of the treated (ATT) was estimated (Stuart, 2010). This is the effect that would be found if all families treated with MST-ID had been treated with standard MST.

Analysis of treatment effect

To estimate treatment effect estimates in the weighted sample for all outcome measures, regression analysis was used. The post-treatment effect on dichotomous outcomes and the effect at 6-month follow-up were estimated using logistic regression. The results were used to estimate average risk ratios (RRs; Austin & Small, 2014). The treatment effects on the continuous outcome measures were assessed using OLS regression. Thereafter, simple bootstrapping was used to calculate 90% confidence intervals for all outcome measures. In total, 5,000 bootstrap samples were drawn from the weighted sample, and in each bootstrapped sample, treatment effects were estimated as described (Austin & Small, 2014). Analyses were performed in IBM SPSS Statistics version 23 and Stata version 12. Because treatment effects might be different when not only the adolescent, but also the parent has intellectual disabilities, the present authors also explored the differential treatment effects in a subgroup of adolescents and parents with intellectual disabilities.

Results

Participant characteristics

Figure 1 shows a flowchart detailing the number of families included at various points in time. Table 1 displays the demographic characteristics of the 128 families included in the study. The adolescents receiving MST-ID had significantly lower educational levels and less often a father figure was present. The adolescents' externalizing problems also differed significantly; parents of adolescents receiving MST-ID reported significantly lower

levels of externalizing problems than did parents of adolescents receiving standard MST. Furthermore, the parents of adolescents receiving MST-ID had significantly lower educational levels and had lower SCIL scores.

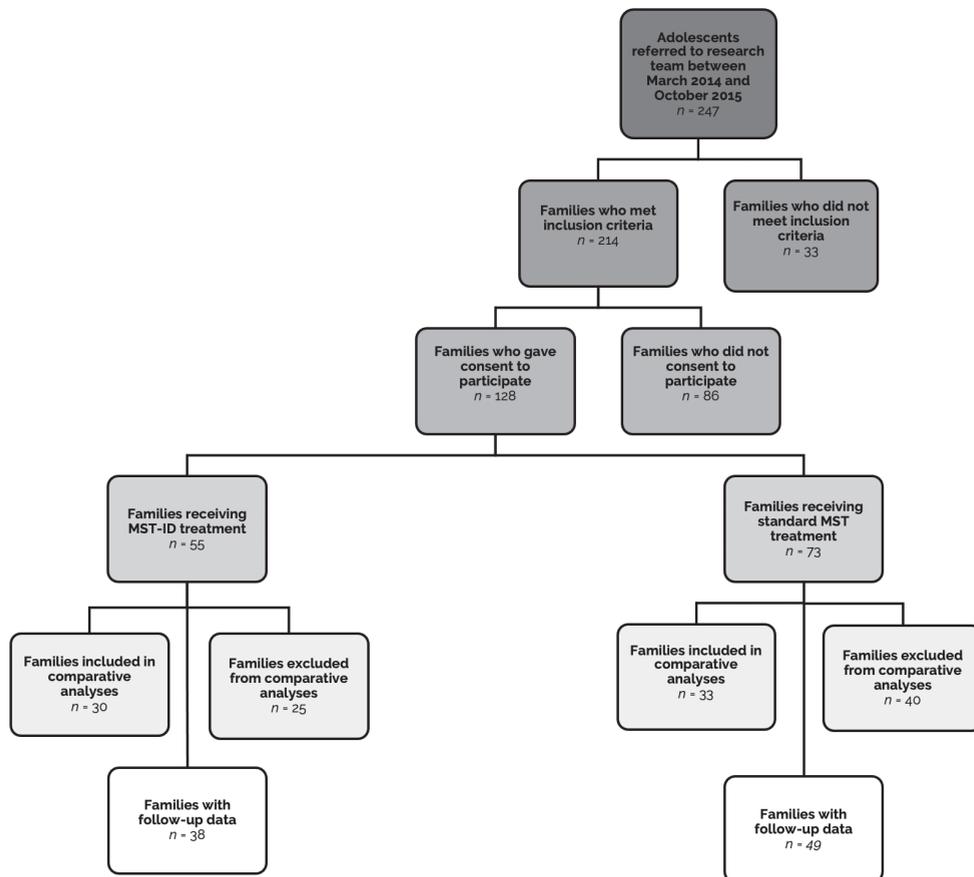


Figure 1
Flowchart detailing number of families included at various points in time

MST-ID treatment outcomes

The present authors tested treatment effects for MST-ID from pre-treatment to 6-month follow-up using repeated measures analyses for dichotomous variables (Friedman test). Table 2 shows the results of these analyses. The percentage of adolescents with police contact after treatment reduced significantly ($\chi^2(2) = 15.91, p < .01$). Post hoc analyses (see Table 2) revealed that the presence of police contact was reduced between the start of the treatment and the

end of the treatment and that this effect was maintained at follow-up. No significant differences between pre- and post-tests were found for engagement in school or work ($\chi^2(2) = 3.65, p = .16$) or adolescents living at home ($\chi^2(2) = 1.00, p = .61$). Therefore, post hoc results were not applicable.

A repeated measures ANOVA showed that there was an effect on rule-breaking behaviour ($F(1, 33) = 13.59, p < .01$). Post hoc results (see Table 2) revealed that there was a significant reduction in rule-breaking behaviour between the start and the end of the treatment and between the start and 6-month follow-up. This means that rule-breaking behaviour decreased during treatment and that this effect maintained until 6 months after treatment.

Table 2
Treatment outcomes for MST-ID ($N = 55$)

Outcome variable	Pre-test	Post-test	Follow-up			
	%	%	%	Pre-post Z-score	Pre- follow-up Z-score	Post- follow-up Z-score
No police contact	49.1	78.2	80.0	-2.968**	-3.500***	-.302
Engagement in school or work	70.4	85.5	72.2	N/a	N/a	N/a
Living at home	96.4	96.4	100.0	N/a	N/a	N/a
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M_{diff} (SE) pre-post</i>	<i>M_{diff} (SE) pre- follow-up</i>	<i>M_{diff} (SE) post- follow-up</i>
Rule-breaking behaviour	66.00 (8.19)	62.46 (7.33)	62.19 (8.65)	4.00 (.94)**	4.77 (1.29)**	.77 (1.30)

Note. Significant results are marked in italics.

MST: multisystemic therapy.

** $p < .01$, *** $p < .001$.

Comparative treatment effects

Balance assessment

To analyse the comparative effects of MST-ID and standard MST, the present authors first evaluated whether balance between the two treatment groups could be achieved using the PS method. For this purpose, the standardized biases were assessed before and after PS application (see Table 1). The standardized bias of all pre-treatment variables as well as the missing indicators included in the PS estimation was lower than .25, which means that balance was achieved after removing families with non-overlapping PS scores (i.e., a PS score that did not fall in the range of PS scores that was observed in the other treatment group).

Table 3
Baseline differences within MST-ID between overlapping group and non-overlapping PS group

Variable	Non-overlapping group (N = 25)		Overlapping group (N = 30)		Test statistic
	Mean	SD	Mean	SD	
Age	14.92	2.00	15.37	1.47	t test .927
CBCL					
Internalising problems	59.04	10.96	62.77	7.84	1.423
Externalising problems	61.44	9.14	68.60	7.24	3.242**
Total behavioural problems	60.48	10.75	67.30	7.69	2.737**
YSR					
Internalising problems	50.29	9.46	54.92	8.14	1.86
Externalising problems	53.42	9.33	60.65	11.86	2.385*
Total behavioural problems	50.88	10.70	57.54	10.29	2.245*
OBVL	63.64	11.59	69.23	10.26	1.899
SCIL	15.80	5.27	18.97	5.10	2.258*
WISC/WAIS	73.83	6.99	74.00	6.60	.093
	%		%		Chi-Square
Gender	48.0		40.0		.355
Country of birth	88.0		100.0		3.808
Western country	-		-		
Non-Western country	12.0		-		
Living situation adolescent	60.0		53.3		3.241
Together with one parent					
Together with multiple parents	32.0		46.7		
Other	8.0		-		
Living situation adolescent	92.0		100.0		2.491
Lived at home					
Level of education	80.0		70.0		.719
None/primary/special/polytechnic education					
Lower secondary education (vmbo/mavo/mbo)	20.0		30.0		
Higher secondary education (havo/vwo)	-		-		

Variable	Non-overlapping group (N = 25)	Overlapping group (N = 30)	Test statistic
Previous treatment	91.7	90.0	.044
Engagement in school or work	Present	Present	.059
Court order	No	36.7	1.985
	Civil	33.3	
	Criminal	30.0	
Police contacts up to six months prior to treatment	Absent	53.3	.475
Relation father	Present	96.7	11.458**
Relation mother	Present	100.0	1.222
Relation siblings	Present	93.3	.469
Relation peers	Present	100.0	N/a
Country of birth primary caregiver	the Netherlands	83.3	3.187
	Western country	-	
	Non-Western country	16.7	
Level of education primary caregiver	None/primary/special/polytechnic education	16.7	9.458**
	Lower secondary education (vmbo/mavo/mbo)	63.3	
	Higher secondary education (havo/vwo)	20.0	
Employment primary caregiver	Employed	46.7	.638
Partner primary caregiver	Present	82.1	.395

Note: CBCL: Child Behaviour Checklist; MST: multisystemic therapy; OBVL: Opvoedingsbelasting Vragenlijst; PS: propensity score; SCIL: Screener for Intelligence and Learning Disabilities; WAIS: Wechsler Adult Intelligence Scale; WISC: Wechsler Intelligence Scale for Children; YSR: Youth Self Report;

TIQ: total IQ.

* $p < .05$. ** $p < .01$.

Table 4

Comparative treatment effect of MST-ID and standard MST post-treatment and at 6-month follow-up

Post-treatment outcomes				
	MST-ID (N = 30)	Standard MST (N = 33)		
Primary outcomes	%	%	RR	90% CI
No police contact	76.7	66.7	.700	.311 - 1.901
Engagement in school or work	80.0	81.8	.978	.790 - 1.279
Living at home	93.3	93.9	.994	.909 - 1.075
Secondary outcomes				
Improved parenting skills	93.3	75.8	1.232	1.031 - 1.587
Improved family relations	100.0	75.8	1.280	1.078 - 1.618
Improved social support	96.7	81.8	1.181	1.049 - 1.473
Success in educational setting	83.3	78.8	1.026	.834 - 1.312
Involved with pro-social peers	93.3	78.8	1.185	1.022 - 1.519
Changes in problem behaviour lasting a minimum of 3-4 weeks	93.3	78.8	1.149	1.001 - 1.449
	<i>M (SD)</i>	<i>M (SD)</i>	<i>B</i>	90% CI
Externalising problems	63.15 (6.97)	67.14 (8.74)	-3.991	-8.107 - .384
Total parenting stress	63.65 (10.99)	63.93 (12.44)	-274	-6.005 - 6.006
Follow-up outcomes				
	MST-ID (N = 20)	Standard MST (N = 17)		
Primary Outcomes	%	%	RR	90% CI
No police contact	78.9	70.6	.716	.198 - 2.295
Engagement in school or work	70.0	76.5	.915	.655 - 1.265
Living at home	100.0	76.5	1.308	1.084 - 1.693
Secondary Outcome	<i>M (SD)</i>	<i>M (SD)</i>	<i>B</i>	90% CI
Rule-breaking behaviour	64.25 (7.38)	63.75 (9.92)	-496	-4.632 - 5.439

Note. Significant results are marked in italics.
MST: multisystemic therapy.

Though this restricts the generalizability of the results to the cases for which overlap was present, removing those cases allows for balancing the treatment conditions more precisely (Harder et al., 2010). Excluding families with a non-overlapping PS resulted in a balanced sample of 30 families who received MST-ID and 33 families who received standard MST (25

families who received MST-ID and 40 families who received standard MST were excluded).

Families with a non-overlapping PS who received MST-ID differed too much from the families who received standard MST to allow for comparison. Therefore, the present authors looked into the differences between the overlapping and non-overlapping groups within MST-ID (Table 3). Compared to the families who received MST-ID and who were included in the analyses, the excluded MST-ID families reported significantly lower levels of adolescents' externalizing problems, lower levels of total behavioural problems, fewer family situations in which a father figure was present, lower educational levels of parents and lower SCIL scores of parents.

Analysis of treatment effect

Based on the analyses of data from the subsample of 63 families retained following the PS, Table 4 shows that there were no significant between-group differences on the primary outcome measures at the end of the treatment. At 6-month follow-up, however, significantly more adolescents lived at home after MST-ID than did adolescents after having received standard MST (see Table 4).

On the secondary outcomes, five out of six "instrumental outcomes" differed significantly between MST-ID and standard MST. Families who had received MST-ID showed significantly higher percentages of improved parenting skills, improved family relations, improved social support, involvement with pro-social peers and changes in problem behaviours in contrast to families who had received a standard MST treatment.

The differential treatment effect in the subgroup where both the adolescents and the parents had intellectual disabilities ($n = 48$) could not be established, because within this subsample, balance between MST-ID and standard MST could not be achieved using the PS. This meant that the subgroup treatment samples were too different to compare.

Discussion

The current study evaluated the effects of MST-ID, therewith piloting this adaptation of standard MST. MST-ID targets adolescents with intellectual disabilities in combination with antisocial or delinquent behavioural problems and their parents. Following our first hypothesis, the present authors found that MST-ID significantly reduced adolescents' rule-breaking behaviour, which dropped from a subclinical mean score at the start of treatment to an average range mean score post-treatment and at 6-month follow-up. The percentage of adolescents with police contact was also significantly reduced after MST-ID, dropping from 51% to 20% at follow-up. Thus, as hypothesized, MST-ID showed positive treatment outcomes which were sustained up to 6 months after treatment. Because a previous pilot

study showed that adolescents with intellectual disabilities were placed out of home more frequently than adolescents without intellectual disabilities following standard MST (Lange & Van der Rijken, 2012), the current study also aimed to compare the effects of MST-ID and standard MST in a population of adolescents with intellectual disabilities. It was hypothesized that treatment outcomes would be better for MST-ID compared to standard MST.

Regarding this second hypothesis, no differences were found on the primary outcomes (living at home, police contact and engagement in school or work) at the end of treatment. Six months after treatment, however, the percentage of adolescents living at home was higher in MST-ID than in standard MST (100% in MST-ID vs. 77% in standard MST). In addition, the present authors found that MST-ID obtained better treatment outcomes than standard MST on several of the secondary outcome measures: MST-ID more frequently resulted in improvements in parenting skills, family relations, social support, involvement with pro-social peers and lasting behavioural changes than did standard MST. Although MST-ID did not obtain significantly better results on all outcome variables, the present authors would argue that the differences the present authors did find support the adaptation of MST for adolescents with intellectual disabilities and their parents. Our results suggest that the instrumental outcomes of MST may be underlying to treatment outcome retention up to 6-month follow-up. The improved parenting skills, family relations, social support, contact with pro-social peers and lasting behavioural changes may explain why the percentage of adolescents living at home 6 months post-treatment is higher in the MST-ID group than in the standard MST group. Though further research is needed, it seems advisable for standard MST therapists treating families with adolescents with intellectual disabilities to pay increased attention to the instrumental outcomes to ensure the retention of positive change in parenting skills and prevent the out-of-home placement of adolescents at follow-up. The additional training received by MST-ID therapists, in which specific attention is paid to the identification of parenting stress and an intellectual disability, techniques to motivate families to enter treatment, creating alliance between the family and the therapist, generalization of acquired skills, simplification of treatment content and focusing on one assignment while using visual cues, may explain why MST-ID leads to better results in some areas.

Maintenance of treatment results is difficult in families with adolescents with intellectual disabilities and has largely been ignored in the intervention literature focusing on adolescents with intellectual disabilities. Researchers argue that studies should more often assess long-term outcomes as well as focus on increasing initial family engagement to maximize the chances of maintaining treatment results (Crnic et al., 2017). It has been stated that long-term home care interventions and the construction of lasting

(professional) networks are needed to maintain results in families with a multitude of problems (Tausendfreund et al., 2016). With effects of MST-ID still present 6 months after treatment, families who received MST-ID seem to have succeeded in learning to generalize newly acquired skills to different situations, even after having received a relatively short intervention.

Unfortunately, the effects of MST-ID could not be established in families where both adolescents and parents had intellectual disabilities, because this group was too different from the families receiving standard MST. In fact, almost half of the families treated with MST-ID were excluded from the analyses because they differed too much from the families treated with standard MST. One of the differences found was that the parents in the MST-ID group more often had an intellectual disability than the parents in the standard MST group. This baseline difference between families receiving MST-ID and families receiving standard MST may in part be explained by how families are referred to the interventions. Families known to have intellectual disabilities and related problems usually are referred to organizations specializing in intellectual disability care. Consequently, MST-ID, provided by an organization specialized in care for people with intellectual disabilities, may have had more referrals of families in which the parent was known to have an intellectual disability than standard MST. Thus, different referral paths may have led to the baseline differences found.

In addition to differences in parental intellectual disabilities, the excluded MST-ID families differed significantly from the included families on reported behavioural problems, the presence of a father figure and parental educational level. Parents with intellectual disabilities seemed to report less problem behaviour of their children. Though research has suggested that measures such as the CBCL can be answered by parents (of adolescents) with intellectual disabilities (Dekker et al., 2002), instruments developed for use in general populations often employ language that is not easily understood by persons with limited vocabularies or limited information processing. Therefore, the use of instruments such as the SCIL, developed specifically for people with intellectual disabilities, or instruments thoroughly validated for use in this population should be encouraged.

While other evidence-based systemic treatments such as multidimensional family therapy (Liddle et al., 2018) and family flexible assertive community treatment (Family FACT) have started developing modules for adolescents or families with intellectual disabilities (see e.g., Rijkaart & Neijmeijer, 2011; Youth Interventions Foundation, 2018), to our knowledge no research has been published evaluating their effects in a population of adolescents or parents with intellectual disabilities. Moreover, most interventions that target adolescents with intellectual disabilities and antisocial or delinquent behaviour

focus on the individual (without involving or with a much less involvement of the systems surrounding the adolescent) or are aimed at adolescents who are placed out of home. MST-ID aims to prevent out-of-home placement by involving the adolescent and all systems around them. Therefore, MST-ID seems to add to the existing treatments for adolescents with intellectual disabilities and antisocial or delinquent behaviour.

Limitations

Although our study showed that MSTID generated more positive outcomes than standard MST in adolescents with intellectual disabilities and their parents, results only apply to 55% of the research sample. This is due to the fact that 45% of the families treated with MST-ID were too different from the families treated with standard MST to allow for comparison of their treatment results. Although the exclusion of families with non-overlapping PS scores restricts the generalizability of the results, overall, removing cases without overlapping PS scores allows for more precisely balancing the treatment arms (Harder et al., 2010).

The PS method was used to control for the non-random assignment of families to MST-ID or standard MST as prior studies on and using the PS (Vidal et al., 2017; West et al., 2014) have shown that this method can be used to equate non-randomized groups through balancing differences in pre-treatment characteristics, thereby mimicking balance achieved by random assignment on those covariates (West et al., 2014). While selection bias and bias in baseline characteristics can be reduced using the PS (Vidal et al., 2017), a critical issue in PS analysis is the selection of baseline variables or covariates (West et al., 2014). Although a wide range of initial differences between families receiving MST-ID and standard MST were controlled (i.e., a total of 27 clinically relevant variables were included into our estimation of the PS), there could still be baseline differences that were not measured and, thus, were not controlled. This may have lead to hidden biases in the results. Nevertheless, the use of the PS method is a viable alternative to an RCT and even enhances external validity when treatment selection is thoroughly controlled (Stuart et al., 2011). Careful application of the PS, therefore, can be used to demonstrate that a treatment is effective even without randomization.

Furthermore, it is unknown whether all adolescents with intellectual disabilities and receiving standard MST were referred to the research team. During the inclusion period of this study, 1,301 families were referred to standard MST. Of these families, 164 (13%) were referred to the research team because of a (suspected) adolescent' intellectual disabilities. With intellectual disability prevalence estimated at approximately 15% of the Dutch population (Dutch Knowledge Centre for Child and Adolescent Psychiatry,

2020a), the percentage of adolescents referred to the research team approximates the percentage in the general Dutch population.

Data management in this study was not in its entirety independent. Researchers were not blind to the treatment conditions, because they carried out home visits and, for safety reasons, received the contact information of the therapist delivering MST(-ID) to the families. Since the researchers knew which therapists worked for which organizations, it was impossible to achieve masked assessment. Also, researchers carrying out the data collection were involved in data processing and data analyses. Thus, independent data management could not be realized. To reduce the chance of bias, the researchers who handled the data were supervised by two independent researchers, who were neither involved in the development of the assessed programmes nor in data collection.

Lastly, the present study did not take the duration of the treatment into account, because the present authors intended to establish the comparative effect of MST-ID and standard MST as provided in daily clinical practice. De Wit and colleagues (2012) advise that intellectual disability adaptations of existing interventions should reserve more time, because persons with intellectual disabilities often have a slow information processing speed and experience difficulty concentrating for a longer period of time. MST generally treats families for 3–5 months. This seems a short duration for families with intellectual disabilities. In MST-ID, treatment sessions have to be shorter to suit the needs and abilities of family members with intellectual disabilities. Therefore, more sessions may be needed to reach the treatment goals. Indeed, the mean treatment duration of MST-ID was longer than the duration of standard MST.

Conclusion

There is a need for evidence-based interventions that consider the strengths and abilities of families with intellectual disabilities. Interventions should do whatever it takes to realize lasting results in families with intellectual disabilities. Unnecessary care re-entry and high societal, personal and emotional costs as a result of incarceration should be avoided. To achieve this, interventions for individuals with intellectual disabilities yielding positive post-treatment outcomes which are maintained over (longer periods of) time are needed. MST-ID has shown to achieve lasting favourable outcomes in families with adolescents with intellectual disabilities who are generally difficult to engage in treatment. More research is needed to establish the effects of MST-ID when both the adolescent and the parent(s) have intellectual disabilities.

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CHAPTER 3

Brief report:
Follow-up outcomes of
multisystemic therapy for
adolescents with an intellectual
disability and the relation with
parental intellectual disability

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Abstract

Research on follow-up outcomes of systemic interventions for family members with an intellectual disability is scarce. In this study, short-term and long-term follow-up outcomes of multisystemic therapy for adolescents with antisocial or delinquent behaviour and an intellectual disability (MST-ID) are reported. In addition, the role of parental intellectual disability was examined.

Outcomes of 55 families who had received MST-ID were assessed at the end of treatment and at 6-month, 12-month and 18-month follow-up. Parental intellectual disability was used as a predictor of treatment outcomes. Missing data were handled using multiple imputation.

Rule-breaking behaviour of adolescents declined during treatment and stabilized until 18 months post-treatment. The presence or absence of parental intellectual disability did not predict treatment outcomes.

This study was the first to report long-term outcomes of MST-ID. The intervention achieved similar results in families with and without parents with an intellectual disability.

Introduction

Care re-entry, placement in residential youth care and incarceration are relatively common among adolescents with an intellectual disability³ and comorbid severe behavioural problems (McReynolds et al., 2010; Thompson & Morris, 2016). To avoid out-of-home placement, the home-based intervention MST-ID was tailored to the needs of adolescents with an intellectual disability and antisocial or delinquent behaviour. In a previous study by Blanckstein et al.(2019), all adolescents who had received MST-ID lived at home at 6-month follow-up and police contacts dropped from 51% at the start of treatment to 20% at 6-month follow-up. Until now, insight in long-term follow-up outcomes of systemic interventions for individuals with an intellectual disability is lacking.

As children with an intellectual disability often have problems retaining treatment results, research into the sustainability of achieved results is needed (Crnic et al., 2017). Therefore, the first aim of the current study was to assess whether treatment results of MST-ID were maintained up to 18-month follow-up. The second aim was to investigate whether outcomes of MST-ID varied as a function of parental intellectual disability, since parents with an intellectual disability often receive less social support and experience mental health problems, both of which have been shown to be related to child developmental outcomes (Llewellyn & Hindmarsh, 2015).

Method

Participants and procedure

Between March 2014 and October 2015, 55 families were included in the study. All adolescents were aged 12 to 18, had an intellectual disability (intelligence quotient [IQ] score of 50–85) and showed antisocial or delinquent behaviour. Out of the 55 adolescents who took part in this study, 23% had an IQ score of between 50 and 69 and 77% had an IQ score of between 70 and 85. From each family, one parent was identified as the primary caregiver by the MST-ID therapist. Of the 55 parents, 32 (58%) had an intellectual disability (IQ score < 85). For a detailed description of inclusion criteria, consent procedure, and referral of participants to researchers, see Blanckstein and colleagues (2019).

Therapists completed a questionnaire at the start and at the end of the treatment. Parents answered questionnaires during home visits by the research team at the start and at

³ In the Netherlands, intellectual disability generally encompasses intelligence quotient (IQ) scores of 50 to 70 (mild intellectual disability) and IQ scores of 70 to 85 (borderline intellectual functioning in the Diagnostic Statistic Manual IV-TR, American Psychiatric Association, 2000) with co-occurring deficits in adaptive functioning. Symptoms must have begun during the developmental period (American Psychiatric Association, 2013).

Table 1
Treatment outcomes MST-ID over time (N = 55)

Variable	Original data			Imputed data			Original data			Imputed data		
	Mean (SD)	Mean (SD)	Mean (SD)	n	t test	p value	Cohen's d	n	t test	p value	Cohen's d	
Continuous variables												
Rule-breaking behaviour (CBCL)	At the start of treatment	66.00 (8.19)	66.00 (8.16)	Start-end	48	-4.720***	.000***	-0.68	55	-3.296**	.001**	-0.44
	At the end of treatment	62.46 (7.33)	62.65 (8.68)	Start-6mth	38	-3.786*	.01*	-0.61	55	-1.549	.124	-0.21
	6-month follow-up	62.11 (8.77)	62.86 (14.54)	End-6mth	35	-4.422	.675	-0.07	55	.100	.921	.01
	12-month follow-up	63.19 (8.19)	62.96 (6.82)	Start-12mth	32	-3.039**	.005**	-0.54	55	-2.442*	.015*	-0.33
	18-month follow-up	63.76 (8.87)	63.22 (6.53)	6mth-12mth	27	-0.062	.951	-0.01	55	.049	.961	.01
				Start-18mth	25	-2.491*	.020*	-0.50	55	-2.119*	.034*	-0.29
				12mth-18mth	24	.273	.787	.06	55	.282	.778	.04
Categorical variables		% (n)	% (n)									
No police contacts	At the start of treatment	49.1 (55)	49.1 (55)									
	At the end of treatment	78.2 (55)	78.2 (55)									
	6-month follow-up	81.1 (37)	70.9 (55)									
	12-month follow-up	81.3 (32)	71.3 (55)									
	18-month follow-up	76.0 (25)	66.7 (55)									

Variable	Original data	Imputed data	Original data	Imputed data
Adolescent is engaged in school or work	At the start of treatment 70.4 (54)	70.0 (55)		
	At the end of treatment	85.5 (55)		
	6-month follow-up	73.7 (38)		68.0 (55)
	12-month follow-up	65.6 (32)		63.5 (55)
	18-month follow-up	64.0 (25)		60.0 (55)
Adolescent lives at home	At the end of treatment 96.4 (55)	96.4 (55)		
	6-month follow-up	100.0 (38)		86.0 (55)
	12-month follow-up	90.6 (32)		80.7 (55)
	18-month follow-up	96.0 (25)		77.1 (55)

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 2
Treatment outcomes in subgroups of parents with ($n = 32$) and parents without disabilities ($n = 23$)

Variable	Original data				Imputed data				
		b	SE	t test	p value	b	SE	t test	p value
Continuous variables									
Rule-breaking behaviour	CBCL	At the end of treatment	-1.15	1.69	-0.685	.497	2.13	-0.055	.956
		6-month follow-up	.56	2.69	.208	.837	3.85	.078	.938
		12-month follow-up	.14	3.25	.042	.967	2.02	-0.379	.705
		18-month follow-up	-1.15	4.57	-0.251	.804	2.03	-0.624	.533
Categorical variables			b	SE	p value	b	SE	p value	
Police contacts during MST	Present	At the end of treatment	-0.88	.97	.365	-0.88	.97		.365
	Absent		.00	.98	1.000	.00	.98		1.000
	Present	6-month follow-up	-0.41	.97	.677	-0.48	.96		.621
	Absent		19.41	13397.66 ^c	.999	1.55	2594.45 ¹		1.000
	Present	12-month follow-up	-1.32	1.09	.224	-0.96	1.01		.340
	Absent		19.59	15191.52 ²	.999	.38	1.38		.780
	Present	18-month follow-up	-1.95	1.28	.129	-0.83	.91		.360
	Absent		20.10	17974.84 ²	.999	.36	1.28		.779

Variable	Original data		Imputed data				
	Present	At the end of treatment					
Engagement in school or work	Present	.17	1.27	.896	-.21	1.21	.860
	Absent	1.44	1.30	.268	1.12	1.26	.371
	Present	-.29	.93	.757	-.07	.89	.940
	Absent	.22	1.48	.880	.19	1.31	.888
	Present	-.76	.89	.390	-.73	.81	.369
	Absent	1.39	1.80	.442	.10	1.37	.941
	Present	1.07	1.01	.287	.50	.89	.575
	Absent	.69	1.87	.711	.25	1.23	.839
Living situation adolescent	At home	-.34	1.44	.812	-.34	1.44	.812
	At home	n/a	-. ³	n/a	3.33	2963.07 ¹	.999
	At home	.76	1.28	.552	.37	.99	.709
	At home	18.72	11602.71 ⁴	.999	-.02	.82	.978

¹This high value is a result of zero-observations in the cells 'adolescent with police contact' (in 3 of the 40 datasets) and 'adolescent does not live at home' (in 5 of the 40 datasets).

²These high values are a result of zero-observations in the cells 'adolescent with police contact' x 'caregiver with disability'.

³This value could not be calculated since all adolescents were living at home at 6-month follow-up.

⁴These high values are a result of zero-observations in the cells 'adolescent not living at home' x 'caregiver without disability'.

the end of the treatment and were contacted by an independent call centre for a telephone interview at 6-month, 12-month and 18-month follow-up. At 6-month follow-up, 40 parents (73% of the total sample) participated in the interview, at 12-month follow-up 33 parents participated (60%), and at 18-month follow-up 27 parents (49%) participated in the interview. Data from the start and end of treatment as well as 6-month follow-up have previously been discussed in an earlier study (Blankestijn et al., 2019). All 12-month and 18-month follow-up data are thus newly collected data. Parents were contacted at each point in time, unless they withdrew their consent to partake in the study. The study was approved by the Internal Review Board of one of the participating mental healthcare agencies.

MST-ID

MST is aimed at families with adolescents who display antisocial or delinquent behaviour and are at risk of out-of-home placement (Henggeler et al., 2009). Treatment sessions are conducted at home with a focus on increasing parental skills and parental empowerment. MST-ID has been adapted to suit the needs of adolescents with an intellectual disability and their parents. Specific attention is paid to the generalization of new knowledge and skills and the promotion of the active involvement of the social network. The mean treatment duration seen in this study was 5.1 months (range 2 to 8 months).

Measures

Screening for intellectual disability

Parents were asked to complete the Dutch Screener for Intelligence and Learning Disabilities 18+ (SCIL 18+; Kaal et al., 2015). The screener provides a valid indication of whether a person's IQ is below 85 (Nijman et al., 2018). For adolescents, unless IQ scores were already known, IQ was assessed using a short form of the Dutch Wechsler Intelligence Scale for Children (WISC-III-NL; Wechsler, 2005) in adolescents aged < 17 years. For adolescents aged 17–18 years, the Wechsler Adult Intelligence Scale—Short Form (WAIS-III-NL; Wechsler, 2000) was used.

Behavioural problems: Rule-breaking behaviour

Parents reported on adolescent problem behaviour using the subscale "Rule-breaking behaviour" of the Child Behaviour Checklist (CBCL 6–18; Achenbach & Rescorla, 2001). *T* scores were computed and used in analyses.

Ultimate outcomes: Police contact, school or work, living at home

The three main outcomes of MST-ID were assessed at all time points: (a) the adolescent is living at home (yes/no), (b) the adolescent attends school or works for at least 20 hours a week (yes/no), and (c) the adolescent has not been involved with the police since the start of treatment (post-treatment)/in the previous six months (follow-up) (yes/no).

Statistical analyses*Missing data*

Families without missing follow-up interviews ($n = 23$) were compared on baseline characteristics to families with at least one missing follow-up interview ($n = 32$). Independent t tests were calculated for continuous variables and chi-squares for categorical and dichotomous variables. Results revealed that families without missing follow-up interviews reported more parenting stress at the start of treatment ($M = 70.26$, $SD = 8.15$) than families with one or more missing follow-up interview(s) ($M = 64.13$, $SD = 12.36$; $t(53) = 2.217$, $p = .031$). Families with and without follow-up data did not differ with regard to age, gender, IQ score, treatment duration, externalizing problem behaviour, rule-breaking behaviour, educational level, country of birth, living at home, engagement in school or work or police contact of the adolescent or SCIL score, parenting stress, educational level or country of birth of the parent.

Missing data were imputed 40 times using the predictive mean matching method (PMM) in SPSS version 25. PMM only imputes values that have been observed for that variable in other cases. As such, all imputed values are realistic values. All variables reported in this study were imputed. The analyses mentioned below were performed separately on the imputed data sets and on the original data set. Two-sided analyses were performed with a 95% confidence interval ($p = .05$).

Analyses over time

Dependent (paired samples) t tests were used to assess whether continuous outcomes changed significantly over time. Treatment outcomes at the end and at follow-up were compared to these variables at the start of treatment. For dichotomous outcomes, analyses over time could not be conducted as pooled estimates could not be calculated (Li et al., 1991). Nevertheless, descriptive results of dichotomous outcomes are reported.

Parents with and without intellectual disabilities

(Logistic) Regression analyses were performed to explore if the presence of parental intellectual disability affected the treatment outcomes. Regression analyses were used to examine the relation between parental intellectual disability and continuous outcomes, and logistic regression analyses were used to examine the relation between parental intellectual disability for dichotomous outcomes. Analyses were conducted separately for adolescents who did and did not demonstrate certain outcome measures at start (e.g. police contact). Thus, logistic regression analyses for police contact were conducted separately for adolescents with and without police contact at the start of treatment. This was not the case for the variable "living at home" because all adolescents had to be living at home at the start of treatment to receive MST-ID.

Results

Outcomes over time

The results of the imputed data (see Table 1) indicated that rule-breaking behaviour declined significantly between start and end of treatment, between start and 12-month follow-up and between start and 18-month follow-up (small effect sizes [ES]; Cohen's d = between $-.29$ and $-.44$). Results did not differ between start and 6-month follow-up (small ES; Cohen's d = $-.21$).

The results of the original data showed a similar pattern, although the decline in rule-breaking behaviour between start and end of treatment, between start and 12-month follow-up and between start and 18-month follow-up showed larger effect sizes (medium ES; Cohen's d = between $-.50$ and $-.68$). Contrary to findings from the imputed data sets, rule-breaking behaviour declined significantly between start and 6-month follow-up ($p < .01$; medium ES; Cohen's d = $-.61$).

Descriptive percentages of the other treatment outcomes are depicted in Table 1. Results of the imputed data sets suggest that successes achieved at the end of treatment were not maintained up to 18-month follow-up. Results of the original data suggest that the outcomes "no police contacts of adolescents" and "adolescents living at home" were maintained until 12-month follow-up and 6-month follow-up, respectively.

Parental intellectual disability

Analyses on the imputed and original data sets showed no significant differences in outcomes for parents with or without intellectual disability (see Table 2).

Discussion

The current study provides insight into long-term outcomes of MST-ID for families with adolescents with an intellectual disability and antisocial or delinquent behaviour, and parents with or without an intellectual disability. Families with and without missing data differed on levels of parenting stress at the start of treatment, but no other differences were found. Findings indicate that rule-breaking behaviour declined during treatment and that this was sustained until 18 months after treatment. Although over 75% of adolescents had no police contact, were in school or work or lived at home at the end of the treatment, the percentages of adolescents without police contact, percentages of adolescents engaged in school or work, and percentages of adolescents living at home were lower at 18-month follow-up than at the end of treatment. This finding emerged in both the original and imputed data sets, suggesting that imputation of the missing data did not affect these results.

It may seem surprising that positive changes were found for rule-breaking behaviour, but not for other outcomes such as police contact. Previous studies comparing standard MST to other treatments also found a reduction in problem behaviour at the 18-month time-point, but not for recidivism or re-arrest (see for example, Weiss et al., 2013). This finding may be explained by the way rule-breaking behaviour was measured in the present study. It includes different forms of rule-breaking behaviours such as having bad friends swearing, stealing, or vandalism. While these behaviours declined over time, MST-ID may have been less able to modify more serious antisocial behaviours leading to police contact.

For persons with an intellectual disability, the retention of treatment results is often difficult (De Wit et al., 2012). While a meta-analysis showed that several systemic interventions targeting antisocial behaviour produce positive long-term effects, it did not distinguish between adolescents with and without an intellectual disability (Sawyer et al., 2015). It is, therefore, still unclear what the long-term follow-up results are of systemic interventions for adolescents with antisocial or delinquent behaviour and an intellectual disability (Crnic et al., 2017; Sawyer et al., 2015). As the current study did evaluate outcomes up until 18-month follow-up, it adds to a small body of research and may serve as a point of reference for future studies.

Parental intellectual disability did not influence adolescents' treatment outcomes. This could indicate that MST-ID achieves similar results for families with parents with as well as without an intellectual disability. Further research is needed to establish if these findings can be replicated, especially since the current analyses pertain to a relatively small sample of 55 families.

Limitations

A first limitation is that the study did not employ a control group, and thus outcomes cannot be ascribed to the treatment condition. Future research, therefore, should include a control group, for instance families with adolescents with an intellectual disability and antisocial or delinquent behaviour receiving a different type of treatment.

A second limitation is the amount of missing data seen in the original data set. To deal with missing data, the current study employed multiple imputation. In general, the results from the imputed data showed smaller effect sizes and outcomes were less positive than results in the original data. It is hypothesized that parents experiencing more difficulties might drop-out at follow-up more often. Therefore, it might not be surprising that the imputed data had less favourable outcomes than the original data. Since imputation allows for the discussion of long-term outcomes of all 55 families in this study, it is believed the imputed data are of substantial added value to this study.

A third limitation is that the authors did not know if all parents of the adolescents had an intellectual disability, since only one parent per family was involved in the research. Subsequently, families may have been categorized as not having a parent with an intellectual disability although the parent's partner did have an intellectual disability. To develop a more comprehensive understanding of the family situation, future research may need to assess parental intellectual disability of all caregivers involved.

A fourth limitation is that participants with mild intellectual disability (IQ score 50–69) or borderline intellectual functioning (IQ score 70–85) were brought together in one target group. In the Netherlands, individuals with mild intellectual disability or borderline intellectual functioning may be admitted to the same (healthcare) organizations for treatment and care (Seelen-de Lang et al., 2019). Henceforth, the present authors defined intellectual disability as an IQ score of between 50 and 85. As this definition may differ across international studies, it affects the generalizability of results.

Conclusion

The current study is one of few—insofar the present authors are aware—studies looking into the follow-up outcomes of an intervention for adolescents with an intellectual disability and antisocial or delinquent behaviour and parents with or without an intellectual disability. As generalization and the sustainability of treatment results is difficult for these families, it is imperative that intervention studies employ follow-up data more often.

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CHAPTER 4

Treatment outcomes of a shortened secure residential stay combined with multisystemic therapy: A pilot study

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Abstract

ThisBest is a newly developed family focused treatment that combines secure residential youth care with multisystemic therapy (MST), allowing adolescents to return home after secure residential youth care more quickly. The purpose of this pilot study was to examine treatment outcomes for adolescents in ThisBest ($N = 86$, $M_{\text{age}} = 15.2$ years, 63% boys) and to what degree those treatment outcomes could be predicted by client characteristics. The results showed that externalizing behavior problems and parenting stress had decreased at the end of treatment. After ThisBest, 83% of the adolescents did not have new police contact, 72% lived at home, and 89% attended school or work. Almost none of the treatment outcomes could be predicted by any of the client characteristics. ThisBest seems a promising trajectory, as it reduces the length of the stay in secure residential youth care, and may, therefore, be more cost-effective than standard secure residential youth care. However, given the lack of a control group and follow-up data, findings must be interpreted as preliminary.

Introduction

Adolescents in secure residential youth care show severe behavior problem and various forms of psychopathology (Vermaes & Nijhof, 2014). Although meta-analyses have shown positive short-term effects of secure residential youth care in reducing severe problem behavior (De Swart et al., 2012; Knorth et al., 2008), this form of youth care is costly (Court of Audit, 2012; Van Dam et al., 2010; Whittaker et al., 2016) and separates adolescents from their families. Families are critical in the (dis)continuation of delinquent behavior of adolescents (Ryan & Yang, 2005). Family involvement during residential stay has found to be effective in decreasing behavioral problems after secure residential youth care (Geurts et al., 2012; Knorth et al., 2008; Ryan & Yang, 2005) and after placement in juvenile justice institutions (Simons et al., 2017). The current study describes the outcomes of a newly developed trajectory (ThuisBest, which means HomeBest), which combines a shortened stay in secure residential youth care with multisystemic therapy (MST). MST is an evidence-based multisystemic treatment that engages families as well as other systems surrounding the adolescent to decrease the adolescent behavioral problems. Given the importance of engaging families for improving adolescent problem behavior and the high costs of incarceration, this new trajectory is expected to be beneficial for adolescents as well as society.

In ThuisBest, adolescents stay at the secure residential youth care institution for 6 to 8 weeks (Dutch Knowledge Centre for Child and Adolescent Psychiatry, 2020b) followed by 3 to 5 months of MST at home. In comparison, adolescents in standard secure residential youth care stay at the institution for an average of 7 months (Jeugdzorg Nederland, 2017). Reducing the length of the residential stay is beneficial for adolescents, as this minimizes the disconnection between adolescents and their family system (De Swart et al., 2012; Knorth et al., 2008). Different theories describe that parents are one of the factors that play a role in the discontinuation of delinquent behavior in adolescents. According to the social control theory (Hirschi, 1969), a strong parent-child relation increases the level of control of parents when the child is confronted with opportunities to engage in undesirable behavior (e.g., criminal activities), and thereby decreases the likelihood of delinquency. In addition, according to the social learning theory (Bandura, 1977), parental management strategies (e.g., monitoring, identification of delinquent behavior, modeling and positive parenting) seem important in reducing the likelihood of delinquent behavior.

Parents may further be able to positively influence their child's behavior by being involved during the residential stay. In recent years, there has been an increase of activities aimed at family involvement across the field of residential youth care, known under the umbrella term "the family focused approach." The family focused approach is used for

activities such as increased family contact, more frequent visits, and family involvement in treatment programs at the residential youth care institution or at home (Geurts et al., 2012). A review of 27 studies on the outcomes of residential youth care for adolescents has pointed out that a family focused approach in residential youth care has positive short-term outcomes, such as a decrease in behavioral problems during and after residential youth care (Huefner et al., 2015; Knorth et al., 2008). Studies on different forms of family focused approaches in residential youth care have shown that in-home counseling and family contact during residential stay reduce the likelihood of recidivism in juvenile delinquents (Huefner et al., 2015; Ryan & Yang, 2005). Also, family focused approaches contribute to better equipped parents who are able to deal with their child's behavioral problems when back at home after residential youth care (Geurts et al., 2012).

Although the abovementioned studies focus on family involvement during the residential stay of the youth, it is not well known whether significantly shortening the residential stay and, instead, providing a systemic treatment can be effective as well. An example of a study on a combined trajectory is a study on multisystemic therapy for family integrated transitions (MST-FIT; Trupin et al., 2011). MST-FIT provides therapy to juvenile offenders and their families during the period of transition of youth from juvenile justice institutions back home. MST-FIT starts 2 months before the end of the placement and lasts a total of 6 months in the home environment. MST-FIT was developed in the United States of America and yielded positive results for juvenile offenders (Trupin et al., 2011), as well as in foster care in the United Kingdom (Butler et al., 2017). In the Netherlands, *ThuisBest* was developed for adolescents in secure residential youth care, thus targeting a slightly different population than MST-FIT. The largest difference between *ThuisBest* and MST-FIT, however, is that *ThuisBest* focuses on significantly shortening the duration of the residential stay. As far as we know, no prior research has examined such an approach. This pilot study was the first to examine the effects of a shortened residential stay in combination with a systemic therapy, called *ThuisBest*.

Treatment method: *ThuisBest*

ThuisBest was developed for adolescents between 12- and 18-year-olds who display severe antisocial behavior and have a warrant for secure residential youth care issued by the juvenile court (NYI, 2016; Transition Authority Youth, 2017). *ThuisBest* uses a family focused approach as it aims to limit the separation between adolescents and caregivers by a shortened out-of-home placement. Parents are highly involved during the stay at the secure residential youth care institution and intensively work together with group workers during and after the residential stay as they have at least weekly contact with the adolescent

and group workers of the secure residential youth care institution. A short residential stay of 6 to 8 weeks provides caregivers a time-out of possible parenting stress due to the adolescent's behavioral problems and provides adolescents a time-out in a structured and supervised environment (De Swart et al., 2012; Knorth et al., 2008). Furthermore, the secure residential youth care institution uses various approaches to help the adolescents. During their stay, every adolescent is assigned a mentor (who is one of the group workers of the residential group) and a psychologist (who has a coordinating role). The mentor and psychologist use a schema focused approach to help adolescents regulate their cognitions and behavior (Van Vreeswijk et al., 2009; Young et al., 2005). Together with parents or caregivers, the mentor and psychologist are responsible for stimulating positive behavior of the adolescent. Beside the daily program, which includes education and sport, adolescents may receive additional therapy, such as individual psychotherapy, creative or psychomotor therapy and therapy by the MST therapist. In addition, adolescents can go on furlough to their families from the second week of residential placement onward.

During the adolescent's stay at the secure residential youth care institution, the family directly starts with MST, which continues after the child has returned home. During this time, parents are empowered with skills and resources needed for when their child will return home. After the adolescent has returned home, it remains possible to place the adolescent back in the secure residential youth care institution for a time-out placement. Thus, the MST trajectory connects seamlessly to the residential stay through intensive contact between the MST therapist and the secure residential youth care institution. MST is flexible and tailored to the specific needs of each family. The weekly MST sessions (approximately 2 to 3 times a week) are held in the families' homes and communities to reduce barriers to service access and focus on achieving treatment goals by trying to mobilize family and community resources (Henggeler et al., 2009).

MST is an evidence-based intervention for adolescents who show antisocial or delinquent behavioral problems (Henggeler et al., 2009). MST aims to reduce externalizing behavioral problems in terms of decreased recidivism, prevention of out-of-home placement, and attendance of school or work. MST is based on the social-ecological model of Bronfenbrenner (1979), which indicates that adolescents' externalizing behavioral problems are related to an accumulation of criminogenic risk factors, such as familial or individual risk factors. The underlying assumption is that parents and the social network of the adolescent are important for adolescents' behavior change (Henggeler et al., 2009). Therapists engage parents in identifying and changing individual, familial, and social factors that contribute to problem behavior by using a strength-focused approach (Henggeler et al., 2003). In numerous studies, MST has been shown to be effective in

reducing severe criminal behavior, externalizing behavior problems, and improving parental competence (Asscher et al., 2013; Deković et al., 2012; Henggeler et al., 2009; Van der Stouwe et al., 2014), as well as long-term effects up to adulthood (Sawyer & Borduin, 2011).

Based on the knowledge of the *ThuisBest* program, the current study had two study aims: (a) Assess treatment outcomes (externalizing behavior, parenting stress, and three societal indicators of success) at the end of *ThuisBest* and (b) examine to what extent treatment outcomes are predicted by characteristics of the adolescent and their family (age, gender, ethnicity, educational level, type of previous care, type of registration, the number of adolescent and familial problems, functioning of youth, quality of environment, and needed intensity and urgency of care). Given the existing evidence on the positive short-term outcomes of residential youth care (De Swart et al., 2012; Knorth et al., 2008) and the effectiveness of MST in the Netherlands (Asscher et al., 2013; Deković et al., 2012; Van der Stouwe et al., 2014), it is expected that adolescents will show less externalizing problem behavior after *ThuisBest* and parents will show less parenting stress after *ThuisBest*. Furthermore, MST evaluates treatment using the percentages of three societal indicators of success, namely, no new police contact, no out-of-home placement, and school/work attendance. There are no hypotheses formulated regarding the expected percentages of success for these outcomes, as this is the first study on treatment outcomes of *ThuisBest*. As the analyses for the second aim are exploratory, no hypotheses are formulated.

Method

Participants

Treatment allocation to *ThuisBest* was based on having a warrant for secure residential youth care issued by the juvenile court and the institution's assessment of whether *ThuisBest* or standard secure residential youth care would be most suitable for the adolescent. Inclusion criteria for *ThuisBest* state that the adolescent should show severe antisocial or criminal behavior, is between 12 and 18 years old, and that parents should be motivated to start systemic therapy. Exclusion criteria for *ThuisBest* were the absence of a family system and adolescents having an autism spectrum disorder, or psychiatric problems such as psychoses or suicidal behavior.

A total of 90 adolescents started the *ThuisBest* trajectory at the secure residential youth care institution, which provided *ThuisBest* between June 2012 and August 2017. Four adolescents were excluded from the study, because they received an adaptation of MST instead of standard MST (two adolescents) or because there were no routine outcome data available at all (two adolescents). This resulted in a final sample of 86 adolescents. The

average age of these adolescents was 15.16 years ($SD = 1.20$) and 63% were boys. Almost half of the adolescents (49%) had at least one parent who was not born in the Netherlands (of which 18% were from a western country and 31% from a non-western country). In this sample, adolescents spent an average of 56 days ($SD = 22.4$) at the secure residential youth care institution and they received MST for an average of 145 days ($SD = 43.5$). Due to the missing data, the number of participants for whom data were available varied between the measures used. The total N per variable can be found in Table 1. Imputation of all variables was used to handle missing data (see section "Statistical analyses").

Table 1
Client characteristics of adolescents in ThisBest

	Non-imputed data, n	ThisBest non-imputed data	ThisBest imputed data
		$M (SD)$	$M (SE)$
Continuous variables			
Age	86	15.16 (1.25)	15.16 (.13)
CAP-J: Total number of child problems (0-77)	86	4.98 (4.44)	4.98 (.48)
CAP-J: Total number of parent problems (0-43)	86	2.71 (3.13)	2.71 (.34)
STEP: Functioning of youth (1-5)	58	3.68 (.46)	3.69 (.07)
STEP: Quality of environment (1-5)	58	3.47 (.59)	3.46 (.08)
STEP: Needed intensity of care (1-5)	57	4.05 (.81)	4.04 (.09)
STEP: Needed urgency of care (1-5)	58	4.02 (1.05)	3.57 (.31)
CBCL: Externalizing problems start	34	68.66 (12.61)	68.64 (1.23)
OBVL: Parenting stress start	31	67.15 (12.73)	67.16 (1.24)
		%	%
Dichotomous variables			
Gender (% boys)	86	63	63
Ethnicity (% Dutch)	42	64	51
Educational level (% secondary education)	74	42	43
Type of previous care (% youth care at home)	72	46	41
Type of registration (% second enrolment)	77	35	38

Note. CAP-J = classification of the nature of youth problems; STEP = standard taxation of severity of problems; CBCL = child behavior checklist; OBVL = parenting stress questionnaire.

Procedure

ThisBest is provided by one secure residential youth care institution in the Netherlands in a joint effort with all mental health and youth care institutions providing MST in the

Netherlands. The secure residential youth care institution and MST-NL provided an anonymous data set, collected as part of routine outcome monitoring (ROM), which consisted of scores on behavioral questionnaires, parenting stress questionnaires, risk taxations, and background characteristics of adolescents who had received ThuisBest. Data collection of the background characteristics and risk taxations only took place at the start of residential stay. The behavioral and parenting stress questionnaires were collected at the start and end of ThuisBest. The institutions providing MST were informed about the research. As data collection was part of the clinical practice and the data were provided anonymously to the researchers (i.e., it concerned retrospective file data), no further informed consent was required. The study complied with the American Psychological Association's ethical principles regarding research with human participants.

Measurements

Background characteristics

Background characteristics were collected in a national monitoring system, the monitor secure residential youth care (*monitor JeugdzorgPlus*; Vermaes et al., 2012). These background characteristics were used to describe the population of adolescents in ThuisBest and were included as predictors of treatment outcomes. The monitor consisted of data regarding age, gender, ethnicity, educational level of the adolescent, previous type of youth care (residential placement vs. care at home), and whether the adolescent was enrolled for the first time in secure residential youth care or was transferred from another residential care institution. The monitor was completed by employees of the secure residential youth care institution at the start of residential care.

Classifications of adolescents' individual and familial problems

The Classification of the Nature of Youth Problems (CAP-J; Classificatie voor de Aard van de Problematiek van Jeugd) was used to assess the number and type of individual and familial problems across several domains (Konijn et al., 2009). This classification system classifies 136 problems into five domains (emotional, behavioral, cognitive, physical, and family problems) and 25 subdomains. The CAP-J is scored as a checklist and completed by the psychologist at the start of the residential stay. This study used the number of problems in every of the 25 subdomains to calculate the total number of classifications of individual and familial problems to describe the population of adolescents in ThuisBest. In addition, these variables were included as predictors of treatment outcomes. The interrater reliability of the CAP-J was evaluated as sufficient (Konijn et al., 2009).

Severity of adolescents' problems

The standard taxation of severity of problems (STEP; Standaard Taxatie Ernst Problematiek) was used to evaluate the severity of the adolescents' problems (Van Yperen et al., 2010). This risk taxation instrument was used to describe the population of adolescents in ThuisBest and was included as predictor of treatment outcomes of ThuisBest. The STEP was completed by the psychologist at the start of the residential stay. The norm scores of the four subscales, namely, functioning of the adolescent (nine items), quality of the environment (five items), needed intensity of care (three items), and needed urgency of care (one item) of this risk taxation instrument were used in this study. Every item was answered on a 5-point scale ranging from 1 (no/light problems) to 5 (severe problems). The Cronbach's alphas in this study for the three subscales with more than one item were .68, .66, and .79, respectively.

Adolescent externalizing behavior problems

The subscale externalizing problem behavior of the child behavior checklist (CBCL; Achenbach & Rescorla, 2001; Verhulst & Van der Ende, 2001) was completed by caregivers at the start and end of treatment. The CBCL is a diagnostic instrument that examines behavioral problems in adolescents aged 6 to 18 years. The subscale externalizing behavior consists of the subscales delinquent behavior (17 items) and aggressive behavior (18 items). All items were rated on a 3-point Likert-type scale ranging from 0 (not true/never) to 2 (very true/often). The Cronbach's alpha for the subscale externalizing behavior was .85 (Verhulst & Van der Ende, 2001). For the current study, raw scores were transformed to *T* scores, with a higher *T* score indicating more severe problems.

Parenting stress

The parenting stress questionnaire (OBVL; Opvoedingsbelastingvragenlijst) was used to evaluate the level of parenting stress experienced by parents (Vermulst et al., 2015). The OBVL was completed by parents at the start and end of treatment. The questionnaire consists of 34 items that can be scored on a 4-point scale, ranging from 1 (does not apply to me) to 4 (totally applies to me). The five subscales are parent-child relationship problems, parenting problems, depressive mood, parental role restriction, and physical health problems. The total parenting stress scale of the OBVL was used in this study and was found to be reliable, with a Cronbach's alpha of .93 (Vermulst et al., 2015). For the current study, raw scores were transformed to *T* scores, with a higher *T* score indicating more severe problems.

Societal indicators of success

At the end of *ThuisBest*, the MST therapist completed a questionnaire including three dichotomous outcomes concerning the societal indicators of success. The MST therapist scored whether there had been (a) police contact; whether or not the adolescent had been in contact with the police during the past 6 months (excluding contact with the police as a victim, but including contact as a suspect or witness), (b) out-of-home placement, and (c) whether the adolescent attended school or work for more than 20 hr a week.

Statistical analyses

Missing Data

As only 34% of the adolescents had a complete pre- and post-measure of the CBCL and OBVL completed by the same caregiver, independent samples *t* tests and chi-square tests for categorical variables were performed to examine whether families with a complete pre- and post-measure of the CBCL and OBVL differed from families who had one or both of these questionnaires missing. The analyses showed that adolescents with responses on the pre- and post-measure of both the CBCL and OBVL were more likely to be enrolled at the institution for the first time, $\chi^2(2, 86) = 9.58, p < .01$, and were more likely to live at home after *ThuisBest*, $\chi^2(1, 86) = 13.57, p < .001$, than adolescents without a complete pre- and post-measure. The groups did not differ on all other client characteristics. The response rate on questionnaires completed by psychologists was 73% on the CAP-J and the STEP. Response rate on the monitor varied between 84% and 100%, except for the response rate of 49% for ethnicity. For every participant who had missing data in one of the variables used in this study, data were imputed 40 times using predictive mean matching (PMM) method in SPSS Version 24. Multiple imputation is intended to preserve the characteristics of the data and represent the true population as closely as possible. Research has shown that estimates obtained from multiple imputed data are always less biased than estimates based on listwise deletion (i.e., using original non-imputed data), even with rates of missing data up to 50% (Van Ginkel, 2010; Vroomen et al., 2016). PMM uses realistic values as it is based on values observed elsewhere in the data and has been found to outperform other methods in reproducing the characteristics of the data for non-normal data (Vink et al., 2014). All variables reported in the article were included in the imputation procedure, and analyses were performed on the imputed data sets only.

Client characteristics and treatment outcomes

Descriptive statistics were provided for the client characteristics and the societal indicators of success to describe the population and treatment success. Paired samples *t* tests were used to examine the difference between scores on externalizing behavior and parenting stress at the start and end of ThuisBest.

Predictors of treatment outcomes

Multiple univariate linear regression analyses were conducted including sociodemographic characteristics (i.e., age, gender, ethnicity, and educational level of the adolescent), and indicators of problem severity (i.e., type of previous care, type of registration, the number of adolescent and familial problems, functioning of youth, quality of environment, needed intensity of care, and needed urgency of care) in separate analyses as predictors of the level of externalizing problem behavior and parenting stress at the end of treatment, controlling for the level of problems at the start of treatment. Furthermore, logistic regression analyses were performed to examine whether adolescents with positive outcomes according to the societal indicators of success differed from adolescents with negative treatment outcomes on these client characteristics (i.e., sociodemographic characteristics and indicators of problem severity). All analyses were executed with SPSS Version 24 with a significance level of $p < .05$.

Results

Client characteristics

First, an overview is given of the client characteristics of adolescents in ThuisBest (Table 1). Almost half of the adolescents (43%) in ThuisBest followed secondary education, 41% of the adolescents had received youth care at home prior to ThuisBest, and 38% had previously been enrolled at a residential youth care institution. On average, adolescents were reported to have a total number of 4.98 ($SE = .48$; theoretical range = 0-77 problems) different individual problems as scored by a psychologist at the start of the treatment. Parents of adolescents in ThuisBest were reported to have on average a total number of 2.71 ($SE = .34$; theoretical range = 0-43 problems) different problems at the start of treatment. Adolescents in ThuisBest scored above average on all four subscales of the STEP (Table 1); adolescents in ThuisBest had severe personal problems, severe problems in their home environment, needed an intensive form of youth care, and were in urgent need of this care.

Treatment outcomes

Using dependent samples t tests, it was found that the level of externalizing behavior problems, $t(13,441) = 5.55, p < .001, d = .60$ medium effect, and of parenting stress, $t(16,783) = 4.25, p < .001, d = .46$ small effect, had significantly decreased by the end of treatment. The average level of externalizing behavior dropped from the clinical range at the start of treatment ($M = 68.64, SE = 1.23$) to below the clinical range at the end of treatment ($M = 61.09, SE = .83$). The average level of parenting stress also dropped from the clinical range at the start of treatment ($M = 67.16, SE = 1.24$) to below clinical level at the end of treatment ($M = 61.37, SE = .96$). Regarding the societal indicators of success (Figure 1), 83% of the adolescents had no new police contact after *ThuisBest*, 72% of the adolescents lived at home after *ThuisBest*, and 89% attended school or work after *ThuisBest*.

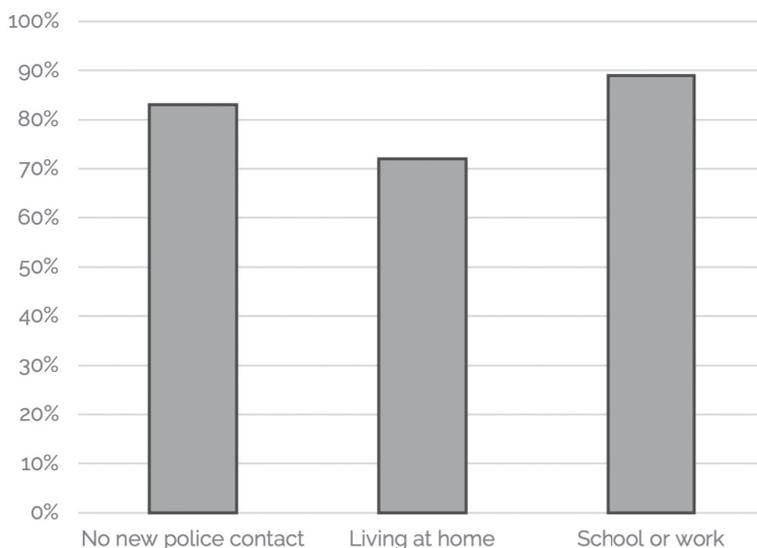


Figure 1
Percentages of success on societal indicators

Predictors of treatment outcomes

Multiple univariate linear regression analyses were used to examine to what extent client characteristics predicted the level of externalizing problem behavior and parenting stress, controlling for the level of externalizing problem behavior or parenting stress at the start of treatment (Table 2). The results showed that none of the client characteristics predicted the level of externalizing behavior or parenting stress at the end of ThisBest. This indicated that boys and girls, younger and older adolescents, adolescents from different ethnic groups, adolescents in different educational levels, adolescents who used different types of previous care, adolescents who entered secure residential youth care for the first time and more than once, adolescents with varying numbers of problems, adolescents with parents with varying numbers of parental problems, adolescents with different levels of functioning, adolescents in different levels of quality of their environment, and adolescents in need of different intensity and urgency of care similarly improved with regard to externalizing problem behavior and their parents experienced the same reduction of parenting stress. Thus, the decrease in externalizing problem behavior and parenting stress was similar for all tested groups.

Table 2

Regression analyses for externalizing behavior and parenting stress at the end of ThisBest, imputed data of $N = 86$

	Externalizing behavior end ^a	Parenting stress end ^b
	<i>B (SE)</i>	<i>B (SE)</i>
Externalizing behavior start	.17 (.07) [*]	
Parenting stress start		.20 (.09) [*]
Gender	.33 (1.68)	.69 (1.98)
Externalizing behavior start	.17 (.07) [*]	
Parenting stress start		.19 (.09) [*]
Age	-.07 (.65)	.61 (.79)
Externalizing behavior start	.17 (.01)	
Parenting stress start		.21 (.11)
Ethnicity	-3.29 (2.83)	-2.45 (3.23)
Externalizing behavior start	.18 (.07) [*]	
Parenting stress start		.21 (.09) [*]
Educational level	-1.10 (1.96)	-.69 (2.04)
Externalizing behavior start	.15 (.08)	
Parenting stress start		.22 (.10) [*]
Type of previous care	-2.88 (1.94)	-4.23 (2.33)
Externalizing behavior start	.18 (.07) [*]	
Parenting stress start		.21 (.09) [*]

	Externalizing behavior end ^a	Parenting stress end ^b
	<i>B (SE)</i>	<i>B (SE)</i>
Type of registration	-2.07 (1.86)	-2.15 (2.01)
Externalizing behavior start	.16 (.07) [*]	
Parenting stress start		.20 (.09) [*]
CAP-J: Total number of child problems	.85 (.81)	1.65 (.94)
Externalizing behavior start	.17 (.07) [*]	
Parenting stress start		.21 (.09) [*]
CAP-J: Total number of parent problems	-.12 (.84)	.44 (.95)
Externalizing behavior start	.17 (.07) [*]	
Parenting stress start		.22 (.09) [*]
STEP: Functioning of youth	.05 (1.87)	-1.70 (2.25)
Externalizing behavior start	.17 (.07) [*]	
Parenting stress start		.22 (.09) [*]
STEP: Quality of environment	-.29 (1.60)	-1.47 (1.87)
Externalizing behavior start	.17 (.07) [*]	
Parenting stress start		.21 (.09) [*]
STEP: Needed intensity of care	.22 (1.17)	-.38 (1.38)
Externalizing behavior start	.16 (.07) [*]	
Parenting stress start		.19 (.09) [*]
STEP: Needed urgency of care	.49 (.70)	.62 (.91)
Externalizing behavior start	.13 (.09)	.10 (.10)
Parenting stress start	.07 (.09)	.15 (.10)

Note. CAP-J = classification of the nature of youth problems; STEP = standard taxation of severity of problems.

^a The linear regression analyses for externalizing behavior at the end of treatment include externalizing behavior at the start of treatment as control variable.

^b The linear regression analyses for parenting stress at the end of treatment include parenting stress at the start of treatment as control variable.

p < .05.

Logistic regression analyses were used to examine to what extent client characteristics predicted success on the societal indicators (Table 3). Prior registration significantly predicted whether the adolescent could stay at home at the end of *ThuisBest* ($B = 1.06, p < .05$), indicating that adolescents who had not previously being placed in a secure residential youth care facility were 1.06 times more likely to stay at home than adolescents who had previously been placed. None of the other client characteristics predicted whether or not an adolescent had police contact, lived at home or attended school or work at the end of *ThuisBest*.

Table 3

Logistic regression analyses for societal indicators of success at the end of ThisBest, imputed data of $N = 86$

	No police contact	Living at home	School/work attendance
	<i>B (SE)</i>	<i>B (SE)</i>	<i>B (SE)</i>
Gender	4.21(2751.83) ^a	-.26 (.50)	-.12 (.60)
Age	-.32 (0.33)	-.11 (.20)	-.38 (.27)
Ethnicity	-.56 (0.49)	-.58 (.40)	-.53 (.42)
Educational level	-.57 (0.78)	.65 (.57)	.16 (.63)
Type of previous care	.04 (0.91)	.10 (.58)	.32 (.66)
Type of registration	.65 (.77)	1.06 (.53)	.27 (.60)
CAP-J: Total number of child problems	.08 (.09)	-.01 (.05)	.08 (.07)
CAP-J: Total number of parent problems	.32 (.21)	-.06 (.07)	.17 (.13)
STEP: Functioning of youth	.31 (.83)	.04 (.58)	-.14 (.69)
STEP: Quality of environment	.13 (.69)	-.44 (.47)	.10 (.59)
STEP: Needed intensity of care	.49 (.57)	.51 (.35)	.30 (.44)
STEP: Needed urgency of care	.11 (.31)	.22 (.24)	.15 (.25)
CBCL: Externalizing behavior start	.00 (.04)	-.00 (.02)	.02 (.03)
OBVL: Parenting stress start	.03 (.03)	-.01 (.03)	-.01 (.03)

Note. All predictors were added in separate logistic regression analyses. CAP-J = classification of the nature of youth problems; STEP = standard taxation of severity of problems; CBCL = child behavior checklist; OBVL = parenting stress questionnaire.

^a These high values are a result of zero observations in the cell "women with police contact" in six of the 40 data sets, including the original data set. However, in all 41 imputed data sets, this particular logistic regression analysis is not significant. Therefore, we expect this conclusion to be reliable. $p < .05$.

Discussion

The purpose of this pilot study was to examine treatment outcomes of a newly developed treatment that combines secure residential youth care and MST (ThisBest). This pilot study adds knowledge about combining short out-of-home placement with systemic therapy, which has benefits for adolescents and society as it prevents long separation of adolescents and their family and is less costly than standard secure residential youth care. The results showed that after ThisBest, parents reported a significant reduction of the externalizing behavior problems of the adolescents and a decrease in parenting stress. In addition, the majority of the adolescents did not have police contact, lived at home, and attended school or work for more than 20 hr a week after ThisBest. None of the treatment outcomes were predicted by client characteristics.

In accordance with our expectation, externalizing behavior problems and parenting stress decreased during ThisBest. This finding is in line with earlier research on the short-

term outcomes of MST (Asscher et al., 2013) as well as the outcomes of employing a family focused approach in residential youth care (Geurts et al., 2012; Knorth et al., 2008). These treatment outcomes are positive and promising and suggest that a shortened residential stay in combination with a family focused approach can be beneficial for adolescents and their caregivers in secure residential youth care. Further research should investigate the effectiveness of ThuisBest by comparing it to standard secure residential youth care and by studying the underlying mechanisms of change.

In addition, more than half of the adolescents in ThuisBest were placed out-of-home for the first time. In future research, it would be interesting to examine to what extent ThuisBest is effective for adolescents who have been previously placed out-of-home in a secure residential youth care institution. None of the treatment outcomes were related to client characteristics. This is in line with previous studies that found few moderator effects (Asscher et al., 2013; Henggeler et al., 2003). In contrast to the study of Ryan and Yang (2005) who found a link between ethnic background and new records of police contact, the current study did not identify ethnicity as a predictor of treatment outcomes, even though about half of the sample consisted of adolescents with non-Dutch ethnicity.

The findings regarding the societal indicators of success for ThuisBest differ from previous research. The percentage of adolescents having no police contact at the end of ThuisBest (83%) is higher than the percentage of adolescents having no police contact after a family focused approach in residential care (64%; Ryan & Yang, 2005) and after MST-FIT (42%; Trupin et al., 2011). These differences could be due to differences in target populations or in the way of implementing a family focused approach in residential youth care. More research should be conducted to find out what the relation is between family focused youth care and recidivism in adolescents. The percentage of adolescents living at home after ThuisBest (72%), the second societal indicator of success, is lower than in previous research on MST in the Netherlands (91%; Lange et al., 2016). Perhaps, adolescents in ThuisBest are different from adolescents in MST and, therefore, this goal is harder to achieve. Adolescents in ThuisBest may, for example, have more severe behavior problems than adolescents receiving standard MST, because all adolescents in ThuisBest had a warrant for secure residential youth care, whereas not all adolescents receiving MST have a warrant. The percentage of adolescents attending school or work (89%), the last societal indicator of success, is similar to the observed percentage for MST in previous research in the Netherlands (83%; Lange et al., 2016). Further research should compare client characteristics and treatment outcomes of ThuisBest and MST to find out what treatment works best for whom.

Taken together, these first results of ThuisBest look promising. Given the

importance of focusing on families and the high costs of residential stay, combining a shortened stay in a secure residential youth care institution with intensive (multi) systemic therapy seems preferable for adolescents showing externalizing behavior problems. As almost none of the treatment outcomes could be predicted by client characteristics, ThisBest seems equally effective for all adolescents in the current population. The only exception was prior registration in a secure residential youth facility. Adolescents who had previously been placed were slightly less likely to stay at home at the end of ThisBest than adolescents for whom this was the first placement. It would be interesting to study why these adolescents may benefit less from the program. On the contrary, we must bear in mind that the observed effect was quite small. Further research is warranted.

ThisBest is an example of how different institutions can effectively work together, whereby each contributes their specialism to therapy in such a manner that it is nonetheless experienced by clients as one coherent trajectory. The current study adds knowledge about the possible collaboration between secure residential youth care and systemic therapists by providing a whole treatment approach.

ThisBest is currently implemented at one secure residential youth care institution in the Netherlands. This study can only suggest possible positive outcomes for ThisBest at this specific institution. For dissemination of ThisBest, future research should incorporate implementation strategies and examine whether ThisBest is also effective at other secure residential youth care institutions and how the family focused approach can be best implemented in secure residential youth care. The review of Geurts and colleagues (2012) showed that successful implementation of a family focused approach within residential youth care can be hard to achieve. A family focused approach such as ThisBest does not only encompass parent-child contact, but also parental involvement in decision-making and parental contact with group workers, MST therapists, and other residential care workers. As some parents live far away from the residential care institution or have had negative experiences with previous youth care institutions, it can be hard to actively involve parents. Thus, although ThisBest seems a promising treatment program for adolescents showing externalizing behavior problems, implementation strategies should be carefully considered before dissemination of ThisBest to other secure residential youth care institutions.

Limitations

The current study has several limitations. First, the response rate was low for questionnaires completed by caregivers. The response rate in secure residential youth care is known to be low (Van Dam et al., 2010), as it is hard to motivate caregivers to

complete questionnaires. The analyses showed that adolescents without missing data were more likely to be enrolled at the institution for the first time and were more likely to live at home after ThuisBest than adolescents with missing data. This indicates that the results are possibly not generalizable to adolescents who have previously been placed out-of-home. Multiple imputation of the data was used to handle missing data, to induce more power and compute better estimates (Van Ginkel, 2010; Vroomen et al., 2016). As the rate of missing data increases, the likelihood of biased estimates is likely to increase as well, as there is less information available for reproducing the true population values. Given that more than half of the data were missing for some of the outcome measures, we must bear in mind this limitation when interpreting the results of this study. Replication of our results is warranted. Nevertheless, Vroomen and colleagues (2016) have shown that imputation of the data is preferable over using the non-imputed data set, even when missing data are up to 50%. Research suggests that multiple imputation is able to recover the results in unfavorable conditions, such as high missing data or low correlations (Van Ginkel, 2010; Vroomen et al., 2016). In future studies, the response rate could be improved by encouraging better collaboration between researchers, psychologists, and caregivers.

Second, no control group was included in this study. Therefore, it is not possible to attribute the current outcomes of ThuisBest to the treatment program with any certitude. Thus, the outcomes should be considered preliminary and should be interpreted with care. The authors highly recommend adding a control group in future research to examine the effectiveness of ThuisBest and deal with baseline differences in client characteristics between treatment conditions, for example, by using a randomized controlled design or propensity score matching. Third, this study focused on short-term outcomes of ThuisBest. Future studies should incorporate long-term outcomes as well as a cost-effectiveness design, as little is known about long-term effects and cost-effectiveness of family focused secure residential youth care and combined trajectories such as ThuisBest.

Conclusion

This pilot study was the first to examine treatment outcomes of ThuisBest. ThuisBest seems a promising trajectory for adolescents showing severe externalizing behavior problems and may be a cost-effective alternative for adolescents who would otherwise have been placed out of home for a longer period of time. Beside consisting of a shortened residential stay, ThuisBest is highly family focused as there is intensive contact between parents, the MST therapist and employees of the secure residential youth care institution, and families are being assisted in playing a pivotal role in changing adolescent behavior.

Further research is needed to investigate whether this family focused approach in secure residential youth care is more effective in decreasing problematic behavior of adolescents than regular secure residential youth care by using a longitudinal research design with a control group.

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CHAPTER 5

Predicting levels of family-centered care and the use of systemic interventions in secure residential youth care

This chapter was submitted as:
Blankestijn, A. M. M. M., Broekhoven, J. L., Lange, A. M. C., Van der Rijken, R. E. A., Asscher, J. J., Van Domburgh, L., Van Santvoort, F., Simons, I., & Scholte, R. H. J. (submitted). Predicting levels of family-centered care and the use of systemic interventions in secure residential youth care.

Abstract

In order to attain sustainable treatment results in families, secure residential youth care institutions in the Netherlands are increasingly employing family-centered care and systemic interventions. The aim of this study was to identify if certain families were more likely to receive family-centered care or a systemic intervention (i.e., MDFT, MST or RGT) than others. Moreover, we investigated whether the level of family-centered care predicted the use of systemic interventions. Family-centered care was operationalized as a) parental involvement and b) staff family-centered attitude and behavior. In this multi-informant, multi-center study, 405 adolescents and their parent(s) participated. The results showed that living in a family situation prior to placement increased the likelihood of increased parental involvement and the likelihood of receiving MDFT, MST or RGT. Moreover, females had a higher likelihood of increased parental involvement than males. When staff perceived fewer barriers towards family-centered care, this predicted a higher likelihood of families receiving MDFT, MST or RGT. Based on these findings, implications for clinical practice and suggestions for further research are discussed.

Introduction

The importance of family-centered care in residential settings is widely acknowledged (Preyde et al., 2011; Simons et al., 2017) and yet, not all secure residential youth care institutions in the Netherlands employ family-centered treatment approaches (Geurts et al., 2012). Despite adolescents presenting with family-related problems as well as individual problems (Harder et al., 2018), secure residential youth care has historically been primarily child-centered with family functioning being largely ignored in care and research (Knorth et al., 2008). To date, it is unknown whether certain families are more likely to receive family-centered care than others. If certain families are more likely to receive family-centered care, treatment practice could benefit from knowing which familial characteristics relate to levels of family-centered care employed. Therefore, the first aim of the current study is to identify if certain adolescent and familial characteristics predict certain levels of family-centered care.

Secure residential youth care is the most intensive and restrictive form of residential youth care in the Netherlands. It is provided in juvenile justice institutions and in so called Youth Care Plus institutions (Harder et al., 2017). These institutions operate within different legal frameworks (criminal and civil law, respectively), but can both be regarded as secure youth care facilities (Harder, 2011). This study focuses on the latter type of facility (Youth Care Plus, from here on: secure residential youth care institutions). Over the last five years, 1651 to 1924 adolescents were placed in secure residential youth care in the Netherlands on a yearly basis (Jeugdzorg Nederland, 2019). Adolescents in secure residential youth care show multiple problems which either affect society or their personal safety (Vermaes et al., 2014). Most of the adolescents in secure residential youth care (85%–99%) have severe externalizing behavior problems. Of these adolescents, 70%–72% have been in contact with the police and 45%–60% have antisocial friends. Over half of them have a below average intelligence quotient, suffer from substance abuse (Vermaes et al., 2014), or have experienced traumatic life events (Van Dam et al., 2010). Problems seen in families of adolescents receiving secure residential youth care include problems in the child-caregiver relationship, parenting problems (Harder, 2018), and inadequate parental monitoring (Vermaes et al., 2014). In addition, high parenting stress is experienced by 75% of parents of adolescents receiving secure residential youth care (Van Dam et al., 2010).

The problems displayed by adolescents in secure residential youth care and their families call for a multifaceted systemic treatment approach (Merritts, 2016), with caregivers playing an active role (Geurts et al., 2012; Huefner et al., 2015). Research has shown that involving parents in treatment in residential youth care can lead to substantial benefits for families, such as improvements in externalizing behavior problems, treatment

engagement, family relationships, parenting skills, and parental understanding of the child's behavior (Huefner et al., 2015; Merritts, 2016; Preyde et al., 2011). While the need for family involvement in residential treatment of adolescents is well understood, providers are unsure of how to best engage families in a meaningful way (Christenson & Merritts, 2017; Garfinkel et al., 2010). In other words, not all families of adolescents in secure residential youth care currently receive family-centered care. More knowledge of factors affecting family-centered care may help improve secure residential youth care for adolescents and their families, as it could provide staff with new insight into barriers and facilitating aspects of staff family-centered attitude and behavior.

In the current study, family-centered care is operationalized as containing two elements. These are parental involvement and family-centered staff attitude and behavior. Parental involvement can be viewed in terms of contact (telephone, family visits), and participation in daily activities at the institution (Huefner et al., 2015). In order to achieve parental involvement, staff members need to be open to working and acting in a family-centered manner. This has been defined as staff members supporting families in shared decision-making and participation through respecting familial perspectives and focusing on strengths of families (Geurts et al., 2012), in other words, by developing family-centered attitudes and behaviors. It is important to gain insight into these constructs, because staff member' attitudes may play a crucial role in providing adequate support to adolescents and families in residential youth care (Ten Brummelaar et al., 2018).

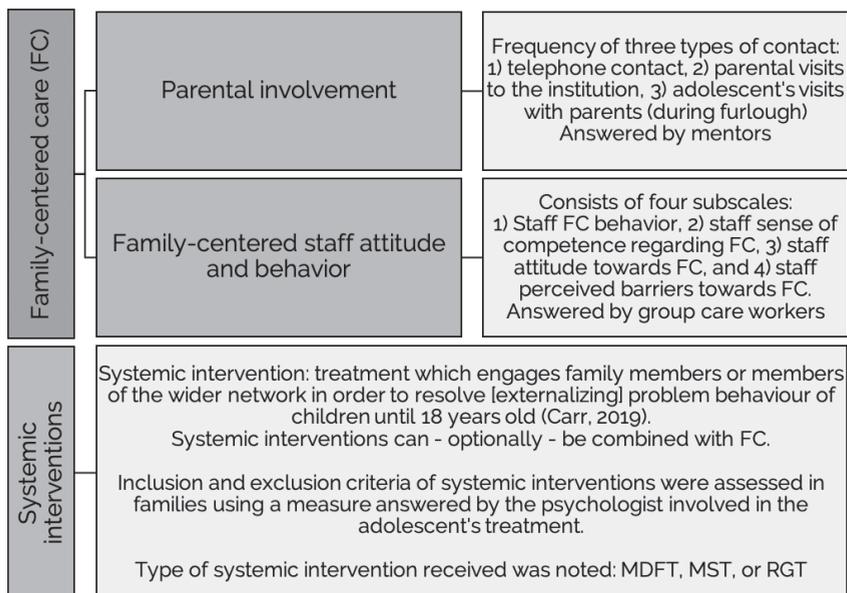
Besides providing family-centered residential youth care, families can be involved through using systemic interventions during or after the placement in secure residential youth care. Here, systemic intervention is defined in terms of offering treatment which engages family members or members of the wider network in order to resolve externalizing problem behaviour of children until 18 years old (Carr, 2019). Placing an adolescent out of home can disrupt relationships between the adolescent and their family. The use of systemic interventions can potentially prevent or reduce such a rupture. Improvements in family relationships can subsequently decrease externalizing behavior problems in adolescents (Henggeler et al., 2009; Liddle et al., 1991; Merritts, 2016). Another benefit of using systemic interventions is that it may support adolescents in retaining their improved functioning. While secure residential youth care helps adolescents improve their functioning during placement, studies have regularly shown that adolescents are at risk for delinquent behavior and recidivism when the placement ends (Harder et al., 2017; James et al., 2013). This could be an indication that secure residential youth care is not perfectly able to help all adolescents retain their improved functioning. Using systemic interventions could help families develop pro-social competencies with peers,

school, and the community, improve family empowerment, and decrease parenting stress (Henggeler & Schaeffer, 2016). Improvements in these areas can support adolescents and families to retain their improved functioning. Another benefit of systemic interventions is that they focus on the period of transition to the home environment – when combined with residential care (Trupin et al., 2011) – and can achieve greater changes in problem behavior precisely because they involve members from the context of adolescents and families (Dopp et al., 2017). In short, to support adolescents in sustaining their behavioral changes after departure from residential care, the use of systemic interventions during or after residential care could be promising (James et al., 2013).

Little research has focused on the combination of secure residential youth care and systemic interventions, possibly due to the historically child-centered nature of secure residential youth care (Knorth et al., 2008). As a result, little is known about if and how frequently systemic interventions are adopted in secure residential youth care and whether the use of systemic interventions depends on the presence of specific characteristics of adolescents and families. Therefore, the second study aim is to investigate whether adolescent or familial characteristics or the level of family-centered care predict the use of systemic interventions in secure residential youth care.

The present study

The use of family-centered care and systemic interventions are central to this paper. Family-centered care in secure residential youth care is operationalized as containing two elements: parental involvement and staff family-centered attitude and behavior. The extent to which a residential youth care institution applies family-centered care embodies the specific way of working and views on parental involvement in terms of importance in that secure residential youth care institution. Systemic interventions, on the other hand, are an additional element that can be added when deemed necessary. In other words, it may be that some adolescents and families need additional specific care elements for specific problems (Harder et al., 2020) such as a systemic intervention that targets family problems, a limited social network, and truancy. Therefore, these two concepts (family-centered care and systemic interventions) are viewed as separate constructs in this paper (see Figure 1 for the operationalization).

**Figure 1**

Operationalization of Family-centered Care and Systemic Interventions

Since there has been a relative recent increase in the use of family-centered care in secure residential youth care, it is valuable to assess who currently receives (higher or lower levels of) family-centered care. It could be that all adolescents and their families are receiving equal levels of family-centered care, but it could also be that this is determined by certain baseline measures of family functioning or by adolescent and familial characteristics. If – as shown in prior research – involving parents in care and employing staff family-centered attitude and behavior can improve adolescent outcomes (Huefner et al., 2015; Merritts, 2016; Preyde et al., 2011), an assessment of who currently does not receive higher levels of family-centered care could provide valuable insights for institutions to help improve clinical practice.

Therefore, and to recapitulate, the research questions that are addressed in this study are: 1) Which adolescent and familial characteristics predict the level of family-centered care (i.e., parental involvement and staff family-centered attitude and behavior) in secure residential youth care? and 2) Which adolescent and familial characteristics and levels of family-centered care in secure residential youth care predict the use of systemic interventions? Since little is known about predictors of family-centered care in secure residential youth care, this study is exploratory and data collection followed clinical practice of the participating institutions.

Method

Participants and procedure

Seven secure residential youth care institutions participated in this prospective study with a total of 36 residential groups. Between February 2016 and June 2018, 664 adolescents were placed in one of these residential groups. Figure 2 gives a detailed description of how many adolescents and their caregivers (from here on: parents) were excluded from this study for which reasons. Of the 486 eligible families, 405 families (83%) participated and filled out at least one questionnaire. Adolescents were aged between 12 and 18 years.

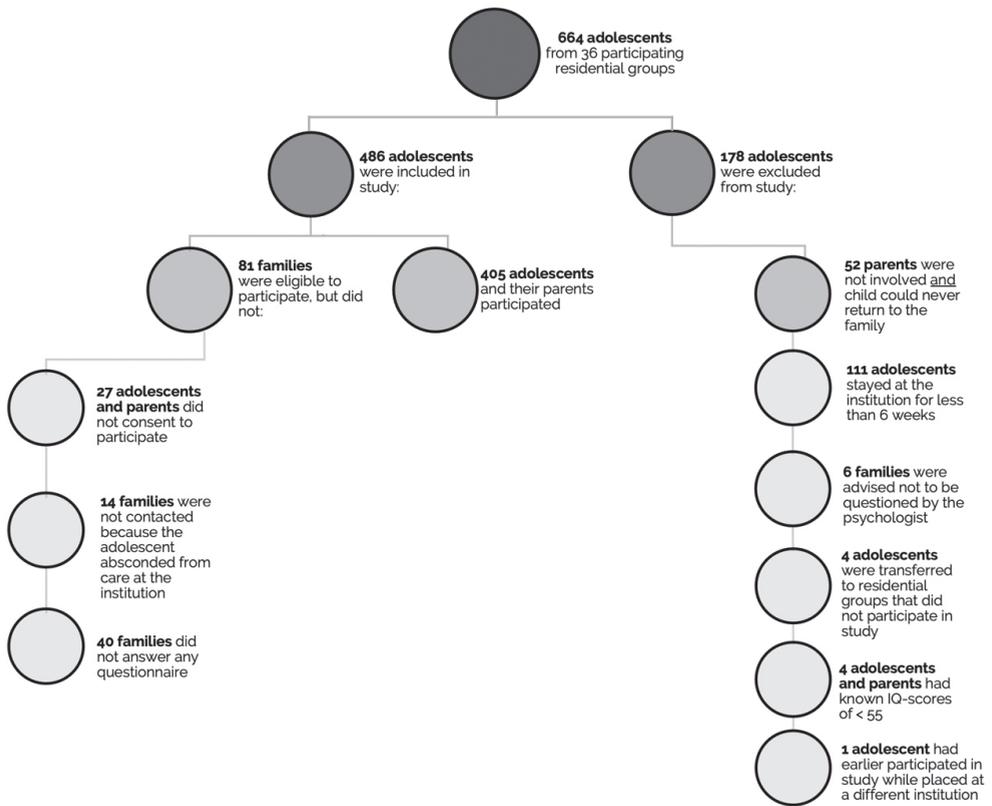


Figure 2
Flowchart of number of families participating in study

Families were either asked for their consent or whether they objected to participation in this study, depending on the institution's standard practice. If parents did not hold custody of their child, the legal guardian was asked for consent. This study

complied with the ethical principles of APA and compliance with the ethical standards of Dutch law was approved by the Internal Review Board of the VU University Medical Center, Amsterdam.

At the start of the placement (T1), questionnaires were filled out by the (child) psychologist involved in the adolescent's treatment and by the parents. At the end of the placement (T2) the adolescent's mentor (all adolescents in secure residential youth care are assigned a group care worker as their personal mentor) answered a questionnaire. In addition, group care workers of all participating residential groups completed a questionnaire every 6 months. During and after the placement (T2/T3), through consulting psychologists, systemic therapists, and families, the researchers recorded which systemic intervention the family had received, if any.

Instruments

Characteristics of adolescents and their families at the start of placement

Sociodemographic characteristics. Age, gender, and cultural background of adolescents were registered at the start of the treatment. If at least one parent was born outside of the Netherlands, that adolescent's cultural background was coded as 'migrant background'. If both parents were born in the Netherlands, an adolescent's cultural background was coded as 'Dutch'. It was also registered whether adolescents were admitted to the institution from a home situation (living with parents or caregivers, a foster family, or a family treatment home) or came from a different setting (i.e., open residential youth care institution, a prior secure residential youth care placement, juvenile justice institution, or crisis shelter facility).

The average age of the adolescents at the start of placement was 15.90 years ($SE = .06$, range 11.84-18.06 years) and 45% were female. The cultural background of 58% of the adolescents was Dutch. A minority of the adolescents, 39%, came from a family situation, whereas 61% came from a different setting.

Externalizing problem behavior. The externalizing problem behavior of adolescents was assessed using the Brief Problem Monitor for Parents (BPM-P; Achenbach et al., 2011). The subscale externalizing problem behavior, consisting of 7 items, was used. Answers ranged from *never* (0) to *often* (2). Higher scores indicate that parents report more externalizing problem behavior for their child. The reliability of the subscale externalizing problem behavior was adequate ($\alpha = .74$).

Parenting stress. Parenting stress was assessed using the Burden of Parenting Questionnaire [Opvoedingsbelasting Vragenlijst] (OBVL; Vermulst et al., 2012). Parents

completed this self-report instrument consisting of 34 items. The total parenting stress scale was used in this study, with a higher score indicating a higher level of parenting stress. Answers ranged from not at all *true* (1) to *completely true* (4). The reliability was very good ($\alpha = .93$).

Parental distress. Parental distress was assessed using this subscale of the Parenting Stress Index (PSI; Abidin, 1990). This subscale measures the extent to which the parent feels capable and comfortable in the parenting role. Answers to its 8 questions range from *completely disagree* (1) to *completely agree* (6). Higher scores indicate higher levels of parental distress. The reliability ($\alpha = .87$) was good.

Family empowerment. Family empowerment was assessed using the Dutch version of the Family Empowerment Scale (FES; Koren et al., 1992). This instrument measures empowerment at various levels, one of which is at the familial level, assessed in this study. The subscale Family Empowerment consists of 12 items with answers ranging from *never* (1) to *very often* (5). A higher score indicates a higher level of family empowerment experienced by parents. The reliability of this subscale was good ($\alpha = .88$).

Family-centered care during placement

Parental involvement. Parental involvement was measured through a questionnaire answered by the mentor of the adolescent, assessing three types of contact: 1) telephone contact (i.e., "*How many times a week has there been telephone contact between a staff member and caregivers if any?*"), 2) parental visits to the institution (i.e., "*How many times a week did parents or caregivers visit the adolescent at the institution if any?*"), and 3) furlough spent with parents (i.e., "*How often did an adolescent spend furlough with his or her parents if any, per week?*"). This categorization was based on a similar categorization employed in an earlier study on parental involvement by Huefner and colleagues (2015).

Staff family-centered attitude and behavior. A questionnaire consisting of 31 questions was answered every 6 months by the group care workers. This questionnaire pertained to their views on and practice of family-centered care in the residential group. The questionnaire was largely based on the questionnaire pertaining to family-centered care practice in juvenile justice institutions described by Simons and colleagues (2016). It consists of 17 questions or statements answered on a ten-point scale (*completely disagree* [1] to *completely agree* [10]) and 14 questions on a five-point scale (*never* [1] to *always* [5]; recoded to a ten-point scale). An average score of the available measurements per residential group was calculated.

A confirmatory factor analysis was performed and resulted in the identification of 4 subscales: 1) Staff family-centered care behavior (e.g., "*Are parents of all adolescents*

invited to treatment plan meetings?"; range of alphas for each 6-month assessment $\alpha = .54$ to $.87$), 2) staff sense of competence (e.g., *"How competent do you feel in your contact with parents?"*; range $\alpha = .70$ to $.89$), 3) staff positive attitude towards family-centered care (e.g., *"Parents are indispensable in reducing problem behavior in adolescents"*; range $\alpha = .75$ to $.87$), and 4) staff perceived barriers towards family-centered care (e.g., *"Parents are the cause of the problem behavior of the adolescent"*; range $\alpha = .57$ to $.71$).

Systemic interventions

The adolescent's psychologist completed a questionnaire which incorporated the inclusion and exclusion criteria of three systemic interventions that are known to reduce externalizing behavior problems often seen in adolescents who receive secure residential youth care: Multidimensional Family Therapy (MDFT; Liddle et al., 1991), Multisystemic Therapy (MST; Henggeler et al., 2009) and adaptations of MST (MST-ID, for parents or adolescents with intellectual disability, Blanckstein et al., 2019), and MST-PSB, for adolescents with problematic sexual behavior (Borduin et al., 2009), and Relational Family Therapy (RGT; Tjaden & Albrecht, 2015). The inclusion criteria of these systemic interventions were: 1) the referred adolescent is 12-18 years, 2) at least one caregiver is able to participate in the systemic intervention, 3) the adolescent has behavioral problems, and 4) family problems are present. The exclusion criteria were: 1) severe psychopathology requiring a different, specialized treatment, 2) sexual abuse requiring a different, specialized treatment, and 3) continuous and ongoing physical or psychological abuse requiring a different, specialized treatment. If all criteria were met, the family was considered to qualify for MDFT, MST, or RGT. The researchers noted whether a family received MDFT, forms of MST, or RGT, to later assess which of the families meeting the indication criteria did in fact receive one of these systemic interventions.

Statistical analyses

Missing data

At T1, 60% of the parents filled out at least one questionnaire ($n = 242$) and the psychologists filled out questionnaires pertaining to 84% of the families ($n = 340$). At T2, the mentors completed questionnaires for 84% of the families ($n = 342$). Of all families, 40% did not show missing data on any of the measured variables and 60% of families had missing data on at least one variable.

Families with missing data were compared to families without any missing data. In families with missing data, staff indicated lower levels of family-centered care behavior

($t[403] = 2.36, p = .019$) and higher levels of perceived barriers towards family-centered care ($t[276] = 4.96, p = .000$) than in families without missing data. Moreover, in families with missing data lower levels of parental visits to the institution ($t[348] = 2.14, p = .033$) were present as well as an increased probability that adolescents were not living in a family situation ($\chi^2[1] = 6.93, p = .008$) when compared with families without missing data.

In order to use the data of all 405 families, missing data were imputed 40 times using predictive mean matching (PMM). This method only imputes values that have been observed in other cases, meaning all imputed values are realistic values. As advised in recent research (Van Ginkel et al., 2020), all variables present in this study were imputed.

Multilevel regression analyses

The analyses were conducted in IBM SPSS Statistics version 25. Clients were nested in residential groups. All variables were measured at the client level with the exception of staff family-centered attitude and behavior, which was measured at the residential group level. Therefore, firstly, variance on the residential group level was assessed. Results indicated that variance at the group-level was non-significant for all dependent variables. As a result, multilevel analyses were replaced by (binary logistic/linear) regression analyses at the single-level. All analyses were tested two-sided with a significance level of $p < .05$.

In order to answer research question 1 – which adolescent and familial characteristics predict the level of family-centered care – linear regression analyses were used for continuous variables and binary logistic regression analyses for dichotomous variables. All predictors (age, gender, cultural background, living situation before placement, externalizing problem behavior, parenting stress, parental distress, and family empowerment) were included simultaneously in analyses. Each dependent variable was included in a separate analysis. The dependent variables were: the three types of parental involvement and the four subscales of staff family-centered attitude and behavior.

To answer research question 2 – to what extent the adolescent and familial characteristics and the level of family-centered care predict the use of a systemic intervention – linear regression analyses were used for continuous variables and binary logistic regression analyses for dichotomous variables. Predictors included in these analyses were: age, gender, cultural background, living situation before placement, externalizing problem behavior, parenting stress, parental distress, and family empowerment as well as the 3 subscales of the level of parental involvement and the 4 subscales of staff family-centered attitude and behavior. This analysis was restricted to

those families who met the indication criteria for systemic interventions (i.e., MDFT, MST, or RGT) and did actually receive one of these interventions.

Results

Descriptives

See Table 1 for descriptive statistics of the family characteristics, the subscales of parental involvement, and the subscales of staff family-centered attitude and behavior.

Table 1
Descriptives of Baseline Variables

Family characteristics	<i>M</i>	Range	<i>SE</i>
Adolescent externalizing problem behavior (0-14)	8.14	.00 – 14.00	1.24
Parenting stress (34-136)	70.26	35.00 – 118.00	1.38
Parental distress (1-6)	3.65	1.00 – 6.00	.09
Family empowerment (1-5)	3.83	1.00 – 5.00	.04
Family-centered care	<i>M</i>	Range	<i>SE</i>
Staff FC behavior (1-10)	7.82	6.81 – 8.36	.02
Staff sense of competence FC (1-10)	7.82	7.13 – 8.44	.01
Staff attitude towards FC (1-10)	7.61	6.60 – 8.57	.02
Staff perceived barriers towards FC (1-10)	5.58	4.93 – 6.25	.02
PI - visits to institution (0-1)	.66	.00 – 1.00	.01
	%		
PI - telephone contact			
Low level: up to once a week	55.5		
High level: more than once a week	44.5		
PI - furlough spent with parents			
Low level: up to once a week	79.5		
High level: more than once a week	20.5		

Note. FC = Family-centered (care), PI = Parental involvement.

Looking at the indication criteria, 71% of the families were eligible for MDFT, MST, or RGT. However, only 21% ($n = 51$) of the eligible families actually received one of these interventions. Of these families, 7 received MDFT, 34 received standard MST, 5 received MST-ID, 3 received MST-PSB, and 2 received RGT.

Predictors of the level of family-centered care

All variables used as predictors were sufficiently unrelated ($r < .70$; Akoglu, 2018) to be included in the analyses together (see Table 2 for all correlations).

Table 3 shows that when an adolescent lived in a family situation prior to placement, the frequency of parental visits to the institution was higher than when an adolescent did not live in a family situation. Additionally, the likelihood of spending furlough with parents was greater for females than for males. None of the individual or familial characteristics predicted the level of telephone contact between mentors and parents. Similarly, the family characteristics predicted neither staff family-centered care behavior, staff sense of competence, staff attitude towards family-centered care, nor staff perceived barriers towards family-centered care.

Predictors of receiving a systemic intervention

The results of the logistic regression analysis predicting the use of a systemic intervention are shown in Table 3. It shows that if staff perceived fewer barriers towards family-centered care, a family was more likely to receive a systemic intervention than when staff perceived more barriers towards family-centered care. The results also indicated that if an adolescent was living in a family situation prior to placement, the likelihood of receiving a systemic intervention was higher than if an adolescent had not been living in a family situation prior to placement.

Table 2
Spearman's correlations of imputed data of predictors and dependent variables

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Age	-															
2. Cul background	.01	-														
3. Gender	-.05	.07	-													
4. Living situation	-.02	-.06	.01	-												
5. Ext beh	-.06	-.06	-.03	.02	-											
6. Parent stress	.04	-.11	.07	.03	.38 ^{***}	-										
7. Fam emp	-.10	.09	.01	-.02	-.06	-.33 ^{***}	-									
8. Parent dis	.10	-.05	-.02	.00	.16	.47 ^{***}	-.36 ^{***}	-								
9. Pl telephone	.05	.05	.11	.07	.02	.11	-.02	.04	-							
10. Pl visits fam	-.01	-.04	.13	.04	-.01	-.04	-.01	.01	.11	-						
11. Pl institution	-.05	-.01	.12	.16 ^{**}	-.05	.08	.04	-.01	.16 ^{**}	.07	-					
12. FC staff beh	-.08	-.03	-.11	.20 ^{***}	-.03	-.02	.02	-.00	.11	.01	.18 ^{**}	-				
13. FC staff com	.06	-.04	-.11	-.16 ^{**}	.00	-.08	-.06	-.01	-.10	-.08	-.17 ^{**}	-.16 ^{**}	-			
14. FC staff att	-.07	-.03	-.02	.17 ^{**}	-.01	.02	-.04	.01	.21 ^{***}	.10	.15 ^{**}	.38 ^{***}	-.04	-		
15. FC staff bar	-.14 ^{**}	-.01	.24 ^{***}	.18 ^{***}	-.02	.03	.04	-.07	.07	.03	.05	.26 ^{***}	-.09	.35 ^{***}	-	
16. SI	-.09	-.11 [*]	-.03	.26 ^{***}	.01	.07	.01	-.01	.04	.01	.13 [*]	.36 ^{***}	-.13 [*]	.32 ^{***}	.39 ^{***}	-

Note. 1. Age 2. Cultural background adolescent (1 = migrant background) 3. Gender (1 = female) 4. Living situation prior to placement (1 = living in family situation) 5. Externalizing problem behavior at T1 6. Parenting stress at T1 7. Family empowerment at T1 8. Parental distress at T1 9. Parental involvement – telephone contact 10. Parental involvement – furlough spent with parents 11. Parental involvement – visits to institution 12. Staff family-centered care behavior 13. Staff self-perceived competence with regards to family-centered care 14. Staff attitude towards family-centered care 15. Staff perceived barriers towards family-centered care 16. Systemic intervention.
* $p < .05$, ** $p < .01$, *** $p < .001$.

Table 3
Predictors of family-centered care and use of systemic interventions

Model	Dependent variable	Predictors	Imputed data		
			<i>b</i>	<i>SE</i>	<i>p</i> value
1	Parent visits to institution	Age	-.01	.01	.49
		Gender	.04	.02	.06
		Cultural background	-.01	.03	.77
		Family empowerment	.02	.03	.44
		Parental distress	-.01	.02	.66
		Externalizing problem behavior	-.00	.01	.40
		Parenting stress	.00	.00	.14
		Living situation prior to placement	.07	.02	.00**
2	Parent - mentor telephone contact	Age	.10	.10	.29
		Gender	.38	.23	.10
		Cultural background	.24	.25	.32
		Family empowerment	.11	.25	.68
		Parental distress	-.03	.15	.86
		Externalizing problem behavior	-.01	.05	.89
		Parenting stress	.02	.01	.15
		Living situation prior to placement	.31	.23	.18
3	Furlough spent with parents	Age	.01	.12	.92
		Gender	.72	.29	.01
		Cultural background	-.28	.30	.35
		Family empowerment	-.03	.36	.93
		Parental distress	.07	.21	.76
		Externalizing problem behavior	.00	.07	.97
		Parenting stress	-.01	.02	.57
		Living situation prior to placement	.20	.29	.49
4	Staff FC behavior ^a	Age	-.02	.10	.82
		Gender	-.10	.17	.56
		Cultural background	.14	.41	.73
		Family empowerment	-.06	.52	.91
		Parental distress	.13	.30	.65
		Externalizing problem behavior	-.03	.06	.60
		Parenting stress	-.01	.02	.70
		Living situation prior to placement	.51	.34	.13
5	Staff sense of competence	Age	.09	.08	.23
		Gender	.00	.12	.97
		Cultural background	-.01	.32	.97
		Family empowerment	-.12	.38	.76

Model	Dependent variable	Predictors	Imputed data		
		Parental distress	.13	.21	.53
		Externalizing problem behavior	.03	.04	.44
		Parenting stress	-.02	.02	.25
		Living situation prior to placement	-.23	.24	.34
6	Staff attitude towards FC ^a	Age	-.12	.13	.33
		Gender	.04	.22	.87
		Cultural background	-.03	.54	.96
		Family empowerment	-.42	.65	.52
		Parental distress	.07	.39	.85
		Externalizing problem behavior	-.02	.08	.81
		Parenting stress	-.01	.03	.80
		Living situation prior to placement	.58	.42	.17
7	Staff perceived barriers towards FC ^a	Age	-.05	.10	.59
		Gender	.27	.16	.10
		Cultural background	-.07	.40	.86
		Family empowerment	-.04	.50	.94
		Parental distress	-.04	.27	.89
		Externalizing problem behavior	-.00	.05	.94
		Parenting stress	-.01	.02	.67
		Living situation prior to placement	.30	.30	.32
8	Use of systemic intervention ^b	Age	.22	.19	.26
		Gender	-.39	.47	.40
		Cultural background	-.56	.50	.27
		Family empowerment	-.15	.51	.77
		Parental distress	-.33	.32	.30
		Externalizing problem behavior	-.02	.11	.89
		Parenting stress	.02	.02	.44
		Living situation prior to placement	1.25	.50	.01
		Staff FC behavior ^a	1.11	.79	.16
		Staff sense of competence	-1.22	1.09	.26
		Staff attitude towards FC ^a	.93	.63	.41
		Staff perceived barriers towards FC ^a	2.87	.74	.00***
		Parent visits to institution	.83	1.29	.52
		Telephone contact parents - mentor	-.14	.49	.77
		Furlough spent with parents	.22	.60	.71

^a FC = Family-centered (care).

^b Systemic interventions include MDFT, MST, and RGT.

* $p < .05$ ** $p < .01$ *** $p < .001$.

Discussion

The present study aimed to determine whether the level of family-centered care in secure residential youth care and the use of the systemic interventions MDFT, MST, and RGT depend on characteristics of adolescents and families. The present study also aimed to assess whether the level of family-centered care predicts the use of systemic interventions. The findings revealed that living in a family situation prior to placement increases the likelihood of receiving more parental visits at the institution and of receiving a systemic intervention (MDFT, MST, or RGT). The study also revealed that, on average, females spend more furlough with parents than males. Lastly, it was found that when staff members perceive fewer barriers towards family-centered care, families were more likely to receive a systemic intervention (MDFT, MST, or RGT).

Of the adolescents living in a family situation prior to placement, 96% lived with parents or other family members. It seems that these parents are more willing or likely to visit the institution than parents whose children were not living in a family situation before placement. It is possible that familial relationships are stronger if adolescents are living at home before placement (Preyde et al., 2011). It may also be that when adolescents come from a home situation prior to placement, staff members perceive fewer barriers to allowing an adolescent to return home after placement. As a result, referring the family to a systemic intervention may sooner come to mind as an option than when children are not living in a family situation prior to placement. It would be worthwhile to pay increased attention to (parent-child interactions of) parents whose children are being admitted from a different setting rather than from a family situation. These parents could benefit from being more involved in the treatment of their child and may qualify for systemic interventions, just like parents who are living with their child prior to admission. In fact, 67% of the families of adolescents who were not living in a family situation prior to placement met the indication criteria of MDFT, MST, or RGT.

In the whole study sample, 71% of families qualified for MDFT, MST, or RGT. However, only 21% actually received one of these systemic interventions. This could either be due to parental refusal to participate in treatment, a lack of availability of systemic interventions when indicated, or staff or institutional attitudes towards working (together) with such interventions. The current study found that when staff members perceive more barriers to family-centered care, families are less likely to receive MDFT, MST, or RGT. It may be that perceiving more barriers hinders collaboration with disciplines that make referrals to these systemic interventions. This means that staff member' attitudes may play a crucial role in providing adequate support to adolescents and their families (Ten Brummelaar et

al., 2018). Staff attitudes may improve through training (Simons et al., 2019). Also, having a systemic therapist as a member of staff at the institution may facilitate developing positive attitudes and taking away perceived barriers towards family-centered care. Moreover, a systemic therapist may more easily initiate a systemic intervention or make a referral to a systemic intervention. Institutions should be encouraged to stimulate positive attitudes towards family-centered care, for instance through training or implementing more family-centered policies or programs.

Some residential care institutions implement family-centered care by combining residential care and systemic interventions (James, 2017; Lee & McMillen, 2017). Such collaborations with 'outside' service providers may smoothen the sometimes problematic transition of adolescents from the institution (Harder et al., 2011) to the home situation. A smooth transition is important because research has shown that family support during residential treatment is a significant predictor of an adolescent's ability to adapt following discharge from residential placement (Frensch & Cameron, 2002; Merritts, 2016). Our finding that only a small percentage of families who could receive MDFT, MST or RGT actually received one of these systemic interventions, could be due to the limited implementation or use of combinations of secure residential youth care and systemic interventions. Increasing the use of systemic interventions could be an important component of bridging the gap between residential placement and home-based (after)care (James et al., 2013), therewith preventing the prolongation of problems seen after placement in this population (Knorth et al., 2008).

Earlier research has shown that females are more likely to receive a systemic intervention than males (Nijhof et al., 2018). Although this finding of Nijhof and colleagues (2018) was not replicated in this study, the current findings suggest that females receive different forms of family-centered care than males. More specifically, females were likelier to spend furlough with parents than males. It is possible that receiving different forms of family-centered care relates to different reasons for placement of females and males. Research has shown that females are more likely to be placed in secure residential youth care for self-protective reasons, whereas males are more likely to be placed to protect their social network or society (Nijhof et al., 2018). These different reasons for referral of girls and boys may influence the likelihood of spending furlough with their parents. In practice, staff should think about creating or encouraging more equal levels of spending furlough with parents outside the institution for all genders.

While the current study found that some adolescent and familial characteristics relate to family-centered care, it is noteworthy that a large number of variables did not predict any of the measures of family-centered care. We can, therefore, conclude that

family-centered care and the use of systemic interventions are, to a large extent, not determined by characteristics of adolescents or their families. This could mean that higher levels of parental involvement, staff family-centered attitude and behavior, and the provision of systemic interventions are achievable in most families, regardless of familial characteristics. While the use of systemic interventions may be achievable in most families, they are received by a minority of eligible families (21%). A next step would be to relate the findings from this study to treatment outcomes, to gain a more thorough understanding of how family-centered care and the use of systemic interventions influence outcomes of secure residential youth care.

Limitations

This study has some limitations. First, there was a substantial amount of missing data in the original dataset. Overall, lower levels of staff family-centered attitude and behavior and fewer adolescents living at home prior to placement were seen in families with missing data than in families without missing data. Perhaps, parents or staff who experienced more difficulties in or with care may answer questionnaire less frequently or willingly due to for example an involuntary nature of the placement. To deal with missing data, the current study employed multiple imputation (MI). While this meant imputation of up to 60% of variables in some cases, contemporary research reminds us it is impossible to define an upper threshold of the amount of missingness that is acceptable (Hughes et al., 2019). Including all cases, even with just 40% data, provides the advantage of being able to use all available data to inform the MI (Nguyen et al., 2017). As imputation allows for the discussion of predictors of family-centered care and the use of systemic interventions of all 405 families, it is believed that the use of data imputation is of substantial added value.

A second limitation is the scope and retrospective nature of the conducted mentor interviews, assessing parental involvement. It is unknown whether furlough spent with parents consisted for example of overnight visits to a home environment or an outing to a nearby cafeteria, which could relate to adolescent outcomes differently (Huefner et al., 2015). Contacts were also not registered in terms of duration or if the contact was experienced positively or negatively. Moreover, neither parental involvement nor family-centered staff attitude and behavior were assessed from parental or adolescent perspectives. Future research could employ qualitative methods such as interviews to gain insight into parental and child perspectives on parental involvement or discuss duration and type of contact. These different perspectives could also offer valuable insights into the content and quality of family-centered staff attitude and behavior.

Conclusions

Only a limited number of adolescent and familial characteristics were found that predict levels of family-centered care and the use of systemic interventions in secure residential youth care in the Netherlands. Therefore, this study suggests that most families receive equal levels of family-centered care and are equally likely to receive a systemic intervention. While a majority of families meet the inclusion criteria for a systemic intervention (i.e., MDFT, MST, or RGT), a minority actually receive one despite presenting with family problems. Some implications for clinical practice have been formulated on the basis of this study. First, it would be worthwhile to pay increased attention to (parent-child interactions of) parents whose children are not being admitted from a family situation. While acknowledging that the encouragement of parental involvement may be more difficult to realize in these families, their children may benefit from their parents being more involved in the treatment and receiving systemic interventions, just like children who are living with their parents prior to admission. Second, having established a gender bias in opportunities of spending furlough with parents, staff should think about creating or encouraging more equal levels of spending furlough with parents outside the institution. Finally, staff may benefit from a training in family-centered care or from closer cooperation with systemic therapists to reduce perceived barriers to family-centered care. The current study hopes to serve as a starting point for future studies into this important aspect of youth care.

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CHAPTER 6

Residential youth care combined with systemic interventions: Exploring relationships between family-centered care and outcomes

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Abstract

Family-centered care, in terms of parental involvement and family-centered staff attitude and behavior during placement in secure residential youth care, is increasingly being combined with systemic interventions. Little is known, however, about this combination of family-centered residential care and systemic interventions. This study assessed whether levels of parental involvement or family-centered staff attitude and behavior during placement predicted outcomes of systemic interventions. We first assessed the outcomes in the full sample of families receiving systemic interventions and thereafter in families receiving systemic interventions with a strong evidence base (Multidimensional Family Therapy, Multisystemic Therapy [specializing in treatment of individuals with an intellectual disability/with problem sexual behavior], Relational Family Therapy [MDFT, MST(-ID/-PSB), RGT]) and systemic interventions with a less strong evidence base (Attachment Based Family Therapy, Flexible Assertive Community Treatment [FACT], FamilyFACT, Forensic Ambulant Systemic Therapy, Systemic Therapy [ABFT, (Family)FACT, FAST, ST]). Results revealed that higher levels of parental involvement predicted less family empowerment and a longer duration of the systemic intervention. Higher levels of family-centered staff attitude and behavior predicted more parental distress, a shorter duration of the residential placement and a shorter duration of the systemic intervention. Combinations of secure residential youth care with different systemic interventions of different evidence bases resulted in different outcomes. Future research is needed to establish which components of family-centered care or systemic interventions contribute to adolescent outcomes.

Practice implications

- Improving aspects of family-centered care when combined with systemic interventions could help improve adolescent outcomes in secure residential youth care
- When a shorter duration of residential placement is desirable, implementing family-centered care or systemic interventions could be beneficial
- Institutions should consider implementing systemic treatments with a strong evidence base to improve adolescent outcomes
- In designing studies on family-centered care, parental and adolescent perspectives need to be represented more often

Introduction

In recent years, residential treatment is increasingly being combined with systemic interventions to enhance outcomes of adolescents and their families (Hoogeveen et al., 2017; Rovers et al., 2019; Trupin et al., 2011). Historically, residential treatment has been largely child-centered (Knorth et al., 2008; Sunseri, 2020). Today, an increased focus on family functioning in secure residential youth care is necessitated by the knowledge that family functioning affects adolescent problem behavior (Carr, 2019). It is hypothesized that combinations of residential care and systemic interventions ensure that behavioral improvements achieved during placement are maintained after departure (Knorth et al., 2008), with families showing improved family functioning (e.g., less parental distress, improved family empowerment, and caregiver-child relationships after treatment; Preyde et al., 2011; Smulders et al., 2018). In addition, these combinations may reduce the duration of placement, as these interventions aim for adolescents to return home as soon as possible or to live independently after placement (Rovers et al., 2019; Trupin et al., 2011).

Placement in secure residential youth care is warranted if and when adolescents show multiple problems which either affect society, such as aggression or delinquency, or their personal safety, such as self-harming behavior or sexual exploitation (Vermaes et al., 2014). In the Netherlands, where the present study was conducted, most of the adolescents in secure residential youth care (85%–99%) have severe externalizing behavior problems (Vermaes et al., 2014). Secure residential youth care is one of the most restrictive forms of residential youth care in the Netherlands, where adolescents are placed through a court order under civil law (Harder, 2011) and where residential groups and bedrooms that accommodate adolescents are locked (at night). Aside from offering treatment, attention is paid to the pedagogical climate of residential groups. A good pedagogical climate offers support and responsivity between group care workers and adolescents, offers adolescents the opportunity to grow and develop, offers structure and rules, offers positive interactions between adolescents, offers a good atmosphere, offers safety, and encourages interactions between adolescents and their parents (De Lange et al., 2017; Van der Helm et al., 2018).

The risk and protective factors of the severe behavioral problems of adolescents are often found within the systems surrounding them. The social-ecological model developed by Bronfenbrenner (1979) explains that adolescent behavior is largely determined by the functioning of proximal systems such as the family system. Family characteristics associated with severe behavioral problems include parent-child relationship problems (Carr, 2019), poor parental monitoring (Biglan et al., 2004; Harder et al.,

2017), and high levels of parenting stress (Vermaes et al., 2014). Higher parental involvement and monitoring, as well as empowerment and resilience processes (Liebenberg, 2020) can mitigate the development of severe behavior problems in adolescents (Biglan et al., 2004; Damen et al., 2019).

Viewing severe behavioral problems of adolescents as a result of interactions between systems, implies that the treatment of these problems should involve the systems surrounding adolescents (Carr, 2019; Figge et al., 2017). This has translated to residential youth care increasingly employing family-centered care (Geurts et al., 2012; Merritts, 2016; Sharrock et al., 2013). For example, juvenile justice institutions implemented the family-centered care program (Simons et al., 2017). Family-centered care in secure residential youth care aims to enhance parental involvement and family-centered staff attitude and behavior (See Figure 1 for a visualization of the conceptual model). To avoid further disruption of family relationships, it is often combined with systemic interventions. Because family functioning is predictive of adolescent outcomes post discharge (Merritts, 2016), and because studies have found that residential programs offering systemic treatment had better outcomes than programs offering only individual treatment (Gorske et al., 2003), this study focuses on adolescent and familial outcomes of families who receive secure residential youth care combined with systemic interventions in the Netherlands.

Parental involvement in residential youth care has been shown to improve family relationships and treatment engagement, and to lead to reductions in parenting problems and adolescent behavior problems (Huefner et al., 2015; Merritts, 2016; Preyde et al., 2011). Greater parental involvement has the potential to improve bonding and relationships between parents and adolescents. These relationships may have been negatively affected prior to placement due to adolescent association with delinquent peers, mental illness of family members, or family instability (Robst et al., 2013). Improving family relationships is important for maintaining treatment gains after leaving the residential youth care institution. In fact, research has shown that treatment gains are better maintained with parental involvement during and after placement (Leichtman, 2006; Sharrock et al., 2013).

In addition to increasing parental involvement, residential youth care is also increasingly encouraging family-centered staff attitude and behavior. Group care workers (learn to) reason from a systemic perspective, encourage parents to be involved in all steps of the treatment, engage parents in decision-making, and to take away perceived barriers of parental involvement (Simons et al., 2017).

Another optional component of family-centered care in residential youth care is the use of systemic interventions (Simons et al., 2017). Systemic interventions aim to change adolescent problem behavior by addressing factors from systems surrounding

the adolescent. These systems not only include the family, but also the school and the neighborhood (Carr, 2019). Alongside the family system, interactions of adolescents with peers and within the neighborhood can influence the development and persistence of severe behavior problems. According to Dopp and colleagues (2017), a major limitation of traditional adolescent-focused treatments for severe problem behavior is that they have a relatively narrow individual focus on behavioral problems. The benefit of employing systemic interventions is that these involve members from the social-ecological context of adolescents and families and as a result are able to produce greater changes in severe behavior problems of adolescents than treatments delivered outside of an adolescent's social-ecological context (Dopp et al., 2017; Gorske et al., 2003).

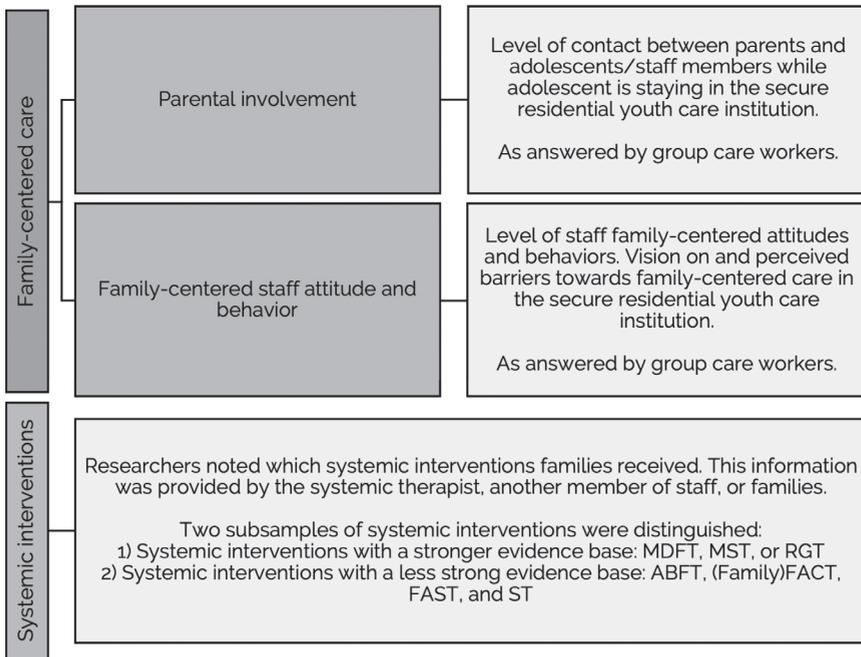


Figure 1
Operationalization of family-centered care and systemic interventions

Note. Systemic interventions with a strong evidence base are well documented, manualized, well-researched and use a quality assurance system and treatment fidelity measures to assure adequate treatment delivery. All other systemic interventions were grouped together to form a subsample of systemic interventions with a less strong evidence base.

Study aims

Based on the abovementioned insights, it could be assumed that family-centered care, combined with systemic interventions, is associated with better outcomes for adolescents and their families than care that is not combined with systemic interventions. Therefore, the current study aimed to assess whether levels of parental involvement or family-centered staff attitude and behavior predicted adolescent problem behavior, parental distress, family empowerment, and problems in the caregiver-child relationship in families receiving a systemic intervention. Secondly, we aimed to assess whether levels of parental involvement or family-centered staff attitude and behavior predicted the duration of the residential placement or the duration of the systemic intervention. Combining parental involvement or family-centered staff attitude and behavior in secure residential youth care with systemic interventions may enhance treatment efficiency and interdisciplinary cooperation. This could positively influence the duration of treatment; both in terms of a shorter duration of the residential placement and in terms of a shorter duration of the systemic intervention. Lastly, because it was expected that a variety of systemic interventions were employed within secure residential youth care, which could affect family functioning study outcomes (e.g., less parental distress, improved family empowerment, and caregiver-child relationships after treatment), the results were analyzed in two subsamples of families receiving either a systemic intervention with a strong evidence base or a systemic intervention with a less strong evidence base (this will be discussed in 'Instruments' in more detail).

Materials and method

Participants and procedure

In this prospective study, participants received a combination of secure residential youth care and systemic interventions. This was a subsample ($N = 111$) of a larger study sample (Blanckstein et al., 2021) of adolescents from 7 secure residential youth care institutions located across the Netherlands. The majority of the adolescents in our study had a Dutch background (71%), the other adolescents had at least one biological parent who was born outside the Netherlands (29%; e.g., in Surinam, Turkey, Morocco, etc). The parents referred to in this manuscript include a variety of caregivers: biological parents, step parents, foster parents, siblings or other relatives acting as guardians, amongst others. Of the 111 adolescents in our study, 48% were female. The average age was 15.58 years ($SE = .11$; range 12-18 years).

All parents and adolescents consented either passively, through an information letter, or actively, by signing a consent form. For institutions using the information letter procedure, participants were asked for their consent for treatment and informed that their data was being collected as part of clinical practice (i.e., Routine Outcome Monitoring) as well as for the purpose of this study. Contact details of the lead researcher were provided so participants could express their wish to not participate. The study complied with the APA ethical principles and the Internal Review Board of the VU University Medical Center, Amsterdam approved compliance with the ethical standards of Dutch law.

Parents answered baseline and outcome measures (pertaining to problem behavior, parenting competencies, family empowerment, and the caregiver-child relationship) at the start of the combined trajectory of secure residential youth care and a systemic intervention (T1) and at the end of the combined trajectory (T2). Group care workers answered questionnaires regarding parental involvement and family-centered staff attitude and behavior. Psychologists, systemic therapists, or families informed the researchers of which systemic intervention was received and when it started and ended.

Instruments

Predictors

Parental involvement. All adolescents in secure residential youth care institutions are assigned a group care worker as a mentor. At the end of the residential placement, this mentor answered a questionnaire pertaining to parental involvement, specified in terms of level of contact between parents and adolescents or between parents and staff members. The questionnaire consisted of 6 questions: 1) 'Did parents visit the adolescent during their residential placement?', 2) 'Has there been telephone contact between staff members and parents?', 3) 'Did the adolescent spend furlough with parents?', 4) 'Did an initial family meeting take place?', 5) 'Did parents attend the treatment plan meetings?', and 6) 'Did parents visit the institution for other activities?' For questions 1-3, if mentors answered the questions with yes, they also indicated if this was up to once a week (0) or more than once a week (1). If their answer to the questions was no, the assigned score was 0 too. Questions 4-6 were answered with yes (1) or no (0).

From these 6 items, an average score was calculated on a scale from 0 to 1, with (0) indicating the lowest possible level of parental involvement and (1) indicating the highest possible level of parental involvement. Because we did not expect the different items to correlate with one another (as different institutions may choose to focus on one type of contact over another type), reliability of the instrument was not assessed.

Family-centered staff attitude and behavior. Every 6 months all group care workers answered a questionnaire consisting of 31 items pertaining to their practice of and views on family-centered care in their residential group. This questionnaire was in large parts based on an earlier version used to measure family-centered staff attitude and behavior in Juvenile Justice Institutions in the Netherlands (Simons et al., 2016). The questionnaire used in our study consisted of 17 items that were answered on a 10-point scale (completely disagree [1] to completely agree [10]) and 14 items that were answered on a 5-point scale (never [1] to always [5]; later recoded to a 10-point scale), totaling 31 items. Two examples of the questions are '*Parents are difficult to work with*' and '*Parents are a source of support for staff members.*' For each assessment, an average score per group care worker was calculated based on all 31 questions. These average scores were then used to calculate an overall average score of family-centered staff attitude and behavior per residential group over the whole research period. The reliability of the total scale was acceptable (range $\alpha = .62$ to $.86$ across 6-month measurements).

Interventions

Systemic interventions. In line with Carr's recent paper (2019), the current study used a broad definition of systemic interventions, covering various interventions consisting of family therapy and other family-based treatments, which engage family members or members of the wider network in order to resolve problems of children until the age of 18 years. The systemic interventions that were combined with secure residential youth care in this study are shown in Table 1. In most cases (85%), systemic interventions commenced during the stay of the adolescent in secure residential youth care, in other cases the systemic intervention followed (immediately) after placement (15%). The systemic interventions were delivered by professionals who were trained in the delivery and models of the respective systemic interventions (i.e., trained MST therapists delivered MST in the home environment).

Because of the large variety of systemic interventions with different levels of evidence base seen in the current study, the study population was first analyzed as a whole and afterwards subdivided into 1) a subsample of families who received a systemic intervention with a strong evidence base and 2) a subsample of families who received a systemic intervention with a less strong evidence base. This first subsample received systemic interventions that have been well documented, manualized, and have attained a strong (international) evidence base for effectively treating severe adolescent problem behavior. Moreover, the selected interventions had to use a quality assurance system and treatment fidelity measures to assure good quality of treatment delivery (Garland &

Schoenwald, 2013). Three interventions matched these criteria: Multidimensional Family Therapy (MDFT), Multisystemic Therapy (MST, standard), MST specializing in treatment of individuals with intellectual disabilities (MST-ID), MST specializing in treatment of problem sexual behavior (MST-PSB), and Relational Family Therapy (RGT). These three interventions were included in the subsample of systemic interventions with a strong evidence base (55% of full sample, $n = 61$). All other systemic interventions were then grouped together to form a subsample of systemic interventions with a less strong evidence base (45% of full sample, $n = 50$).

In secure residential youth care institutions, psychologists are in charge of referrals made to systemic interventions. Depending on which home-based systemic interventions are available in or near the place of residency of a family or which systemic interventions are available in the vicinity of the institution, psychologists were free to choose which systemic intervention they referred a family to. In this study, families were referred to 10 systemic interventions.

Table 1
Overview of Numbers of Families Receiving Various Systemic Interventions

No	Systemic Intervention with a Strong Evidence Base	Reference	Frequency
1	Multidimensional Family Therapy (MDFT)	Liddle et al., 1991	13
2	Multisystemic Therapy (MST, standard)	Henggeler et al., 2009	37
3	MST specializing in treatment of problem sexual behavior (MST-PSB)	Borduin et al., 2009	3
4	MST specializing in treatment of individuals with an intellectual disability (MST-ID)	Blanckstein et al., 2019	5
5	Relational Family Therapy (RGT)	Tjaden & Albrecht, 2015	3
Systemic Intervention with a Less Strong Evidence Base			
6	Attachment Based Family Therapy (ABFT)	Diamond et al., 2016	8
7	Flexible Assertive Community Treatment (FACT)	Van Veldhuizen, 2007	2
8	FamilyFACT	Intermetzo, 2020	5
9	Forensic Ambulant Systemic Therapy (FAST)	Hoogsteder, 2016	3
10	Systemic Therapy (ST)	Savenije et al., 2010	32

Characteristics of adolescents and their families

Sociodemographic characteristics. Age, gender, and the cultural background of the adolescent were registered by researchers at the start of treatment. The start and end dates of the residential placement and the systemic intervention were used to calculate the duration of the residential placement and the duration of the systemic intervention in number of weeks.

Problem behavior. The Brief Problem Monitor for Parents (BPM-P; Achenbach et al., 2011) was used to assess adolescent externalizing problem behavior. The subscale externalizing problem behavior consists of 7 items. One example of these items is: '*Argues a lot.*' Answers range from never (0) to often (2). A total score was calculated. A higher score indicates that parents see more externalizing problem behavior in their child. The reliability of the subscale was good in this study ($\alpha = .82$). Chorpita and colleagues (2010) and Piper and colleagues (2014) found a similar reliability of externalizing problem behavior in their studies ($\alpha = .81$ and $.86$, respectively).

Parental distress. The Parental Distress subscale of the Parenting Stress Index (PSI; Abidin, 1990) was used to assess perceived parental distress. The subscale consists of 8 items and measures the extent to which a parent feels competent, restricted, conflicted, supported, or depressed in their role as a parent. One example of these items is: '*Raising my child is more difficult than I expected.*' Possible answers range from completely disagree (1) to completely agree (6). An average score was calculated. Higher scores indicate parents experience more parental distress. Reliability ($\alpha = .88$) of this subscale was good. Most studies use the short form of the PSI, for which a reliability of $.79$ for the subscale Parental Distress has been reported (Pérez-Padilla et al., 2015).

Family empowerment. The Family Empowerment Scale (FES; Koren et al., 1992) was used to assess family empowerment. The subscale Family Empowerment consists of 12 items with answers ranging from never (1) to very often (5). One example of these items is: '*I feel that my family life is under control.*' An average score was calculated. A higher score indicates a higher level of family empowerment experienced by parents. The reliability of this subscale was very good ($\alpha = .91$). Prior research reported similar findings ($\alpha = .88$; Koren et al., 1992).

Problems in caregiver-child relationship. The Burden of Parenting Questionnaire [Opvoedingsbelasting Vragenlijst] (OBVL; Vermulst et al., 2015) was used to assess problems in the caregiver-child relationship. The subscale consists of 6 items with a higher score indicating more problems in the caregiver-child relationship. One example of these items is: '*I feel calm when my child is with me.*' A total score was calculated. Answers range from not at all true (1) to completely true (4). The reliability was very good ($\alpha = .93$). Earlier (Dutch) research provided similar reliability findings for this subscale ($\alpha = .94$; Vermulst et al., 2015).

Statistical analyses

Missing data

To assess patterns of missing data, the 111 families in this study were divided into a group with no missing data at all and a group with missing data on at least one variable across time points (T1-T2). Analyses showed that 49% ($n = 54$) of families had missing data on at least one variable, while 51% ($n = 57$) of families had no missing data at all. A comparison of families with and without missing data was made using t test analyses for continuous variables. For dichotomous variables chi-square were calculated. Analyses showed that the two groups did not differ on any of the baseline variables, including parental involvement and family-centered staff attitude and behavior.

To enable the use of data of all 111 families, data were imputed 40 times on all variables using the Multiple Imputation (MI) Bayesian estimation procedure using a two-level model in Mplus version 8.3 (Muthén & Muthén, 1998-2017). Imputed values were restricted to values falling within the range of the relevant (scale of the) variables. By using the MI procedure, nonresponse bias can be reduced and power of analyses can be increased (Enders et al., 2016).

Multilevel linear regression analyses

Adolescents were nested in residential groups in the secure residential youth care institutions. Except for family-centered staff attitude and behavior, all variables were measured at the individual adolescent level. Therefore, multilevel linear regression analyses were employed. Parental involvement and family-centered staff attitude and behavior were included as predictors. The baseline measures of the outcome measures were also included in the analyses as predictors. Outcomes were assessed separately using the Robust Full Maximum Likelihood (MLR) method. Any potential deviations from normality are addressed using MLR, because it is a robust estimator for non-normal and dependent data (Muthén & Muthén, 1998-2017). The analyses were performed in the full sample and subsamples.

Although not the primary focus of this paper, comparative AN(C)OVA analyses were used to establish whether the study variables differed significantly between the subgroups. The baseline measures of the outcome measures were included in the analyses as covariates.

All analyses were two-sided with a significance level of $p < .05$.

Results

Descriptive results and group comparison

Table 2 displays the levels of parental involvement and family-centered staff attitude and behavior for the full sample and the subsamples. The levels of the outcome variables have also been detailed for these groups in Table 2.

AN(C)OVA analyses indicated that the subsample of systemic interventions with a strong evidence base showed significantly higher levels of family-centered staff attitude and behavior ($F[1, 109] = 24.64, p = .00$), less parental distress ($F[1, 109] = 12.18, p = .01$), and a shorter duration of both the residential placement ($F[1, 109] = 20.57, p = .00$) and the systemic intervention ($F[1, 109] = 16.36, p = .00$) than the subsample of systemic interventions with a less strong evidence base.

Results of regression analyses in full sample

The predictors parental involvement and family-centered staff attitude and behavior were sufficiently unrelated ($r < .70$; Akoglu, 2018) to be included in the analyses together (see Table 3 for the correlation matrix).

The results of the multilevel linear regression analyses are detailed in Table 4. For the regression analyses predicting the outcomes in the full sample, results showed that a higher level of parental involvement predicted a lower level of family empowerment as reported by parents. In addition, when staff reported higher levels of family-centered attitudes and behaviors, the duration of the placement was shorter.

Table 2

Descriptive statistics of baseline and outcome variables in full sample and subsamples

Variables	Start of trajectory		End of trajectory		Range
	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>	
Full sample					
Parental involvement			.56	.02	.00 – 1.00
Staff family-centered attitude and behavior			7.33	.02	1.00 – 10.00
Adolescent externalizing problems	8.14	.32	5.11	.32	.00 – 14.00
Parental distress	3.58	.11	3.59	.12	1.00 – 6.00
Family empowerment	3.85	.06	4.01	.05	1.00 – 5.00
Problems in caregiver-child relationship	14.96	.44	12.69	.45	6.00 – 24.00
Duration of residential placement (weeks)			26.61	2.71	6.00 – 106.00
Duration of systemic intervention (weeks)			30.95	2.65	5.00 – 110.00
Subsample strong evidence base	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>	Range
Parental involvement			.55	.02	.00 – 1.00
Staff family-centered attitude and behavior			7.43	.04	1.00 – 10.00
Adolescent externalizing problems	8.38	.45	5.55	.44	.00 – 14.00
Parental distress	3.57	.13	3.44	.16	1.00 – 6.00
Family empowerment	3.88	.08	4.11	.06	1.00 – 5.00
Problems in caregiver-child relationship	15.31	.63	13.21	.59	6.00 – 24.00
Duration of residential placement (weeks)			19.26	4.42	6.00 – 106.00
Duration of systemic intervention (weeks)			24.97	2.31	5.00 – 110.00
Subsample less strong evidence base	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>	Range
Parental involvement			.56	.03	.00 – 1.00
Staff family-centered attitude and behavior			7.22	.04	1.00 – 10.00
Adolescent externalizing problems	7.85	.45	4.58	.48	.00 – 14.00
Parental distress	3.59	.17	3.77	.18	1.00 – 6.00
Family empowerment	3.81	.09	3.89	.09	1.00 – 5.00
Problems in caregiver-child relationship	14.54	.63	12.06	.73	6.00 – 24.00
Duration of residential placement (weeks)			35.58	3.73	6.00 – 106.00
Duration of systemic intervention (weeks)			38.25	4.21	5.00 – 110.00

Note. The possible range of scores is displayed under range.

Table 3
Pearson correlations

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Parental Inv	-															
2. Staff FC	.04	-														
3. SI-EB	-.00	.43 ^{***}	-													
4. Age	-.06	.08	.02	-												
5. Cul backg	.05	.02	.01	.04	-											
6. Gender	.11	-.16	-.25 ^{***}	-.05	.03	-										
7. Ext beh T1	.25 ^{***}	.12	.08	-.10	-.20 [*]	-.05	-									
8. Par dis T1	.01	-.03	-.01	.08	-.28 ^{***}	-.00	.29 ^{***}	-								
9. Fam em T1	.14	.06	.06	.01	.15	-.13	.02	-.49 ^{***}	-							
10. Prob rel T1	-.03	.10	.08	-.02	-.25 ^{***}	.00	.49 ^{***}	.42 ^{***}	-.36 ^{***}	-						
11. Ext beh end	.13	.20 [*]	.15	.05	.20 [*]	-.13	.46 ^{***}	.12	.10	.27 ^{**}	-					
12. Par dis end	.03	.19 [*]	-.14	-.02	-.15	-.08	.35 ^{***}	.30 ^{**}	-.23 [*]	.26 ^{**}	.49 ^{***}	-				
13. Fam em end	-.12	.22 [*]	.20 [*]	-.02	.02	.03	-.09	-.18	.52 ^{***}	-.16	-.23 [*]	-.53 ^{***}	-			
14. Prob rel end	.12	.07	.13	.20 [*]	-.02	-.13	.25 ^{**}	.17	-.14	.52 ^{***}	.58 ^{***}	.42 ^{***}	-.41 ^{***}	-		
15. Dur place	.02	-.47 ^{***}	-.40 ^{***}	-.22 [*]	.14	.13	.07	.15	-.19 [*]	.18	.13	.06	-.23 [*]	.09	-	
16. Dur SI	.33 ^{***}	-.25 ^{**}	-.35 ^{***}	-.15	.34 ^{***}	.18	.03	-.11	.08	.02	.08	.05	-.14	.10	.41 ^{***}	-

Note. 1. Parental involvement 2. Family-centered staff attitude and behavior 3. Systemic intervention – evidence base (1 = strong evidence base) 4. Age 5. Cultural background adolescent (1 = Dutch background) 6. Gender (1 = female) 7. Externalizing problem behavior at the start of trajectory 8. Parental distress at the start of trajectory 9. Family empowerment at the start of trajectory 10. Problems in caregiver-child relationship at the start of trajectory 11. Externalizing problem behavior at the end of trajectory 12. Parental distress at the end of trajectory 13. Family empowerment at the end of trajectory 14. Problems in caregiver-child relationship at the end of trajectory 15. Duration of residential placement 16. Duration of systemic intervention.

^{*} $p < .05$ ^{**} $p < .01$ ^{***} $p < .001$.

Table 4
Predictors of treatment outcomes of families receiving systemic interventions

Model	Dependent variables	Predictors		Imputed data							
		Full sample		Subsample strong EB ^a		Subsample less strong EB ^a					
		<i>b</i>	<i>SE</i>	<i>p</i> value	<i>b</i>	<i>SE</i>	<i>p</i> value	<i>b</i>	<i>SE</i>	<i>p</i> value	
1	Adolescent externalizing problems	PI ^b	-54	2.05	.791	.34	2.26	.881	-.73	4.98	.884
		FC ^c	3.54	2.79	.204	5.50	4.38	.209	1.02	4.28	.812
2	Parental distress	PI ^b	-.05	.83	.952	-.30	.72	.678	.09	2.73	.975
		FC ^c	.96	1.26	.446	1.86	.62	.00 ^{***}	1.28	.91	.157
3	Family empowerment	PI ^b	-.54	.25	.032 [*]	-.78	.33	.017 [*]	-.52	.60	.390
		FC ^c	.42	.29	.144	.10	.38	.789	.44	.98	.654
4	Problems in caregiver-child relationship	PI ^b	2.74	2.69	.308	3.99	3.18	.209	.66	4.18	.875
		FC ^c	.66	3.37	.846	2.40	6.92	.729	-.83	3.94	.833
5	Duration of residential placement	PI ^b	-731	11.63	.530	-12.14	11.22	.279	7.00	23.17	.763
		FC ^c	-27.05	11.37	.017 [*]	-32.53	14.85	.028 [*]	-17.83	13.16	.175
6	Duration of systemic intervention	PI ^b	26.75	16.68	.109	13.77	5.18	.008 ^{**}	39.50	10.29	.000 ^{***}
		FC ^c	-14.12	10.14	.164	-18.93	8.54	.027 [*]	.74	8.91	.934

Note: Significant results are presented in bold.
^a EB = Evidence base of the systemic intervention
^b PI = Parental involvement
^c FC = Family-centered staff attitude and behavior
^{*} $p < .05$ ^{**} $p < .01$ ^{***} $p < .001$

Results of regression analyses in subsamples

Subsample with Strong Evidence Base

In the subsample of families receiving a systemic intervention with a strong evidence base, multilevel linear regression analyses showed that higher reported levels of family-centered staff attitude and behavior predicted a higher level of parental distress, a shorter duration of the residential placement, and a shorter duration of the systemic intervention. Additionally, higher reported levels of parental involvement predicted a lower level of family empowerment as reported by parents and a longer duration of the systemic intervention.

Subsample with less strong evidence base

In the subsample of families receiving a systemic intervention with a less strong evidence base, multilevel linear regression analyses showed that family-centered staff attitude and behavior did not predict any of the outcomes. Parental involvement, however, predicted the duration of the systemic intervention. Results indicated that higher levels of parental involvement predicted a longer duration of the systemic intervention.

Discussion

This study is among the first to examine how parental involvement and family-centered staff attitude and behavior relate to outcomes of families receiving secure residential youth care combined with systemic interventions. Consequently, it contributes to the limited body of literature highlighting the outcomes of these combined trajectories, especially those outcomes pertaining to family functioning which have historically received little attention (Knorth et al., 2008; Sunseri, 2020).

In this study, parental involvement predicted few of the outcomes of secure residential youth care combined with systemic interventions. When the level of parental involvement was related to an outcome, these relationships were rather unexpected. Higher levels of parental involvement predicted a lower sense of family empowerment as experienced by parents in the full sample and in the subsample of systemic interventions with a strong evidence base. Higher levels of parental involvement also predicted a longer duration of the systemic intervention in the subsamples of systemic interventions with a strong evidence base and with a less strong evidence base. This indicates that when the level of contact during the residential placement is higher, parents felt less empowered at the end of the combined trajectory and the duration of the systemic intervention became longer.

Parental involvement correlated significantly, although not very strongly, with the level of adolescent externalizing problem behavior at the start of the trajectory. This indicates either that when adolescent problem behavior was more severe, parents were more involved during placement or that when parents were more involved during placement, they saw and reported more severe problem behaviors of adolescents. It is possible that through having more frequent contact, parents are more exposed to the behavior problems their children display during their placement in secure residential youth care. Consequently they can perceive themselves as not being able to provide enough support to alleviate the problems which may result in parents experiencing a lesser sense of empowerment. Increased contact during placement combined with working through issues in family functioning in the systemic intervention could relate to a lowered sense of empowerment at the end of the trajectory.

Alternatively, higher levels of parental involvement in families experiencing less empowerment could result from staff members involving parents more. Staff members may increase the frequency of contact with parents when they notice changes in family empowerment. This may also lead them to encouraging parents to strengthen their parenting competencies (for instance by improving parental monitoring, reducing parenting stress, and improving parent-child relationship problems) – an important component of empowerment (Damen et al., 2019). In this case, one may have expected staff family-centered attitude and behavior to relate to family empowerment as well. This relationship was, however, not found. This may be because the total scale of staff family-centered attitude and behavior is not sensitive enough to establish the degree to which group care workers feel they encourage parental involvement or because staff family-centered attitude and behavior was measured at the residential group level. Future research could therefore opt to look into specific staff family-centered attitudes and behaviors.

Looking more closely into the relationship between parental involvement and the duration of the systemic intervention, we found that when systemic interventions had a very short duration (defined as less than 12 weeks) significantly lower levels of parental involvement were reported than when systemic interventions had longer durations (defined as 12 weeks and over). It may be that combinations of secure residential youth care with very short systemic interventions tend to reflect the unsuccessful implementation of treatment of families with whom engagement could not be achieved, leading to lower levels of parental involvement. This way, lower parental involvement could be reflective of a lack of engagement which could lead to attrition, as seen in prior research (Carl et al., 2020).

In regard to family-centered staff attitude and behavior, higher levels predicted

3 out of 6 outcomes in this study for the subsample of families receiving a systemic intervention with a strong evidence base. In these families, higher levels of family-centered staff attitude and behavior predicted a higher sense of parental distress, a shorter duration of the residential placement and a shorter duration of the systemic intervention. In the full sample, higher levels of family-centered staff attitude and behavior also predicted a shorter duration of the residential placement.

The finding that a higher level of family-centered staff attitude and behavior predicted higher parental distress – at the end of the combined trajectory of secure residential youth care and systemic interventions with a strong evidence base – was somewhat surprising. It may be that the increase in staff involving parents in treatment or decision-making, could lead to parents gaining more insight into how their parenting interrelates with adolescent problem behavior. As a consequence, this could result in parents feeling less competent. Here, the correlation between higher parental distress and higher levels of adolescent externalizing problem behavior at the end of the systemic intervention is worth noting, since studies on parental perspectives of parenting stress and competence note that when behavior problems of adolescents are severe, parents experience less competence (Harder et al., 2017). In other words, higher levels of family-centered staff attitude and behavior and more externalizing behavior problems at the end of the trajectory, seem to contribute to lower sense of competence in parents.

A higher level of family-centered staff attitude and behavior also predicted a shorter duration of the residential stay. This finding may indicate that when treatment staff, including group care workers and systemic therapists, work in a more family-centered way, this helps to minimize the duration of the residential stay. In secure residential youth care institutions these stays currently average 6 months (Jeugdzorg Nederland, 2020). Our study shows that when a systemic intervention with a strong evidence base is implemented in combination with secure residential youth care, the average stay is reduced to less than 20 weeks (< 5 months). This is not entirely surprising given that some combined trajectories of family-centered care at the residential group level and evidence-based systemic interventions explicitly aim to reduce the duration of residential stay to a maximum of for example 6-8 weeks (Rovers et al., 2019).

The combination of family-centered care in secure residential youth care and systemic interventions with a strong evidence base seems to reduce the duration of the systemic intervention as well. In this study, the average duration of systemic interventions with a less strong evidence base was 38 weeks, whereas the average duration of systemic interventions with a strong evidence base was less than 25 weeks; indicating a significant difference in duration of the systemic intervention. Some systemic interventions explicate

the maximum duration of the treatment and some systemic interventions aim to be shorter than others, depending on the accumulation of family problems the intervention addresses. It may be that combined trajectories of secure residential youth care and systemic interventions with a strong evidence base enhance treatment efficiency, especially when quality assurance systems and close monitoring of treatment adherence and treatment duration are in place.

Whether or not treatments employed in residential youth care should be of a stronger evidence base, is an ongoing debate (James, 2017; Lee & McMillen, 2017). According to Lee and McMillen (2017) evidence-based practices are more often discussed than implemented in residential care. They emphasize that evidence-based manualized treatments have neither been designed for nor tested in a residential care setting (Lee & McMillen, 2017), which may be due to a lack of research on the adaptation and implementation of high quality and evidence-informed treatments for residential care (James, 2017; Vaskinn et al., 2020). Our study suggests that combining family-centered residential youth care with evidence-based systemic interventions may shorten the durations of both the residential placement and the systemic intervention. More research is needed to compare the outcomes of such combined trajectories with the outcomes of usual residential youth care and to establish what kind of care works best for which adolescents and families.

Limitations and strengths

It is important to interpret the results of this study with care. Though the multilevel regression analyses allowed us to identify relations between predictors and outcomes, causal relationships could not be established (Pearl et al., 2016). Also, while a group comparison was conducted between outcomes of the subsample of families with a systemic intervention with a strong evidence base and the subsample of families with a systemic intervention with a less strong evidence base, these groups were not matched on baseline characteristics and so results cannot be ascribed to the treatment condition with certainty.

A strength of this study is the above average response rate (51%). Since response rates after placement in secure residential youth care are generally lower (38%; Barendregt & Wits, 2018), the number of families with missing data across time points was unsurprising. Moreover, using Multiple Imputation (MI) allowed for a reduction of the nonresponse bias, an increase in the power of analyses, and for inclusion of all 111 families in the analyses (Enders et al., 2016).

Another limitation of this study is that the constructs of family-centered staff attitude and behavior and parental involvement were measured exclusively from the perspective of the professional. Perspectives on these constructs may, however, differ when assessed from the parental or adolescent perspective (Sulimani-Aidan & Paldi, 2020). Future studies could opt to assess parental involvement from a different perspective, therewith allowing parents' or adolescents' voices to take a more central role in research (Rap et al., 2019).

As discussed, the concept of parental involvement was measured in terms of the level of contact between parents and staff or parents and adolescents. This level or the frequency of contact has previously been found to be inversely affected by the distance between where parents reside and where a residential youth care institution is located (e.g., Huefner et al., 2015; Robst et al., 2013). Unfortunately, we did not include the distance to the care institution in our study and this should be considered a limitation of this study. Efforts were made in this practice-based study to minimize the number of additional questionnaires for parents and staff members. Because parental involvement may have been (negatively) affected by distance to the institution, the authors strongly encourage future studies to include this variable and to assess its relation with parental involvement.

A further limitation of this study is that no information pertaining to the dosage or the fidelity of the systemic interventions was gathered. As mentioned previously, the systemic interventions were delivered by professionals who were trained in the delivery and models of the respective systemic interventions (i.e., trained MST therapists delivered MST in the home environment), which monitored whether professionals delivered the systemic intervention as intended. Nevertheless, future research could opt to collect fidelity (and dosage) data from the organizations administering systemic interventions to ensure that all treatments were carried out as intended.

Finally, it must be noted that while a large variety of systemic interventions (10) were present in this study, 2 of the systemic interventions made up the majority of the study sample: MST (including specializations thereof) and ST were received by 69% of families. Since MST is part of the subsample of families receiving a systemic intervention with a strong evidence base and ST is part of the subsample of families receiving a systemic intervention with a less strong evidence base, this may affect the generalizability of the results.

Future studies

Future studies could opt to include larger samples of adolescents who have received different systemic interventions. It may also be valuable for future studies to identify which facilitating factors and barriers staff members who are responsible for referrals to systemic interventions, encounter. Insight into strategies of staff members relating to how families are engaged and how various forms of contact, or a higher level of parental involvement is achieved, would be of value too. Finally, giving adolescents and parents a more central role in research on family-centered care and parental involvement, is advisable. Qualitative research in the form of interviews could help shed light on these aspects.

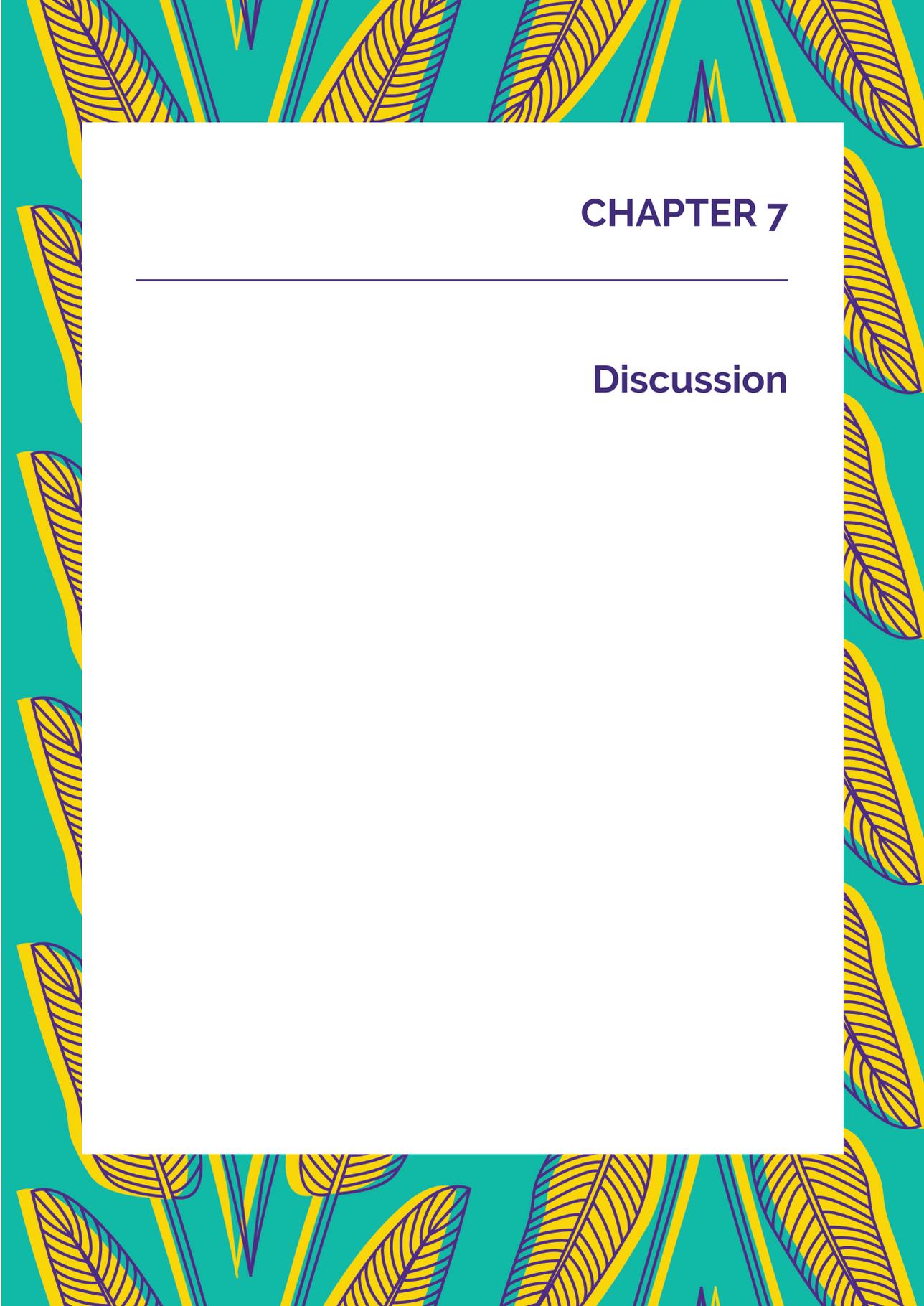
Conclusion

This study has shown that elements of family-centered care, namely levels of parental involvement and family-centered staff attitude and behavior in secure residential youth care, can improve outcomes of adolescents receiving systemic interventions. The study also indicates that levels of family-centered attitude and behavior are higher when systemic interventions have a strong evidence base. When systemic interventions with a strong evidence base are employed, parents also experience less parental distress and the durations of the residential placement and systemic intervention are shorter. Therewith it provides the discussion pertaining to whether or not to implement evidence-based practice in residential youth care with valuable information. More research is needed to identify how outcomes of families receiving systemic interventions and secure residential youth care compare to outcomes of families who do not receive systemic interventions. Giving parents and adolescents a more central role in research on family-centered care, is advisable.

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CHAPTER 7

Discussion

Aims revisited

The aim of this thesis was fivefold: 1) to assess outcomes of adolescents with severe behaviour problems, an intellectual disability, and their parents, receiving multisystemic therapy for adolescents with an intellectual disability (MST-ID) and to compare these outcomes with those of families receiving standard MST, 2) to assess MST-ID outcomes until 18-month follow-up and the role of parental intellectual disability in outcomes, 3) to assess outcomes of a combination of MST and secure residential youth care for adolescents with severe behaviour problems and their families (ThuisBest), 4) to assess which families receive higher levels of family-centered care and systemic interventions in secure residential youth care, and 5) to assess the outcomes of families receiving family-centered care in secure residential youth care combined with systemic interventions.

Summary of main findings

In **Chapter 2**, we studied a specialisation of MST for adolescents with an intellectual disability and severe behaviour problems. The aim of the study described in **Chapter 2** was twofold. First, the question whether MST-ID was able to achieve positive treatment outcomes until 6 months after treatment was answered. Next, the question whether MST-ID attained better results than standard MST was addressed, since some adolescents with an intellectual disability were also receiving standard (i.e., non-specialized) MST. In regards to the first question, findings showed that MST-ID led to reductions in rule-breaking behaviour and police contacts lasting until 6 months after treatment. When comparing the outcomes of MST-ID and standard MST, no differences were found in police contacts, school going or job attainment, or living at home at the end of the treatment (the primary treatment outcomes). Families who had received MST-ID did, however, show more improvements in parenting skills, in family relations, social support, adolescent involvement with pro-social peers, and sustained positive behavioural changes of adolescents at the end of treatment when compared to standard MST (the secondary treatment outcomes). At 6-month follow-up, the only difference between MST-ID and standard MST was that significantly more adolescents of families who had received MST-ID were living at home.

Chapter 3 built on the findings from **Chapter 2** and assessed the long-term treatment outcomes of families of adolescents with an intellectual disability and severe behaviour problems who received MST-ID (until 18-month follow-up). In addition, the role parental intellectual disability may play in relation to the treatment outcomes was explored. The results of this study revealed that the rule-breaking behaviour of adolescents declined during treatment and stabilized until 18-month follow-up. In other words, rule-breaking

behaviour did not further decline after treatment, but remained at a level similar to that at the end of treatment. At the end of treatment 78% of adolescents had no police contact, 86% were in school or work, and 96% lived at home. These percentages, however, reduced over time until 18-month follow-up to 67%, 60%, and 77%, respectively. Analyses showed that parental intellectual disability did not predict the treatment outcomes. In other words, MST-ID achieved similar results for families with parents with as well as without an intellectual disability.

In **Chapter 4** a programme which combines secure residential youth care and MST was evaluated. The programme *ThuisBest* aims to reduce the out-of-home placement of adolescents to a duration which is as long as necessary and as short as possible, and to address problems in family functioning using MST. It was assessed what the outcomes of *ThuisBest* were and whether certain family or adolescent characteristics predicted the treatment outcomes of *ThuisBest*. Findings revealed that the externalizing behaviour problems of adolescents and their parents' parenting stress declined significantly between the start and end of *ThuisBest*. Following *ThuisBest*, the majority of adolescents did not have police contacts, attended school or attained a job, and lived at home. Additional analyses revealed that none of the adolescent or family characteristics predicted the treatment outcomes.

Chapters 5 and 6 focused on family-centered care and the use of systemic interventions in secure residential youth care and how adolescent and family characteristics related to both. In **Chapter 5**, the predictors of levels of family-centered care and the use of systemic interventions (MDFT, MST, or RGT, specifically) were assessed. The study revealed that if an adolescent lived in a family situation prior to placement in secure residential youth care, this increased the likelihood of adolescents receiving more parental visits at the institution and of them receiving a systemic intervention. Findings also indicated that girls spent more furlough with their parents – on average – than boys and that when staff members perceived fewer barriers towards family-centered care, this increased the likelihood of families receiving a systemic intervention (specifically, MDFT, MST, or RGT). **Chapter 6** looked into how family-centered care (i.e., parental involvement and family-centered staff attitude and behaviour) relates to outcomes of families receiving a systemic intervention during or after their child was placed in secure residential youth care. In addition, these relations were assessed in a subsample of families who received a systemic intervention with a strong evidence base and a subsample of families who received a systemic intervention with a less strong evidence base. Results showed that higher levels of parental involvement predicted a lower sense of family empowerment. Higher levels of parental involvement also predicted a longer duration of the systemic

intervention. Higher levels of family-centered staff attitude and behaviour predicted more parental distress, a shorter duration of the residential placement, and a shorter duration of the systemic intervention. Combinations of secure residential youth care with systemic interventions of different levels of evidence base resulted in different outcomes.

Key findings, implications, and future directions

In this section, a number of key findings are deduced from this thesis' main findings. These are discussed below and integrated with knowledge from research, clinical practice, or societal debate on youth care in the Netherlands. This leads to further implications and future directions for research.

Key finding 1: Tailoring evidence-based systemic interventions to the needs of persons with an intellectual disability seems promising

MST-ID, a specialisation of an evidence-based systemic intervention for families of adolescents with severe behaviour problems and an intellectual disability, attains similar or better results when compared to standard MST in this target population. These findings are promising and offer support to the notion that tailored interventions for families with members with an intellectual disability are needed (De Wit et al., 2012). It is often presumed that tailored interventions result in similar or better outcomes, but there is a lack of accompanying scientific evidence.

An initial step to ensuring tailored interventions are received by those who need them most is to recognise the intellectual disability. Research and clinical practice have noted that the recognition of intellectual disabilities – outside of care provided by service providers specializing in ID care – is difficult (Blanckestein et al., 2016; Kaal et al., 2014). In fact, while most of the potential participants of the studies described in Chapters 2 and 3 were identified on the basis of IQ scores from recent IQ tests in their clinical files, 16% of the study population were identified on the basis of their educational level. Shortened intelligence test scores indicated that these adolescents had an intellectual disability. Prior to conducting these IQ tests, neither therapists nor researchers were aware of the presence of an intellectual disability in these adolescents.

If therapists do not recognise the intellectual disability of adolescents or parents, or do not adjust their communication to the skills, deficits, and needs of individuals with an intellectual disability, this can lead to miscommunication, misunderstanding, or negative experiences labeled as 'failure' (Blanckestein et al., 2016). In fact, 'diagnostic overshadowing' is a challenge in clients with an intellectual disability. As Fletcher and colleagues (2016) point

out, a diagnosis of intellectual disability can overshadow coexisting mental disorders, which could predispose practitioners to overlook psychopathology in favour of labelling these as artifacts of developmental or social delay. In response to the previously mentioned negative experiences or experiences of failure, persons with an intellectual disability may mask or deny having problems understanding the information they receive (Nijman et al., 2018). All this can add to the lack of identification of intellectual disabilities in adolescents or parents. Training of professionals (Kaal et al., 2015) or the use of screeners such as the Dutch Screener for Intelligence and Learning Disabilities (Nijman et al., 2018), could help improve the recognition and identification of intellectual disabilities. This could ensure that an intellectual disability is taken into account when decisions are made as to whether a tailored systemic treatment should be indicated in families including persons with an intellectual disability.

The need for tailored interventions for adolescents with severe behaviour problems and an intellectual disability has also been corroborated by the knowledge that these adolescents are at a heightened risk of out-of-home placement when compared to their peers without an intellectual disability (Lange & Van der Rijken, 2012). Since one of the aims of MST-ID is to prevent out-of-home placement and since communication and other treatment elements have been tailored to the needs, deficits, and skills of individuals with an intellectual disability, it could be presumed that MST-ID is better able to prevent out-of-home placement of adolescents with an intellectual disability than standard MST. While the comparative study sample did not show that percentages of adolescents living at home differed at the end of MST-ID and standard MST, significantly fewer adolescents with severe behaviour problems and an intellectual disability were placed out of home 6 months after MST-ID than after standard MST. This indicates that MST-ID was able to prevent more out-of-home placements than standard MST.

In tailoring systemic interventions to the needs of families with members with an intellectual disability, not only should the prevention of out-of-home placements be a concern or even a treatment goal, but also does attention need to be paid to establishing or improving the social network. Research has shown that families with members with an intellectual disability often have a limited social network (Llewellyn & Hindmarsh, 2015). In Dutch society, where emphasis has increasingly been placed on self-efficacy, ownership, and empowerment of individuals to solve problems with the help of members from one's own social network (De Winter, 2011), the lack of informal social networks (i.e., a lack of having caring relatives or close friends or being isolated) is of particular concern for families with members with an intellectual disability (Collings et al., 2017; Neijmeijer et al., 2020). Social isolation is associated with increased parenting stress and, in turn, with poor behavioural outcomes (Collings et al., 2017). That MST-ID is better able than standard MST

to achieve improved social support in families of adolescents with an intellectual disability, therefore, is an important finding.

Key finding 2: Maintenance of treatment outcomes of systemic interventions is difficult and requires monitoring, particularly in families with members with an intellectual disability

Improving social support in the networks of families could also help attain sustainable treatment outcomes of systemic interventions. This is important, because the maintenance of treatment results is difficult in families with members with an intellectual disability and families with members with an intellectual disability often need long-term, home-based care (De Wit et al., 2012). This was also found in Chapter 3. While at the end of MST-ID 78% of adolescents had no police contact, 86% were in school or had a job, and 96% lived at home, 18 months later these percentages had decreased to 67%, 60%, and 77%, respectively. In some cases, disappointingly, the percentages at 1.5 year follow-up were lower than they were at the start of treatment.

Here, it is worth noting that the retention of treatment results is not only difficult for families with members with an intellectual disability. For adolescents in some forms of residential youth care, such as secure residential youth care, the maintenance of treatment improvements is also difficult (Knorth et al., 2008). Secure residential youth care provides youth care to some of society's most vulnerable adolescents and families with multiple and complex problems. The difficulties with retention of treatment results in these families may relate to the difficulties adolescents experience when transitioning from residential to independent living or more open forms of care (Harder et al., 2020). Some form of aftercare may be necessary to retain behavioural improvements attained through residential treatment.

Recently, Trout and colleagues (2020) compared follow-up outcomes for adolescents reuniting with their families following residential placement. The researchers compared results of families receiving an aftercare service called On the Way Home (OTWH) and families receiving services as usual. Results revealed that families who had received OTWH experienced significantly more family empowerment 12 months post-treatment. It was also found that at 21-month follow-up adolescents who had received OTWH were 2 to 3 times more likely to be engaged in school and to be living in the community (Trout et al., 2020). This study's findings are particularly relevant because they show that without aftercare services, following residential placement, families may not retain improvements attained during placement (such as school going or family empowerment).

Not only is the employment of aftercare services important to improve the

transition from residential youth care to a home or independent living environment or with the aim to retain treatment improvements, but also is the involvement of adolescents and their parents therein crucial. Listening to young people during the process of leaving residential care is very important and may lead to better outcomes. It also contributes to adolescents experiencing a sense of agency, well-being, and satisfaction (Bakketeig & Backe-Hansen, 2018; Harder et al., 2020). A lack of adolescent involvement in decision-making may lead to negative outcomes including (the prolongation of) behaviour problems, low self-esteem, and feelings of hopelessness (Edwards, 2012).

In her study, Edwards (2012) also showed that opportunities granted to adolescents to be involved in decision-making allow them to become more confident about their decision-making pertaining to aspects such as having a job. In-depth interviews with young adults (aged 26 - 36 years) with an intellectual disability reveal that job attainment is an important aspect of feeling like one is part of society and fulfils the desire to make a valuable contribution to society (Voermans et al., 2021). This qualitative study also revealed that participation in society is not always self-evident for these young adults. Outcomes such as feeling part of society, school going, and job attainment, are all important aspects of longerspatie vervangen door longer-term retention of behavioural improvements. Greater parental monitoring and positive reinforcement have been shown to increase school achievement (Garfinkel et al., 2010). Since adolescents are the young adults of the next decade, difficulties that care leavers (whether it be after MST-ID or following a placement in secure residential youth care) experience in job or educational attainment, should be given more attention. The use of aftercare services including systemic interventions as aftercare services following residential care, could help bridge this gap (also see key findings 3 to 5).

To avoid the prolongation of problems and to hopefully attain longer-term benefits through intervention, long-term outcome monitoring is of importance. One benefit of long-term monitoring would be that clinical practice would gain more insight into whether treatment improvements seen at the end of treatment are retained or disappear over time. This is important, because many adolescents in secure residential youth care and a portion of adolescents receiving a systemic intervention are nearing the age of 18 years. At this age, young adults in need of care have to switch from the youth care system to the adult care system. Especially for young adults needing assistance (or care) to attain independence following problems in family functioning, this change in systems is difficult to navigate (Gradussen et al., 2020). The monitoring of longer-term outcomes could assist in not only monitoring the longer-term outcomes of interventions, but also in the monitoring of transitions between different systems or providers of care. This way, providers could collectively contribute to the identification of barriers or missing (youth) care services.

Systemic interventions with a strong evidence base and a long history of research, such as MST, often routinely collect rich data sets including longer-term data. Some data is collected until 20+ years post-treatment. Specialisations or adaptations of such systemic interventions may not yet have access to such rich data or funding necessary to establish this data collection. However, collecting long-term follow-up data needs to be taken into consideration from the onset of intervention or programme development, particularly in interventions for families or adolescents who experience difficulties in the maintenance of treatment outcomes. This could assist in improving existing interventions and in improving transitions between different care systems (youth/adult) or domains of care.

Key finding 3: Inter-agency cooperation can lead to the development of innovative systemic treatments

ThuisBest, a programme combining a shortened stay in secure residential youth care with the evidence-based systemic intervention MST is a product of inter-agency cooperation, namely between a secure residential youth care institution and a number of (mental health care) organisations. By working together across the different domains of youth care, the aims of ThuisBest are to reduce the severe behaviour problems of adolescents, parenting stress, police contact, truancy, and lengthy out-of-home placement of adolescents. During the first 6-to-8 weeks of ThuisBest, adolescents are placed out of home, but always with the aim of family reunification.

The inter-agency collaboration across different domains (i.e., residential youth care, community-based youth care) and the aim to offer a programme which targets to reunite families and shorten out-of-home placements fits seamlessly into the 'Action Programme Care for Youth' initiated by the Dutch Ministry of Health, Welfare and Sport together with the Dutch Ministry of Justice and Security (2018). The programme encourages collaborations between residential youth care organisations and mental health care organisations, which aim to improve youth care for adolescents and their families requiring specialized care that will allow family reunification (Ministry of Health, Welfare and Sport & Ministry of Justice and Security, 2018).

Studies from the 2020s have shown that this type of inter-professional collaboration is required to achieve much needed integrated youth care (Nootboom et al., 2021). Integrated youth care is necessary because professionals often operate within their own specialty, due to limitations in access to services, and because of fragmentation in terms of financing, which can lead to a mismatch between service delivery and the needs of families with multiple problems across life domains (Nootboom et al., 2021).

Collaborations between secure residential youth care and systemic interventions could assist those families with multiple problems across life domains, and also help improve the difficult and sometimes problematic transition of adolescents from the institution to a home or independent living situation (Harder et al., 2011; Harder et al., 2020). A smooth transition is of importance because research has shown that family support and stable relationships are predictive of an adolescent's ability to adapt to out-of-care living following discharge (Harder et al., 2020; Höjer & Sjöblom, 2010; Merritts, 2016). While systemic interventions could help improve the transition from secure residential youth care to a family situation, our findings show that only a small percentage of families who could receive a systemic intervention with a strong evidence base (i.e., MDFT, MST, or RGT) actually received one of these systemic interventions (21%). That a minority of families who could receive a systemic intervention actually receive one, could be due to limited implementation or use of combinations of secure residential youth care and systemic interventions. This is in line with recent research which shows that systemic interventions were combined with secure residential youth care placement in just 13% of the families whose files were assessed ($N = 32$; Tempel & Vissenberg, 2018). Increasing the use of systemic interventions could be an important component of bridging the gap between residential placement and home-based (after)care (James et al., 2013), addressing problems in family functioning (Tempel & Vissenberg, 2018), and preventing the prolongation of problems seen after placement (Knorth et al., 2008).

To overcome barriers for integrated youth care, employing a family-centered focus towards family welfare can serve as a facilitator (Nooteboom et al., 2021). This is what *ThuisBest* entails. It addresses severe behaviour problems of adolescents as well as parental problems (i.e., problems with parental monitoring or perceived parenting stress), alongside problems with truancy, police contact, and living situation. Chapter 4 has shown that 72% of adolescents enrolled in *ThuisBest* are able to live at home at the end of the programme; a finding that was based on data collected between 2012 and 2017. The number of adolescents living at home after *ThuisBest* is much higher than the national average following secure residential youth care placement, which is 29%, based on data from 2019 (Jeugdzorg Nederland, 2019). Percentages of adolescents living at home after regular placement in secure residential youth care are not available for the period between 2012 and 2017 and are expected to have been lower in earlier years. Implementing a combined programme of a shortened secure residential youth care placement and systemic intervention aimed at improving family functioning, following which a majority (72%) of adolescents can live at home (Rovers et al., 2019), seems a promising alternative to some standard secure residential youth care placements.

Here, as previously mentioned in Chapter 4, it is suggested that research is needed in which *ThuisBest* is compared to a control group. Comparing residential care with home-based alternative treatments is sometimes difficult because of differences between treatment populations (Huefner et al., 2020). Recently, a meta-analysis (Gutterswijk et al., 2020) attempted to make such a comparison by including only studies that had controlled for pre-treatment differences between home-based and residential youth care for children between 0-23 years of age ($N = 16,943$). One of the study's main findings was that non-residential care has a more positive treatment effect than residential care (Gutterswijk et al., 2020). This is in line with conclusions from earlier meta-analyses (De Swart et al., 2012; Strijbosch et al., 2015). Henceforth, it seems promising to look for alternatives for standard residential youth care placements, such as *ThuisBest*. Possible differences in levels and acuity of problems experienced at the start of treatment would need to be assessed in order to know which adolescents and families are best treated with (partly) home-based programmes or residential youth care if needed. Implementing more (partly) home-based programmes could perhaps help avoid potential iatrogenic effects (Gutterswijk et al., 2020), high costs of secure residential youth care (Ainsworth & Holden, 2018), and unnecessarily long placement duration (also see key finding 5).

Key finding 4: Secure residential youth care staff members' perception of fewer barriers relates to the use of systemic interventions

In our study, family-centered care contained parental involvement and family-centered staff attitude and behaviour. Parental involvement was assessed through 1) telephone contact, 2) parental visits to the institution, and 3) adolescent's visits with parents (during furlough). Family-centered staff attitude and behaviour was measured as 1) staff family-centered behaviour, 2) staff sense of competence regarding family-centered care, 3) attitude towards family-centered care, and 4) staff perceived barriers towards family-centered care. It was found that when staff members perceived fewer barriers towards family-centered care, a family of an adolescent who was placed in secure residential youth care was more likely to receive a systemic intervention (MDFT, MST, or RGT). Staff perceived barriers towards family-centered care were reported by group care workers via statements such as: *'Parents are difficult to work with'*, *'Parents are the cause of the behaviour problems of adolescents'*, and *'As soon as an adolescent displays behaviour problems, parents want nothing to do with their child'*. While group care workers are not in charge of referrals to systemic therapy, their perception of barriers towards family-centered care was found to relate to whether or not a family receives a systemic intervention.

Other research has also shown that child welfare caseworker's openness to evidence-based interventions and the place of work predicts whether or not a referral to an evidence-based programme is made (Myers et al., 2020). In addition, positive attitudes towards evidence-based interventions are associated with more frequent use of evidence-based systemic or parenting interventions (Kolko et al., 2009; Whitaker et al., 2015). Since place of work and staff openness to evidence-based interventions were both found to be related to the use of evidence-based interventions (Myers et al., 2020), it may be that organisational and individual factors of professionals are related. It has been suggested that organisational factors including leadership and organisational culture have an important role in determining the use of an evidence-based intervention (Glisson & Hemmelgarn, 1998; Whittaker et al., 2015).

Relating the above to this thesis' findings, it may be that the barriers group care workers experience towards family-centered care are a reflection of organisational attitudes or motivation to implement evidence-based systemic interventions. In fact, Chapter 5 showed that staff perception of more barriers did relate to lesser use of evidence-based systemic interventions. As discussed in Chapter 5, it may also be that perceiving more barriers hinders intra-agency collaboration with disciplines that make referrals to systemic interventions. If institutions believe in the use of evidence-based systemic interventions with a proven track record of decreasing severe behaviour problems of adolescents (such as MDFT, MST, and RGT), investing in the training of staff members with the aim to facilitate changes in attitudes towards family-centered care could help facilitate the use of evidence-based systemic interventions (Simons et al., 2019).

Key finding 5: Using family-centered care approaches could shorten the out-of-home placement of adolescents with severe behaviour problems

Both Chapter 4 and Chapter 6 address the duration of adolescents' out-of-home placements in secure residential youth care. On average, adolescents' placements in secure residential youth care last 6 months. The maximum duration of a placement is not provided by the national organisation which monitors the entry and exit data from secure residential youth care (Jeugdzorg Nederland, 2019), but was almost 2.5 years in the dataset used in the study described in Chapter 5.

In recent years, the question pertaining to what the (maximum) duration of placements in secure residential youth care should be, has arisen (Bartelink et al., 2017). As part of a recent report, youth care professionals – working for secure residential youth care institutions, municipalities, or other organisations in charge of the acquisition of youth care – were interviewed and unanimously agreed that placement duration should be as short

as possible and as close to home as possible (Buysse et al., 2019). This is in line with the Dutch 'guideline out-of-home placement' which states that when out-of-home placement cannot be prevented, it should be short (Bartelink et al., 2017). The 'guideline residential youth care' states that placements that are 'too long' should be prevented and that a maximum duration of 12 months is advisable (De Lange et al., 2017), since cooperation between parents and staff members decreases from the 13th month (Geurts et al., 2007). Yet, in 2019, 12% of secure residential youth care placements lasted over 12 months (Jeugdzorg Nederland, 2019). To achieve optimal cooperation between parents and staff members, it may be necessary for programmes implemented in secure residential youth care to explicitly aim to shorten the duration of placement.

Presently, some combined trajectories of family-centered care during residential placement and evidence-based systemic interventions such as *ThuisBest* (also see Chapter 4) explicitly aim to reduce the duration of residential stay (Rovers et al., 2019). In many other programmes and approaches, a shortened residential placement is not explicated as a treatment aim and, therefore, measured as a demographic variable or not measured at all (e.g., Trout et al., 2020). This may change as a result of the earlier mentioned 'Action Programme Care for Youth'. This programme explicates the ambition to not only reduce the number of out-of-home placements, but to also shorten the duration of residential placements (Ministry of Health, Welfare and Sport & Ministry of Justice and Security, 2018).

Perhaps, the lack of attention paid to (shortened) placement duration also relates to the larger discussion pertaining to when an out-of-home placement of an adolescent with severe behaviour problems is warranted. The earlier mentioned 'guideline out-of-home placement' (Bartelink et al., 2017) states in which cases an out-of-home placement should be prevented and in which cases an impending out-of-home placement should be executed. If the answer to the question whether an out-of-home-placement is preventable is yes, the guideline advises to use MST or other programmes in which the therapist is available 24/7, has 8-10 hours of contact with a family per week, offers the family concrete help, takes into account the motivation of family members, and involves other important persons such as the family's social networks or the general practitioner (Bartelink et al., 2017). When an out-of-home placement is not deemed preventable, involved professionals are advised to consider whether a family needs any additional help such as interventions that aim to support parents, improve the contact between parents and their child and their relationship, and to enable an adolescent to return home. They are also advised to consider the role the social network can play and to ask the question which interventions would be effective (Bartelink et al., 2017). While these guidelines

are clear, research has shown that guidelines concerning which intervention should be used for which type of problem are insufficiently followed (Tempel & Vissenberg, 2018). If problems in family functioning relating to behavioural problems are not addressed while an adolescent is placed in secure residential youth care, severe behaviour problems may persist unnecessarily long (De Lange et al., 2018) and it could be hypothesised that this may prolong the duration of residential placement.

In our study described in Chapter 6, adolescents who were placed out of home and whose families received a systemic intervention stayed at a secure residential youth care institution for an average of 6 months. When systemic interventions with a strong evidence base (i.e., MDFT, MST, RGT) were used this duration was reduced to less than 4.5 months (or 19.3 weeks) and when systemic interventions with a less strong evidence base were used the duration of the residential stay averaged 8.3 months (or 35.6 weeks). This shows that a reduction of the duration of the residential placement is more attainable when evidence-based systemic interventions are used when compared to less evidence-based systemic interventions. When the court order ordering the secure residential youth care placement is reviewed (ideally every three months; Bartelink et al., 2017) or when an adolescent is initially placed in secure residential youth care, and problems in family functioning are identified, these findings should encourage professionals to consider the use of a systemic intervention and its evidence base.

Strengths and limitations

Routine Outcome Monitoring (ROM) and active data collection

A strength of this thesis is that all the studies described were prospective studies, which means that all data sets have been collated following active data collection. Moreover, all of the studies made use of at least some Routine Outcome Monitoring (ROM) measures. These are the standard sets of questionnaires used by organisations to monitor the quality and outcomes of administered treatments. A minimal number of additional questionnaires was employed to measure the study outcomes, so as to not burden respondents with excessive amounts of questions.

Through active data collection in this thesis, in some cases, response percentages were realised that far exceeded response percentages seen in the studied treatments. For example, in the studies pertaining to MST-ID (Chapters 2 and 3), at the end of treatment 87% of parent measures relating to rule-breaking behaviour were available compared to 50% availability in MST Routine Outcoming Monitoring measures (Lange et al., 2018). While active data collection is costly, it also affords the opportunity to improve the quality of data

(i.e., because questionnaires can be administered in interviews, where respondents can discuss items they may not have understood with researchers) and the quantity of data (i.e., in terms of response rates).

In relatively recent history, ROM has been criticised in the Netherlands. This is due to the increased use of outcomes attained through ROM to account for prices paid by insurance companies or municipalities for interventions or care. In 2017, The Netherlands Court of Audit underlined that ROM – in its then current form – was not meant or suitable for the negotiation of ceiling prices of treatments (Algemene Rekenkamer, 2017; Schoevers & Beekman, 2017). Clinicians such as Schoevers and Beekman (2017) have since, however, argued that the problems surrounding the implementation of ROM should not stop us from using ROM to help improve individual treatments or (youth) care in general.

This latter school of thought, that is to deploy ROM to improve care, has been embraced by relatively new initiatives such as the 'Learning Database Youth' [Lerende Databank Jeugd in Dutch] (Samenwerkingsverband Effectieve Jeugdhulp Nederland [SEJN], 2020) or the 'Learning Monitor' [De Lerende Monitor/StroomOP-Monitor in Dutch] (Branches Gespecialiseerde Zorg voor Jeugd, 2020). These databases focus on collecting information on characteristics of, problems experienced by, and outcomes of young people and their families – based on ROM measures – receiving different forms of youth care (non-residential and residential youth care, respectively). These databases can create an opportunity for professionals to map the problems encountered by their clients and also to assess intervention outcomes across different organisations. The latter can also assist in inter-agency collaboration and organisations learning from one another. These integrated networks of organisations offering youth care can help optimize the use of ROM data. The goal of these databases is to 'attain knowledge [pertaining to problems and interventions] in efficient and effective ways' and to ultimately 'offer excellent youth care' (SEJN, 2020).

Pilot research on treatments in development

A first limitation relates to pilot studies pertaining to systemic interventions that are still in development, which could lead to changes in treatment procedures, content, or the target population of the intervention. In the studies described in Chapters 2 and 3, the treatment MST-ID was piloted for the first time. This treatment has been in development from 2011 until present. At the treatment's onset, it targeted adolescents with an intellectual disability and their parents. Presently, MST-ID targets adolescents or parents with an intellectual disability. This is because the treatment specializes in engagement and communication with individuals with an intellectual disability and because the severe behaviour problems

of adolescents are addressed through improvement of parenting skills such as parental monitoring.

Following the changes to the intervention's inclusion criteria, more families would have been eligible for the studies described in Chapters 2 and 3. Previously, a family was excluded from participation if the shortened IQ test indicated that the adolescent did not have an intellectual disability. It may have been that the adolescent did not have an intellectual disability, but that a parent did. These families have not previously partaken in research on MST-ID, which is a limitation of the body of research on MST-ID as it limits the generalizability of the results to the current treatment population.

'Small' sample sizes in research

The relatively small sample sizes of the studies described in Chapters 2, 3, and 4 of this thesis could also be seen as a limitation. Only 55 families received an MST-ID treatment (Chapter 3), 128 families were included in the comparative study on MST-ID (Chapter 2), and 86 families received a ThuisBest treatment (Chapter 4). While these numbers should be sufficient for initial pilot studies, it limits the ability to identify subsamples or compare subgroups. Both of these treatments (MST-ID and ThuisBest) have been in existence for less than a decade and have been implemented in a small number of organisations, meaning that the number of families who have received these treatments is still limited. Nonetheless, research techniques can increasingly compare even the smallest of samples or subgroups (i.e., $N = 1$ or [repeated] single case designs). With the increasing availability of innovative research designs, 'small' sample sizes may be an issue of the past.

While this limits the power and generalizability of results, attaining a relatively small sample size in pilot studies is also often a given in their initial stages. As these interventions develop, data from larger samples can and should be collected to assess whether the findings from the pilot studies are seen across larger groups of families whom the treatments have been tailored to and developed for. This replication of studies is necessary to assess the robustness of earlier findings.

As interventions continue developing, practice-based research can follow and help improve the evidence base (through verification or falsification) of earlier findings.

Qualitative research

Another limitation of the studies presented in this thesis is that none of them included qualitative research methods. No adolescents, parents or clinical professionals were interviewed about their experiences with the studied forms of youth care (systemic

interventions and secure residential youth care). Moreover, none of the quantitative research study designs included the interpretation of findings with family members who had experience with receiving these treatments. Nonetheless, quantitative measures in the form of questionnaires were used that were answered by an array of different professionals, parents, and adolescents.

Thankfully, presently, much more attention is paid to actively involving the recipients of treatments (in this case, adolescents and parents) in the evaluation of interventions. After all, these individuals have firsthand knowledge of care elements that did and did not work well in treatment. Moreover, gathering parental perspectives on decisions pertaining to for example voluntary out-of-home placements can help shed light on shared decision-making from the parental perspective.

In other areas of youth care, such as child protection service, policy papers emphasise the importance of the participation of young people in the evaluation of care, but guidelines pertaining to how the perspectives of young people are weighed in the decision-making process are missing (Mak et al., 2016; Ten Brummelaar et al., 2018). Research from the ombudsman for children (Kinderombudsman, 2016) has shown that more than half of the young people who had received some form of youth care was unsatisfied with their role in decision-making about what youth care and interventions should entail. In short, adolescent perspectives on (secure residential) youth care are not always considered in research or clinical practice and should, therefore, attain a more central role in the development of child policy, in line with the International Convention on the Rights of Children (CRC law; De Lange et al., 2017).

Conclusion

The Dutch youth care landscape consists of many service providers and a large variety of interventions; some of these interventions are well established, while others are still in development. This thesis aimed to shed light on new uses of existing and tailored systemic interventions in home-based care and secure residential youth care. Where necessary, interventions were tailored to families where members had an intellectual disability (MST-ID) or where family problems were so severe and safety was jeopardized to such a degree that out-of-home placement was warranted (ThuisBest, secure residential youth care), and thereafter studied. The systemic interventions described in this thesis exist and continue to be developed based on the premise that severe behaviour problems of adolescents are inextricably linked to problems in family functioning.

While the clinicians consulted to help interpret the findings of this thesis agree that behavioural problems of adolescents should always be viewed from a systemic perspective and addressed as such, they are of the opinion that this 'systemic thinking' has insufficiently trickled down into some youth care sectors. This practice-based and clinical opinion is supported by research. Clinical file analyses by Tempel and Vissenberg (2018) showed that in just 13% of the families of adolescents who were placed in secure residential youth care, and whose files were assessed ($N = 32$), received a systemic intervention. Similarly, this thesis revealed that while 71% of adolescents in secure residential youth care presented with problems in family functioning and met the inclusion criteria of an evidence-based systemic intervention, only 21% of these families actually received such a systemic intervention. This could relate to problems in family functioning being underdiagnosed or being left unassessed. Wrong diagnoses and barriers relating to assembling external expertise can and do lead to mistakes in (secure) residential youth care. These mistakes can have far-reaching effects (Van der Helm, 2019).

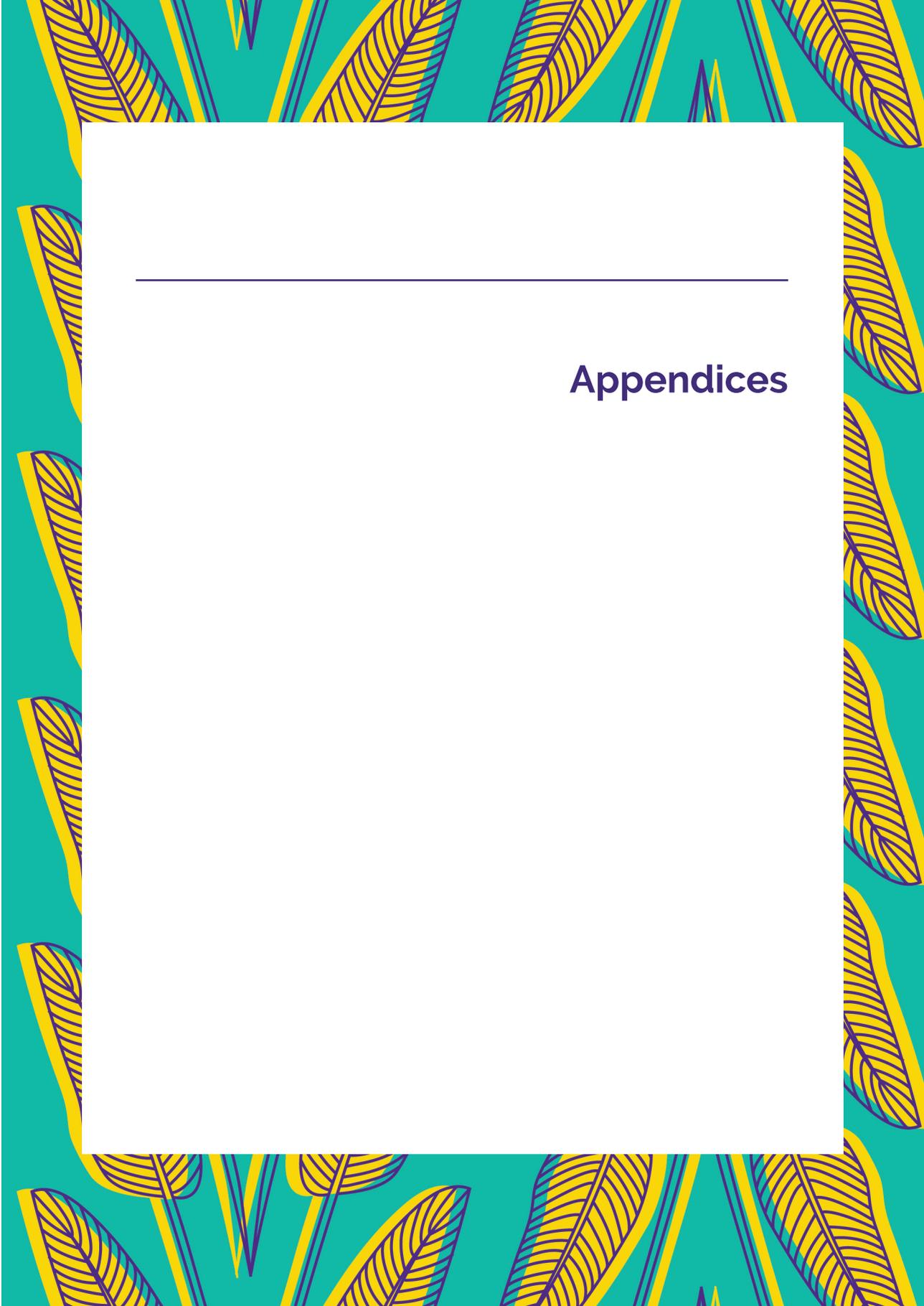
Sometimes much needed interventions do not exist or are not suitable due to the complexity and rarity of the problems experienced by adolescents or their families (i.e., existing interventions are insufficiently tailored to complexity of problems; Buysse et al., 2019). However, other times the needed interventions are not sought or implemented, resulting in institutions "mucking about" intramurally – as was reported in a 2018 report on the handling of suicide prevention in secure residential youth care by the Health and Youth Care Inspectorate (Inspectie Gezondheid & Jeugd, 2018). According to Tempel and Vissenberg (2018), what is lacking in the majority of files are 'causal analyses'. These analyses employ the diagnostic cyclus and holistic theory. The latter is used to identify how problems interrelate, to identify relevant characteristics of clients, and to identify in which situations these present (Korrelboom & Ten Broeke, 2014). According to Tempel and Vissenberg's (2018) research this ultimately leads to professionals insufficiently following the earlier mentioned 'guidelines externalizing problem behaviour, residential youth care, and out-of-home placement' (Bartelink et al., 2017; De Lange et al., 2017, 2018). Only in 17% of families are evidence-based interventions used as 'prescribed' in the guidelines (Tempel & Vissenberg, 2018).

The observation that guidelines are insufficiently followed is not new and has led to the development of 'decision trees' aiming to assist clinicians and other professionals in their decision-making pertaining to which evidence-based interventions can be employed to tackle which problem experienced by adolescents. One example is the decision tree 'severe behaviour problems', developed to accompany some of the earlier mentioned guidelines and with the aim to assist clinicians in developing a treatment plan for families (Eenshuistra et al., 2020).

The Dutch database Effective Youth Interventions [Databank Effectieve Jeugdinterventies (DEJ) in Dutch] recognises 39 interventions that can be effectively used to treat behavioural problems in children. The large number of available interventions, as well as implementation barriers such as (un)availability of services and professionals' preferences for implementation of specific interventions, influence implementation choices made by professionals. The decision tree serves as a tool to assist in the stepwise decision-making pertaining to which intervention can best assist which family. Pilot research has shown that, according to professionals, using the decision tree serves as a useful tool to double check if all vital information has been collected, and helps to make substantiated and quicker decisions regarding which intervention to use when. The value of its use in interdisciplinary meetings is also underlined by professionals and the consulted parents expressed the usefulness of the decision tree, so long as strengths of adolescents and families were taken into account (Eenshuistra et al., 2020).

Intervening in an effective and timely matter is one of the primary aims of the earlier discussed guidelines. Timely intervention can prevent escalation of problems experienced by families in which the adolescent has severe behaviour problems. These problems can lead to disturbances in emotional, cognitive, and social development. It also puts adolescents at risk of truancy, joblessness, delinquency, or social isolation (De Lange et al., 2018; Eenshuistra et al., 2020; Loeber & Burke, 2011). This way, the literal and figurative costs of severe behaviour problems of adolescents can be great to individuals, families, and society in general. Timely and evidence-based intervention, from a systemic perspective, therefore, is of the essence.





Appendices

Samenvatting [Summary in Dutch]

Doel van dit proefschrift

Het doel van dit proefschrift was vijfledig: 1) onderzoeken van de uitkomsten van een specialisatie van multisysteemtherapie voor adolescenten met ernstig probleemgedrag en een licht verstandelijke beperking (MST-ID) tot 6 maanden na afloop van de behandeling, 2) in kaart brengen van de uitkomsten van MST-ID tot 18 maanden na afloop van de behandeling en onderzoeken van de rol die een licht verstandelijk beperking (LVB) bij de ouders speelt, 3) onderzoeken van de uitkomsten van een traject waarin multisysteemtherapie (MST) gecombineerd wordt met plaatsing in de (gesloten) jeugdzorg(Plus) (ThuisBest), 4) identificeren van kenmerken van gezinnen waarbij een hogere mate van gezinsgericht werken en vaker systeeminterventies worden ingezet in de (gesloten) jeugdzorg(Plus) en 5) onderzoeken van uitkomsten van gezinnen die gezinsgerichte hulp ontvangen in de (gesloten) jeugdzorg(Plus), gecombineerd met een systeeminterventie.

Samenvatting van de belangrijkste bevindingen

In **Hoofdstuk 2** werden de uitkomsten van een specialisatie van MST voor gezinnen met adolescenten met een LVB en ernstig probleemgedrag onderzocht (MST-ID). Allereerst werd de vraag gesteld of MST-ID positieve behandeluitkomsten behaalt tot 6 maanden na afloop van de behandeling. Uit het onderzoek bleek een significante afname van regelovertredend gedrag en politiecontacten bij adolescenten tot zes maanden na afsluiting van MST-ID. Vervolgens werd de vraag gesteld of MST-ID betere behandelresultaten behaalt dan reguliere MST in gezinnen waarin de adolescent een LVB heeft. Ten tijde van het onderzoek werden deze adolescenten en hun gezinnen namelijk nog met de reguliere en niet-gespecialiseerde behandeling behandeld (lees: reguliere MST in plaats van MST-ID). Uit het onderzoek bleek dat er geen verschillen waren tussen beide behandelingen wat betreft politiecontact, zinvolle dagbesteding, thuis wonen en regelovertredend gedrag van jongeren aan het einde van de behandeling (primaire uitkomstmaten). Wel woonden zes maanden na MST-ID meer jongeren thuis dan zes maanden na reguliere MST. Bij gezinnen die MST-ID kregen waren bovendien meer verbeteringen zichtbaar in de opvoedvaardigheden, familierelaties, sociale steun, omgang met pro-sociale vrienden en gedrag dan bij gezinnen die reguliere MST kregen (secundaire uitkomstmaten).

Hoofdstuk 3 bouwde voort op de bevindingen uit **Hoofdstuk 2**. In **Hoofdstuk 3** werd dieper ingegaan op de lange termijn resultaten van MST-ID, tot 18 maanden na afloop van de behandeling. Ook werd de rol van de LVB van de ouder(s) in relatie tot de behandeluitkomsten onderzocht. Uit het onderzoek bleek dat het regelovertrekend gedrag van adolescenten significant afnam gedurende de behandeling en stabiliseerde tot 18 maanden na de behandeling. Oftewel, het regelovertrekend gedrag van adolescenten nam na einde van de MST-ID behandeling niet verder af maar bleef op een vergelijkbaar niveau als aan het einde van de behandeling. Aan het einde van de MST-ID behandeling had 78% van de adolescenten geen nieuw politiecontact gehad, had 86% een zinvolle dagbesteding (in de vorm van school of werk) en woonde 96% thuis. Deze percentages namen af tot 18 maanden na het einde van de behandeling: op dat moment had 67% van de jongeren geen nieuw politiecontact, had 60% een zinvolle dagbesteding en woonde 77% van de jongeren thuis. Een LVB bij de ouder(s) bleek geen invloed te hebben op de uitkomsten. Dit betekent dat MST-ID even goede resultaten behaalt bij gezinnen waarin de ouder een LVB heeft als bij gezinnen waarin de ouder geen LVB heeft.

In **Hoofdstuk 4** werd een zorgtraject, waarin (gesloten) jeugdzorg(Plus) gecombineerd wordt met MST, geëvalueerd. Dit programma, genaamd ThuisBest, heeft als doel om de uithuisplaatsing van jongeren te reduceren tot een zo kort als mogelijk, maar zo lang als nodig durende plaatsing. Tegelijkertijd heeft het programma als doel om problemen in het gezinsfunctioneren aan te pakken met behulp van MST. Eerst werd onderzocht wat de behandeluitkomsten van ThuisBest waren en daarna werd nagegaan of bepaalde kenmerken van jongeren of gezinnen de behandeluitkomsten van ThuisBest voorspelden. Uit het onderzoek bleek dat het externaliserende probleemgedrag van jongeren en de opvoedbelasting van ouders afnamen gedurende het ThuisBest traject. Aan het einde van ThuisBest had het merendeel van de jongeren geen nieuw politiecontact, een zinvolle dagbesteding en woonde thuis. Geen van de in het onderzoek onderzochte kenmerken van jongeren of gezinnen waren voorspellend voor de behandeluitkomsten.

Hoofdstuk 5 en 6 richtten zich op gezinsgericht werken in de (gesloten) jeugdzorg(Plus), de inzet van systeeminterventies en de relatie van kenmerken van jongeren en gezinnen hiermee. **Hoofdstuk 5** ging over voorspellers van de mate van gezinsgericht werken en de inzet van systeeminterventies (te weten: Multidimensionele familitherapie [MDFT], MST, Relationele gezinstherapie [RGT]). De vraag of kenmerken van gezinnen de mate van gezinsgericht werken of de inzet van systeeminterventies voorspelden, werd beantwoord. Deze studie toonde aan dat wanneer jongeren in een gezinssituatie woonden voorafgaand aan plaatsing in de (gesloten) jeugdzorg(Plus), de kans op ouderbezoeken aan de instelling en op de inzet van een systeeminterventie

groter was. Daarnaast bleek dat meisjes een grotere kans hadden om verlof met ouders door te brengen dan jongens en dat de kans op inzet van een systeeminterventie (te weten: MDFT, MST, RGT) groter was wanneer groepsmedewerkers minder belemmerende gedachten hadden bij gezinsgericht werken. **Hoofdstuk 6** behandelde de vraag hoe gezinsgericht werken (specifiek ouderbetrokkenheid en gezinsgericht werken op de leefgroep) relateert aan de behandeluitkomsten van gezinnen waarbij tijdens of na plaatsing een systeeminterventie werd ingezet. Er werd onderscheid gemaakt tussen gezinnen die een systeeminterventie kregen met een sterkere *evidence base* en gezinnen die een systeeminterventie kregen met een minder sterke *evidence base*. Een hogere mate van ouderbetrokkenheid bleek minder *empowerment* van de ouders te voorspellen. Ook relateerde een hogere mate van ouderbetrokkenheid aan een langere duur van de systeeminterventie. Verder werd gevonden dat een hogere mate van gezinsgericht werken op de leefgroep meer ouderlijke stress, een kortere verblijfsduur en een kortere duur van de systeeminterventie voorspelde. Tot slot bleek dat combinaties van (gesloten) jeugdzorg(Plus) en systeeminterventies van verschillende niveaus van *evidence base* resulteerden in verschillende behandeluitkomsten.

Praktische implicaties en conclusie

Uit de studies die in dit proefschrift besproken werden, blijkt dat systeeminterventies in verschillende domeinen van de jeugdzorg op verschillende manieren kunnen worden ingezet. Het actief betrekken van ouders bij de behandeling van ernstige gedragsproblemen van jongeren lijkt positieve resultaten te geven. Toch ontbreekt het, volgens klinici die in het kader van dit proefschrift geraadpleegd werden, soms aan een systemische visie waarmee naar de ernstige gedragsproblemen en problemen in gezinsfunctioneren wordt gekeken. Eerder onderzoek (Tempel & Vissenberg, 2018) onderschreef dit, toen uit dossieronderzoek bleek dat bij slechts 13% van de gezinnen die JeugdzorgPlus ontvingen een systeeminterventie werd ingezet. Dit proefschrift ondersteunt deze bevinding. Zo blijkt uit de in Hoofdstuk 5 beschreven resultaten dat bij 71% van de gezinnen, waarvan de jongeren in de (gesloten) Jeugdzorg(Plus) verbleven, sprake was van gezinsproblemen op basis waarvan de gezinnen voldeden aan de indicatiecriteria voor de inzet van een systeeminterventie. Bij slechts 21% van deze gezinnen werd echter een systeeminterventie ingezet. Het is mogelijk dat problemen in gezinsfunctioneren nog onvoldoende in kaart worden gebracht of gediagnosticeerd worden. Verkeerde diagnoses en barrières die ervaren worden bij het inschakelen van de juiste hulp kunnen tot problemen leiden die verregaande gevolgen kunnen hebben (Van der Helm, 2019).

Soms zijn bestaande interventies onvoldoende toegespitst op de beoogde doelgroep of zijn de gewenste interventies onvoldoende beschikbaar (Buysse et al., 2019). Soms zijn interventies echter wel beschikbaar, maar is sprake van handelingsverlegenheid wat betreft het inzetten van deze interventies. Redenen voor het niet inzetten van de (nodige) systeeminterventies hebben te maken met de beschikbaarheid van een grote hoeveelheid interventies, waardoor het maken van een keuze voor de best passende (systeem)interventie soms lastig is voor professionals. Ook kunnen zich barrières bij implementatie voordoen, zoals het niet beschikbaar zijn van de systeeminterventies (in de regio, of door onvoldoende inkoop) of voorkeuren voor bepaalde (systeem)interventies van de professional, wiens taak het is om hulp voor een gezin te indiceren. Onderzoek (Tempel & Vissenberg, 2018) toont ook aan dat onvoldoende analyse van de problemen soms leidt tot het niet inzetten van *evidence-based* behandelingen zoals voorgeschreven in de verschillende richtlijnen jeugdhulp. Slechts bij 17% van de onderzochte gezinnen werd een *evidence-based* behandeling, zoals voorgeschreven in de richtlijn, ingezet (Tempel & Vissenberg, 2018).

Het tijdig inzetten van intensieve (ambulante) jeugdhulp is noodzakelijk om escalatie van ernstige gedrags- en gezinsproblemen te voorkomen. Dit proefschrift had als doel om nieuwe toepassingen van bestaande en gespecialiseerde systeeminterventies, die ofwel ambulant werden ingezet ofwel gecombineerd werden met (gesloten) JeugdzorgPlus, te onderzoeken. Waar nodig werden systeeminterventies op maat gemaakt voor inzet bij gezinnen waarin gezinsleden een LVB hadden (MST-ID) of waar gedragsproblemen van jongeren en gezinsproblemen zo ernstig waren dat de veiligheid zodanig in het gedrang kwam dat uithuisplaatsing onvermijdelijk was (ThuisBest, [gesloten] jeugdzorg[Plus]). De in dit proefschrift onderzochte systeeminterventies bestaan en worden doorontwikkeld vanuit de overtuiging dat ernstige gedragsproblemen van jongeren onlosmakelijk verbonden zijn met problemen in gezinsfunctioneren en ook als zodanig behandeld moeten worden.

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Publications

In this thesis

Blankestein, A. M. M. M., Broekhoven, J. L., Lange, A. M. C., Van der Rijken, R. E. A., Asscher, J. J., Van Domburgh, L., Van Santvoort, F., Simons, I., & Scholte, R. H. J. (2021). Predicting levels of family-centered care and the use of systemic interventions in secure residential youth care. Submitted.

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Rovers, A., **Blankestein, A.**, Van der Rijken, R., Scholte, R., & Lange, A. (2019). Treatment outcomes of a shortened secure residential stay combined with multisystemic therapy: A pilot study. *International Journal of Offender Therapy and Comparative Criminology*, 63(15-16), 2654-2671. <https://doi.org/10.1177/0306624X19856521>

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About the author

Annemarieke Blanckstein (1990) was born in Tiel and raised in Maurik, Gelderland. Between 2002 and 2008 she obtained her First Certificate in English, International Baccalaureate, and VWO diplomas from the Revius Lyceum Wijk bij Duurstede and Revius Lyceum Doorn, Utrecht. In 2009, Annemarieke spent six months of her gap year volunteering as a teaching assistant in Nakuru, Kenya, following which she co-founded the International Non-Governmental Organisation (INGO) Nakuru Children's Project (www.nakuruchildrensproject.org.uk). In 2012, Annemarieke obtained her Bachelor of Science degree in Pedagogical Sciences from Utrecht University and in 2014, she obtained her Master of Science degree in Pedagogical Sciences, specifically in Youth, Education, and Society (with a specialisation in International [Pedagogical] Development). In 2015, Annemarieke started working for the Viersprong, Netherlands Institute for Personality Disorders as a Junior Researcher. From 2017, the research described in this thesis became part of her PhD in Developmental Psychology at the Behavioural Science Institute of the Radboud University. In 2020, she was promoted to Project Manager MST-ID and the position of Researcher at the Viersprong. As of September 2020, she also works as a Postdoc Researcher for the Knowledge Network Youth South-Limburg and the Department of Social Medicine at the Faculty of Health, Medicine, and Life Sciences of the Maastricht University. Meanwhile, Annemarieke continues volunteering as the Chair of the Nakuru Children's Project Foundation (www.nakuruchildrensproject.org).

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"If you want to go fast, go alone. If you want to go far, go together."

—African Proverb

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