Age of onset of disruptive behavior of residentially treated adolescents

Boer, S.B.B. de

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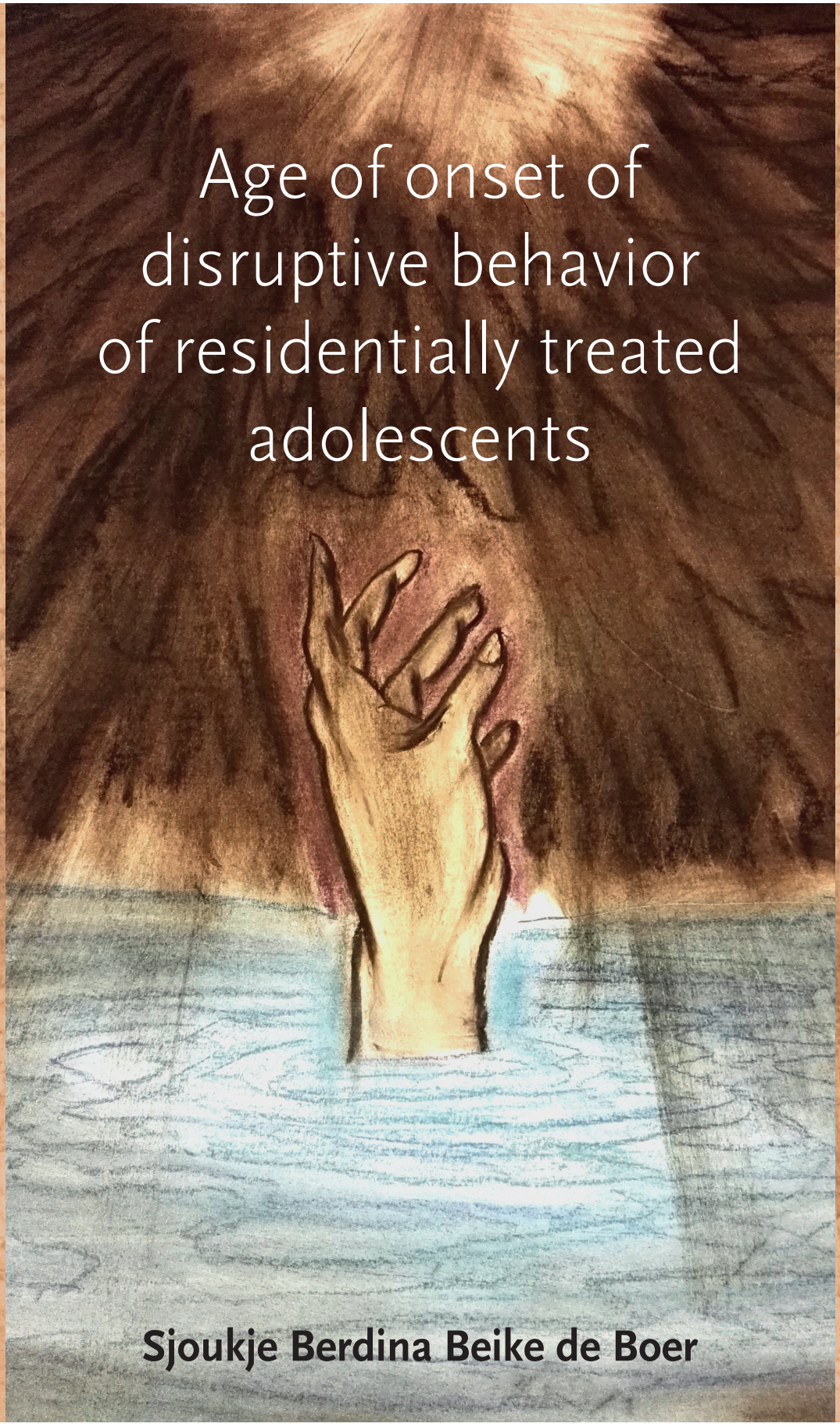

Sjoukje Berdina Beike de Boer

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The study of this thesis is part of a comprehensive, unique, and ongoing program-evaluation study conducted at De Fjord, center of Orthopsychiatry and Forensic Youth Psychiatry, that started as early as the founding of the institution in 1995.

Colofon

ISBN: 978-90-77877-22-7

Cover design by: Denise

Printed by: GVO drukkers & vormgevers, Ede

 Financial support for the publication of this thesis by the Parnassia Academy (part of Parnassia Psychiatric Institute) and Leiden University is gratefully acknowledged.

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PROEFSCHRIFT

ter verkrijging van de graad van Doctor
aan de Universiteit Leiden,
op gezag van Rector Magnificus prof. mr. C.J.J.M. Stolker,
volgens besluit van het College voor Promoties
te verdedigen op woensdag 6 februari 2019
klokke 13.45 uur

door

Sjoukje Berdina Beike de Boer
geboren te Rijnsaterwoude
24 december 1972

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The artwork on the cover was made at De Fjord during art therapy, by a girl for whom fear is a big theme. Her basic strategy is to avoid as much as possible. When she is overcome by fear, she flees. When it comes to fear, it quickly becomes the mind that speaks. She fires all explanatory models to the listener. Therefore we agreed with her to thoroughly examine that fear, without explaining it. How does it look? How does it feel? She has made a number of artworks, large and with material outside her comfort zone to come to her feeling as much as possible. This artwork obviously speaks for itself. The engulfing, the having no control over...
The goal is to get to know the fear a bit more, to embrace it perhaps, so she can become less afraid of the fear. To know that it comes and goes again ...

Her name is Denise

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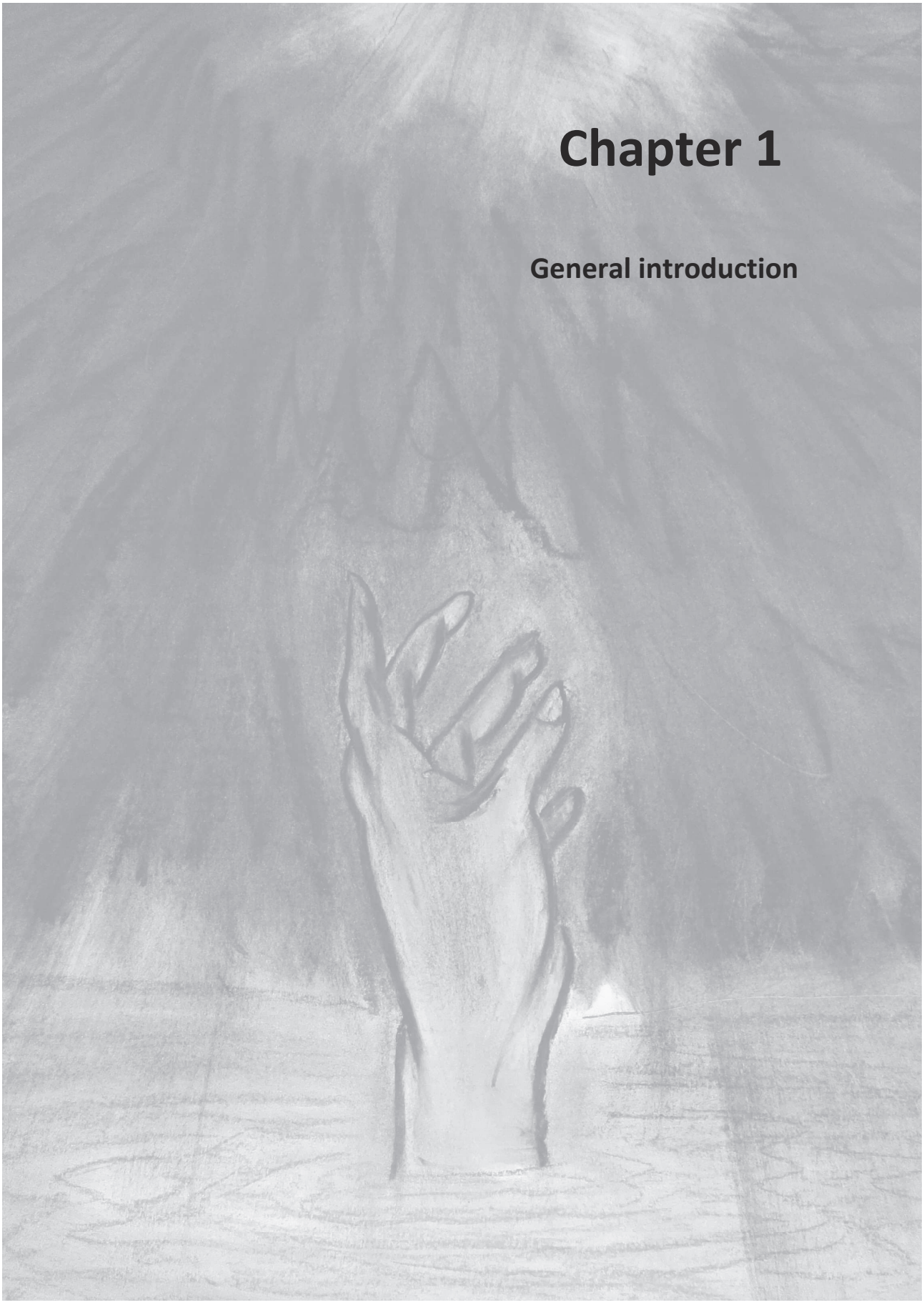
An artwork about perfection, how ugly and obstructive the craving for perfection can be. To break everything that has been made, or to not even start in the knowledge that it will never be perfect. Knowing that it does not have to be perfect, but that the feeling and the thought are so strong. That it is not allowed to fail. Within schema therapy this is an internalized critical side.

Chapter 1

General introduction



The present thesis aimed at identifying subgroups based on the age of onset of disruptive behavior within a clinical cohort of youths with both psychiatric disorders and severe disruptive behavior. The question was, whether the distinction in Life-course persistent and Adolescence-limited antisocial behavior (Moffitt, 1993; Moffitt, Caspi, Dickson, Silva, & Stanton, 1996) was relevant for clinical practice. After dividing the clinical sample into subgroups contrasting early-onset disruptive behavior (i.e., disruptive behavior prior to age 12) versus adolescent-onset disruptive behavior (i.e., disruptive behavior after age 11), subgroups were related to proximal (i.e., dropout, and psychosocial functioning at discharge) and distal outcomes (i.e., social functioning a year after discharge). It was hypothesized that the outcomes for individuals with early-onset (EO) disruptive behavior would be less satisfactory compared to individuals with adolescent-onset (AO) disruptive behavior, as they probably have a higher chance at dropout and also because their disruptive behavior has higher likelihood of being persistent. Therefore it was expected that, once they were in treatment, their problems would be enduring. In order to optimize outcome for adolescent psychiatric inpatients with severe disruptive behavior, treatment must address the needs of the individuals to whom the treatment is targeted (see e.g., Andrews & Bonta, 2010). In this light it is not only important to examine the factors that contribute to treatment success and symptom reduction, but also the factors that contribute to reducing dropout. Differentiation in subgroups, for instance based on age of onset of disruptive behavior, may benefit intervention and may eventually result in more individualized and appropriate intervention and as a consequence better treatment results (Vermeiren, 2003).

Orthopsychiatry

In the nineties of the last century, De Fjord was founded as the first center for orthopsychiatry in The Netherlands. This was the result of a need for specialized treatment of adolescents with a complex combination of problems, who for instance had been rejected or expelled by institutions for youth psychiatry because of the severity of their disruptive behavior, or could not be placed in a judicial youth institution because of the psychiatric problems. The term orthopsychiatry may be somewhat confusing, since it originally and internationally means treatment of mental

disorders with emphasis on prevention during childhood. In case of De Fjord, it entailed a definition that did not explicitly focus on prevention. Orthopsychiatric treatment focusses on youth with psychiatric disorders combined with severe disruptive behavior, in a firmly structured environment.

Initially, De Fjord had been granted an experimental status for five years and had to acquire subsistence rights. Therefore, from the opening in November 1995, program evaluation research was performed to gain insight into characteristics of the population of the facility and into intervention outcome. The research questions concerned were: whether the sample met the predefined characteristics (e.g., previously being treated elsewhere, having both psychiatric problems and disruptive behavior), to what extent treatment goals were attained, and what the psychosocial functioning of the former inpatients was in the year after discharge (follow-up). This initial evaluation led to a report on which basis De Fjord was granted structural funding by the Ministry of Health (Bruinsma & Boon, 2001).

After the justification of its existence, the research at De Fjord continued, because it proved to generate valuable knowledge about the target group. Research data already available since 1995 was extended, although the focus of the research changed. Beside maintaining the existing research questions, the research specifically aimed at differentiation within the inpatient group.

Differentiation: age of onset of the disruptive behavior

The psychiatric disorders as well as the disruptive behaviors of the youngsters treated at De Fjord were diverse, and therefore resulted in a heterogeneous sample. Previous research among a subsample (n=65) indicated that although many individuals seemed to benefit from the treatment, there was a group that performed poorly (Bruinsma & Boon, 2001). About one third of the subsample had terminated treatment prematurely (withdrawal 15.4%, expulsion 18.5%), indicating that for part of them the treatment did not even start. This finding stimulated further research into differentiation of the sample, in order to be able to identify the non-responding group at an early stage. The question even arose whether this group was treatable, or whether other treatment was designated. If it were possible to identify this group in

advance, therapists would for instance be able to adapt the treatment for this particular group.

During this same period, around the turn of the century the implications for clinical practice of the epidemiological research of Moffitt and colleagues concerning the age of onset of disruptive behavior received increasing attention (Moffitt, 1993, 2003; Moffitt & Caspi, 2001; Moffitt et al., 1996). In Moffitt's dual taxonomic model, a distinction was made between two groups: individuals with Life-Course-Persistent (LCP) versus those with Adolescence-Limited (AL) antisocial behavior. A review indicated that in the decennia that followed, this distinction was (albeit roughly) replicated in many studies (Jennings & Reingle, 2012). The underlying mechanisms leading to LCP behavior are presumed to be different from those leading to AL disruptive behavior, with LCP behavior being more tenacious (Moffitt, 1993, 2003; Moffitt et al., 2008; Moffitt, Caspi, Harrington, & Milne, 2002). This was probably one of the reasons why Moffitt initially suggested that, contrary to individuals with AL antisocial behavior, LCP individuals would not benefit from treatment once the conduct problems had persisted into adolescence (Moffitt et al., 1996). Of course, the assumption that the LCP individuals were untreatable was contrary to the view of most healthcare professionals and policy makers. A few decades later, these assertions have been revised and Moffitt stated that during adolescence, both LCP and AL groups need intervention. However, she stated that attrition rates would differ for both groups. Also, she argued that both groups require different intervention goals and approaches (e.g., Moffitt et al., 2008). This was in line with Frick (2016), who indicated that specific interventions may be particularly effective for youth on the adolescent onset pathway, while other interventions may be more effective for (a subgroup of) children with childhood-onset conduct problems. Interestingly, to our knowledge, thus far not much research has been conducted in clinical practice to support these assertions. Knowledge of the effectiveness of interventions specifically regarding childhood onset antisocial behavior in clinical practice is mostly based on studies with a younger population (Beauchaine, Webster-Stratton, & Reid, 2005; Hawes & Dadds, 2005; Houghton et al., 2017; Kolko et al., 2009; Webster-Stratton, Reid, & Hammond, 2004). These studies thus cannot be related to the assertions of Moffitt, because they do not target disruptive behavior in adolescence.

Methodological complicating factors

There were several complicating factors to be dealt with in the operationalization of the LCP and AL concepts in a clinical context. On average, youngsters are 17 years old when they are admitted to De Fjord, making it hard to distinguish the LCP and AL groups on the presentation of the disruptive behavior at that time, as both groups were shown to present similar in frequency and seriousness of offending during adolescence (Moffitt et al., 1996).

In general, clinically admitted individuals are not followed from birth and therefore the classification had to be made based on information collected retrospectively (e.g., information from files or recollected information). Also, since the course of the participants' future disruptive behavior was as yet unknown, the terms LCP and AL could not be used. For this reason, in the present thesis the term early-onset (EO) was used for adolescents admitted to the facility that currently displayed severe disruptive behavior, and who also had shown behavioral problems during childhood. They were expected to be at increased risk of heading for the LCP pathway. Adolescents with current severe disruptive behavior who had not displayed disruptive behavior during childhood, were labeled as adolescent-onset (AO). Presumably, they would develop as those in the AL group, even though it is not guaranteed that AO is equivalent to AL. However, it has been found that some retrospective measures (e.g., psychosocial variables) have low levels of agreement with prospective measures, which directly affects the reliability (Henry, Moffitt, Caspi, Langley, & Silva, 1994). It cannot be ruled out that some adolescents classified in the AO group have not exhibited early-onset disruptive behavior (see e.g., Van Domburgh, Vermeiren, Blokland, & Doreleijers, 2009; Vermeiren, 2003). This may be related to the fact that retrospective classification increases the probability of a recall bias. In this light, several studies have questioned the usefulness of the developmental theory for clinical practice (Fairchild, Van Goozen, Calder, & Goodyer, 2013; Fernández-Montalvo, López-Goñi, Illescas, Landa, & Lorea, 2008; Vermeiren, 2003). However, the level of agreement does seem to depend on the type of behavior that is exhibited . The agreement on the age of onset between prospective and retrospective measures of delinquency for instance may vary depending on the seriousness of the offences (Kazemian & Farrington, 2005). In the present thesis, these concerns were obviated to

some extent by using multi-informant information and not solely relying on (subjective) recall of events, but also on reliable, objective, established occurrences of events. Because retrospective findings may not be as reliable as prospective findings, it cannot be excluded however that the inherent limitations in the operationalization of the retrospective (EO and AO) and the prospective (LCP and AL) group differentiations have influenced the results of this thesis.

Moreover, even if it were possible to assess age of onset reliably, it would still be complicated to compare with other studies, since studies on age of onset often differ in the operationalization of key concepts. Disruptive or antisocial behavior itself in particular, is heterogeneous. There are several ways in which such behavior can be described, for instance by including delinquent, aggressive or violent, externalizing or rule breaking behavior. These concepts partially overlap, while not being completely similar. At present, different operationalizations are used in different studies. Sanford and colleagues (1999) for instance used the age of the first conduct disorder symptom, while others required an actual diagnosis of CD and/or ODD (e.g., Kolko et al., 2009; Webster-Stratton et al., 2004), suspension records (e.g., Houghton et al., 2017), conviction records or arrest records (e.g., Dean, Brame, & Piquero, 1996; Patterson & Yoerger, 1997; Piquero, Daigle, Gibson, Leeper-Piquero, & Tibbetts, 2007) or the self reported (e.g., Dandreaux & Frick, 2009) or official age of the first offence (e.g., Carroll et al., 2006; Tibbetts & Piquero, 1999). While these groups overlap substantially, differences are noteworthy. In specific, not all juvenile delinquents fulfill the characteristics of conduct disorder, while conversely, not all juveniles with a conduct disorder will be involved in crimes which will lead them into criminal law. In the present thesis, the classification of Frick was used for the operationalization of disruptive behavior. Frick and colleagues (1993) conducted a meta-analysis, that resulted in a classification in which all types of disruptive behaviors were contained, covering an overt/covert dimension, as well as a destructive/non-destructive dimension. The term disruptive behavior encapsulated antisocial behavior (i.e., status offences, and property violations), oppositional behavior and aggressive behavior, and roughly corresponds with the behaviors covered by disruptive behavior disorders as used in the DSM-IV (American Psychiatric Association, 1994; APA, 2000).

Also, studies differ in the way disruptive behavior is assessed. Some studies for instance use self report measures (e.g., Dandreaux & Frick, 2009; Sanford et al., 1999) while others use official records of the first offence or conviction (e.g., Carroll et al., 2006; Dean et al., 1996; Tibbetts & Piquero, 1999). And even within studies that use self report measures, there are differences in respondents and in the measures used. Some studies use self-reporting of the youngster (e.g., Veenstra, Lindenberg, Verhulst, & Ormel, 2009), while other studies use self-reporting by parents or teachers (e.g., Eyberg, Nelson, & Boggs, 2008; Frick et al., 1993; Moffitt, 1993; Sanders, Markie-Dadds, Tully, & Bor, 2000).

Another complicating factor relates to the age of onset. Inconsistency characterizes the operational definition of early-onset versus adolescent-onset, with age cut-offs ranging from 10 (APA, 2000; Sanford et al., 1999) to 14 (Tibbetts & Piquero, 1999). Choices are often made based on pragmatic criteria (Simons, Wu, Conger, & Lorenz, 1994), and are related to the data available. When comparing studies, it is crucial to be aware of these differences (Dean et al., 1996). In the present thesis, disruptive behavior starting before age 12 was considered early-onset (EO), and disruptive behavior starting at age 12 or later was considered adolescent-onset (AO). This age cut-off was in accordance with Moffitt (1993; Moffitt et al., 1996), and with Dean (Dean et al., 1996), who found that differences between the EO and AO groups were evident when the threshold was set to age 12.

Not surprisingly, the research of Moffitt and colleagues has substantially influenced the DSM-IV classification of conduct disorder, resulting in two subtypes: Childhood-onset and Adolescent-onset conduct disorder (American Psychiatric Association, 1994; APA, 2000). Already for decades, academics and practitioners alike are searching for criteria to assess severity of conduct disorder. Although the DSM age of onset subtyping probably has considerable overlap with the EO and AO constructs of the present thesis, they are not the same. In the case of Childhood-onset conduct disorder, the diagnostician has to indicate whether the individual shows at least one symptom characteristic of conduct disorder prior to age 10 years. In the present thesis, a specific type of disruptive behavior (Frick et al., 1993) was considered present based on the age at which help was sought because of the behavior, special education was

indicated due to the behavior, or when the youngster committed a specific criminal offence (De Boer, Van Oort, Donker, Verheij, & Boon, 2012).

Dropout

While the vast majority of treated individuals are better off than their untreated counterparts (Duncan, Miller, Wampold, & Hubble, 2010; Eyberg et al., 2008), this does of course not mean that treatment aimed at reducing behavioral problems is effective for everyone. However, the effectiveness of interventions aimed at reducing disruptive behavior among children and adolescents is substantial, with effect sizes between .23 and .51 (Bennett & Gibbons, 2000; McCart, Priester, Davies, & Azen, 2006; Serketich & Dumas, 1996). Therefore, it can at least be stated that treatment increases the likelihood that psychiatric and behavioral problems improve (Kazdin, 2016; Kazdin, Mazurick, & Siegel, 1994; M. Shaw et al., 2012). Continued behavioral problems on the other hand, increase the likelihood of leaving school without a qualification, engaging in delinquent activities, abusing drug and alcohol, and adult unemployment. It is therefore imperative to reduce dropout, since psychiatric disorders or behavioral problems are likely to persist or even worsen later in life (De Haan, Boon, De Jong, Hoeve, & Vermeiren, 2013; Moffitt et al., 2002). Assuming that most individuals signing up for treatment, actually are in need of treatment, dropout percentages found in literature are alarmingly high. A meta-analysis showed that among non-residential child and adolescent outpatients dropout percentages ranged from 28 to 75% (De Haan et al., 2013). In a sample similar to the participants in the present thesis, the dropout rate was 59% (Van den Reijen, Nijman, Orobio de Castro, & Schmitz, 2013).

Considering the characteristics of the orthopsychiatric sample we focus on, dropout was expected to be a major issue. Especially since many client characteristics that are associated with dropout prevail in clients with disruptive behavior. In a meta-analysis (De Haan et al., 2013) on dropout in non-residential outpatient settings for instance, several pre-treatment client characteristics have been listed, i.e., the presence of an externalizing disorder, intensity of self reported externalizing and total problems, ethnic minority status, gender (male), lower academic functioning, higher

number of diagnoses, referral source, and lower social functioning. These characteristics prevail among the youngsters of the orthopsychiatric institute.

To our knowledge, not much is known about characteristics associated with dropout within youth treated for disruptive behavior. The aforementioned distinction in LCP and AL antisocial behavior may play a role with regard to dropout, as was suggested by Moffitt (2008) stating that "Clinical trials are needed to identify whether potential CD (Conduct Disorder) diagnostic criteria can predict treatment compliance or treatment response (p.31)". Among youth treated for severe disruptive behavior, it may be of relevance to distinguish by types of dropout (see Van den Reijen et al., 2013), i.e., withdrawal and expulsion. This distinction based on how treatment was terminated is in line with the dropout definition of De Haan and colleagues (De Haan et al., 2013). In regular psychiatric settings, most dropouts will be withdrawals (i.e., those who terminate treatment against the advice of the therapist). Although this will also hold for many individuals dropping out of orthopsychiatric treatment, it is to be expected that a number of them will be expelled because they continue to display unremitting disruptive behavior. Differentiating between types of dropout may be important in predicting, addressing and preventing dropout and may particularly be relevant to all settings working with conduct disordered youths and other samples with a high incidence of disruptive behavior. It may for instance also be that individuals with EO disruptive behavior have higher chance at expulsion.

Substance Use

Substance use is common among adolescents. At the time this study, in The Netherlands about half of all youngsters age 17 or 18 had used cannabis (Verdurmen et al., 2011). Especially among groups of troubled youth (i.e., loitering youth, homeless youth, truants, and youths under the supervision of youth welfare or judicial institution) the prevalence is substantial. Among adolescents admitted to judicial youth institutions for instance, percentages of 70% were found (Van Laar et al., 2014). There is a strong relation between substance use and antisocial behavioral (conduct disorder) (Disney, Elkins, McGue, & Iacono, 1999; Grant et al., 2015; Kendler, Prescott, Myers, & Neale, 2003) and it has even been found that early-onset conduct problems are a strong risk factor for adolescent problem cannabis use (Heron et al., 2013). With

all this in mind, it was very likely that substance use would occur pervasively among the youngsters admitted to De Fjord. Previous research already indicated that substance use was related to attrition and treatment outcome in youth treated for severe disruptive behavior combined with psychiatric disorders (Boon & De Boer, 2007).

In this light, it has to be noted that in the early days of de Fjord, in the nineties of the previous century, it was generally accepted that substance usage and therapy could not be combined. Therefore, substance usage was initially prohibited and treatment of addiction was primarily aimed at repressing substance use. Not long after, it became clear that many of the orthopsychiatic youngsters had difficulties with substance use and the treatment philosophy became more nuanced and relapse prevention became an important part of the treatment.

Study sample and design or methods

In the beginning, De Fjord was a residential institution for 24 youths. Over the years the facility has expanded with an extra eight clinical "beds" and a department for 20 outpatients. Participants involved in the studies of the present thesis were the youths of the residential departments of De Fjord (age 15.3 – 20.7), and their parents.

All youngsters admitted from the start of the facility in 1995 were approached to participate in the study. According to legislation and the institution's policy, after a personal description of the study to the subjects, written informed consent (asking for the use of their information for research) was obtained. All youngsters agreed to participate and in concordance with the institutional policy, they participated without receiving incentives or rewards. In the present thesis, data were used of those who had been discharged up to and including 2012 (N=294).

According to the study protocol (Bruinsma & Boon, 2001), measurements were conducted at intake (T0), within the first weeks of admission (T1), in the week prior to discharge (T2) and at follow-up (one year after discharge, T3). Although it was the intention that the follow-up measurements took place one year after discharge, in many cases more time was required to succeed. In some cases, much effort was needed to trace the youngster for the follow-up measurement. All this led to a follow-up that took place on average 18 months after discharge.

The measurements were conducted by research assistants. These research assistants were psychology students in the final year of their master program, and were trained and supervised by the main researcher. The information was gathered on standardized forms used in the context of the ongoing program evaluation research. Some of the data originated from patient interview, some were collected through file review and some by self-report instruments (client ratings, parent ratings).

At T0 the participants filled in the Symptom Checklist (SCL-90-R)(Arrindell & Ettema, 2003) and their parents filled in a Child Behavior Checklist (CBCL)(Achenbach & Rescorla, 2001). At T1 participants filled in the SCL-90-R and Youth Self Report (YSR)(Achenbach & Rescorla, 2001; Verhulst, Van der Ende, & Koot, 1997) and were interviewed on socio-demographic information (e.g., sex, age, ethnicity), substance usage (drugs and alcohol) and previous criminal offending. The period for which the information was collected was from birth to admission. The SCL-90-R was administered at all measurements to obtain an indication of the psychological functioning at that specific time. At T2, the youngsters filled in the SCL-90-R and YSR and information was gathered by interview (e.g., residence, school, work after discharge). When involved, parents were approached with the request to fill in the CBCL and the Tevredenheidlijst Ouders Residentiele Jeugdhulpverlening (TOR-J) (Boon, De Boer, & De Haan, 2010). At T3, on average one and a half year follow-up (*M* = 1.51 years, *SD* = 0.69, min. 0.91 - max. 4.55 years), the participants filled out the SCL-90-R and YSR, and were interviewed on living conditions, daytime activities (e,g., school, work), substance usage, and criminal offending. The period for which the information was collected was from discharge to follow-up. To obtain a fair image of how the participant was doing and to ensure the reliability of the data, the interview at follow-up took place at the residence of the participant (see Figure 1).

The research initiated at De Fjord can be seen as Routine Outcome Measurement (ROM) avant la lettre. At fixed measurement points before (intake), during (admission) and after treatment (discharge, and one and a half year follow-up) the results of the intervention were monitored and this outcome was reported on a regular basis to the management and the therapists. In doing so, the results could contribute to the improvement of the treatment.

Outline of the thesis

As described before, the present thesis aimed at identifying subgroups based on the age of onset of disruptive behavior in a heterogeneous group of youths with a combination of psychiatric disorders and severe disruptive behavior. Subsequently, these subgroups were related to proximal and distal outcomes. The starting point was the distinction between LCP and AL antisocial behavior as described by Moffitt and colleagues (1993) based on a general population sample followed from birth until adulthood. Contrary to this prospective study, the sample in the present thesis was first assessed by us at adolescent age. All participants displayed severe disruptive behavior at the time of their admission (mean age 17). Based on that behavior, it was not possible to distinguish individuals with potential LCP or AL disruptive behavior. Thus, one of the first challenges of the present thesis was to find out whether it was possible make a distinction in onset of disruptive behavior in retrospect. In **Chapter 2**, we examined youth health care files of a subsample (n=24) of the 294 participants. In these files, that had been kept up from early infancy, we focused on written comments made by health professionals or teachers at the time that the respondents were five years of age. In these files, professionals were not specifically questioned about disruptive behavior, they just had the opportunity to indicate any striking features of the child. We compared the files of the subsample with those of a control group, who later on, in adolescence had no reported history of behavioral or psychiatric problems. The aim was to examine whether early in their lives both groups differed on reported signs of disruptive behavior.

The aim of **Chapter 3** was to examine whether individuals with EO disruptive behavior differed from individuals with AO disruptive behavior on childhood characteristics. Childhood characteristics were considered that were associated with LCP antisocial behavior and we examined whether they were also present in youths classified as EO.

It was suggested that individuals with LCP antisocial behavior would be less susceptible to treatment compared to individuals with AL antisocial behavior (Moffitt et al., 2008; Moffitt et al., 1996), however, this had never been examined. Therefore, the aim of **Chapter 4** was to compare the outcome (i.e., reduction of symptoms

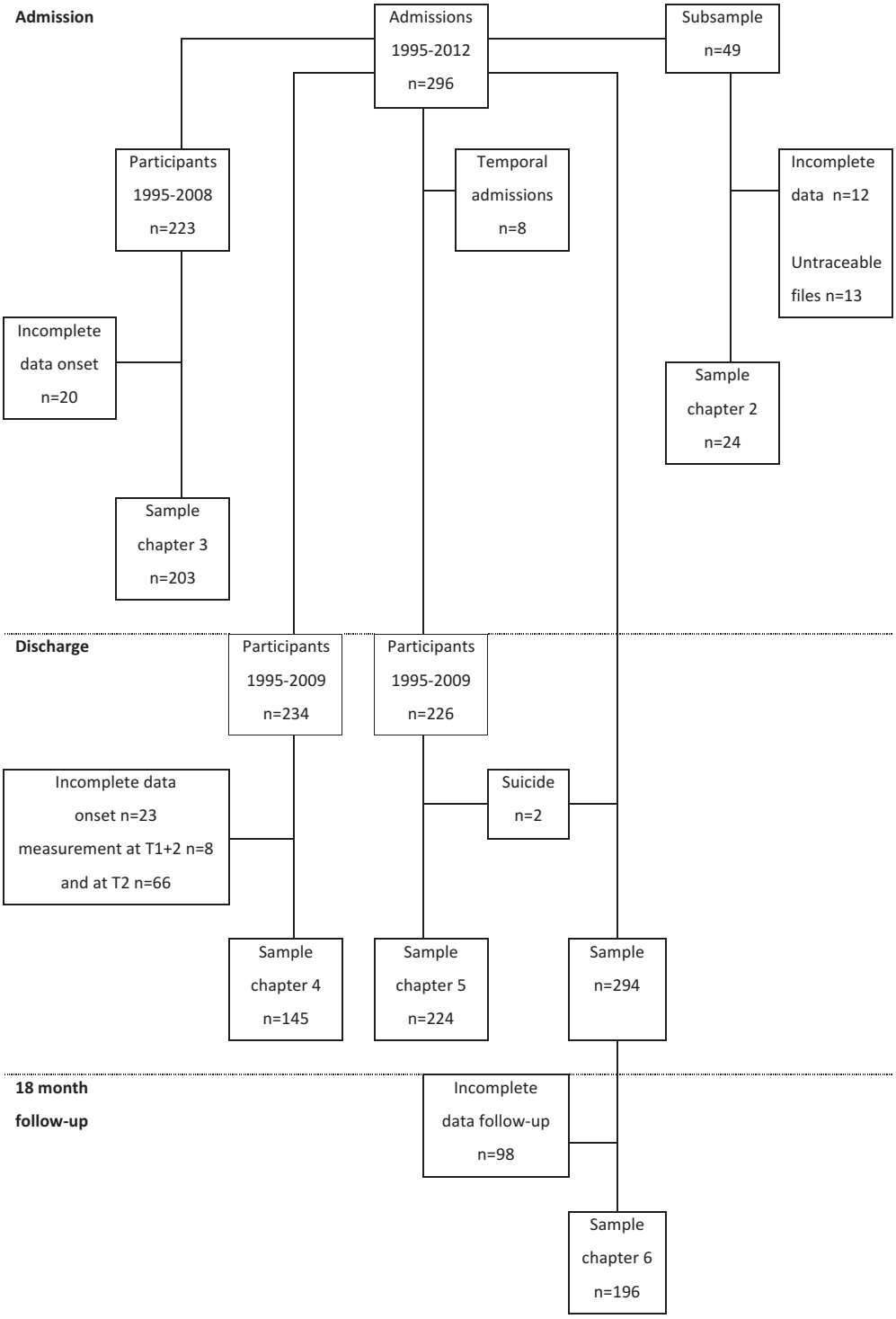
between admission and discharge on the SCL-90-R) of individuals with EO and AO disruptive behavior.

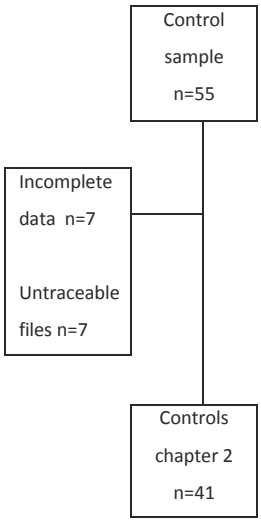
The majority of known pre-treatment characteristics predictive of dropout are related to disruptive behavior (De Haan et al., 2013). Surprisingly enough, little is known about the factors predicting dropout among adolescents treated for severe disruptive behaviour, despite the fact that it is very likely that dropout is a major problem in this specific group. Therefore, the aim of **Chapter 5** was to examine pre-treatment characteristics predictive of dropout within individuals with disruptive behavior. Beside EO disruptive behavior, specific types of disruptive behavior and their relation to dropout were considered.

As follow-up research focuses predominantly on patients who completed the treatment, we lack information on the outcomes of treatment dropouts. Therefore in **Chapter 6**, the long term outcome of the dropouts and completers of the orthospychiatric facility was examined. We investigated whether completion of treatment could predict good general daily functioning 18 months after discharge. To control for the possible effect of the factors (of Chapter 5) that had been associated with dropout in our sample, the influence of EO disruptive behavior, cannabis usage prior to admission and male sex was also examined.

Finally, **Chapter 7** provides a general discussion of main findings and conclusions of chapters 2-6. The results found in the previous chapters are summarized and strengths and limitations are discussed. This thesis concludes with some implications for clinical practice and recommendations for future research.

Figure 1: Flowchart of the participants of the studies




Control sample n=55
Incomplete data n=7
Untraceable files n=7
Controls chapter 2 n=41

A heart is a frequently used symbol in art therapy. This work shows damaged hearts, symbolizing a lack of love, rejection, broken trust. It represents not so much a broken love relationship, it is more of a symbol of how the heart has been damaged after the difficult years of the maker's youth.

Chapter 2

Can youth health care scans at the age of five discriminate between adolescent psychiatric inpatients with severe disruptive behavior and a non-treatment group?

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Albert E. Boon
Anna M. de Haan

Psychology, 2013, 4 (10), 782-786.
(DOI) 10.4236/psych.2013.410111

Abstract

The aim of the study was to examine whether adolescent psychiatric inpatients (n=24) with severe disruptive behavior could be discriminated from a control sample (n=41) based on information about disruptive behavior recorded early in their lives. Remarks by teachers and health professionals made in youth health care files when the respondents were five years of age were used. Both teachers and professionals made significantly more remarks regarding disruptive behavior in the files of the future patients. The files of the patients also contained more remarks about other behavior. The sensitivity and specificity of behavior at the age of five to predict future treatment was satisfactory. The majority of the inpatients belonged to the prototypical life-course-persistent group that is known from epidemiological studies.

Keywords: Adolescent psychiatry, Life-course-persistent, Antisocial behavior, Youth health care files

Introduction

Epidemiological research (Moffitt, 1993, 2003) has shown that a relatively small part of the population (6.2%) was engaged in antisocial behavior at a very young age which persisted at every stage in their life. This group was labeled life-course-persistent (LCP). A larger group (23.6%) was found to be involved in antisocial behavior during adolescence only and therefore their behavior was labeled adolescence-limited (AL). Although during adolescence both groups did not differ in frequency and seriousness of offending, Moffitt (Moffitt, 1993, 2003; Moffitt & Caspi, 2001) argued that they differed in etiology, developmental course, prognosis and classification of their behavior as either pathological (LCP) or normative (AL). Extensive support for these prototypes and their relevance for etiology, developmental processes, and prevention priorities was found (Odgers et al., 2008). By labeling children with early onset of antisocial behavior as "life-course-persistent", the epidemiological researchers implied that this group would hardly benefit from treatment or at least are in need of more intensive treatment. However, thus far this consequence has barely been tested in treatment research, nor have findings from epidemiological research been put to practical use for inpatient or forensic settings.

Present study concerned adolescents with antisocial behavior that were treated in a residential orthopsychiatric treatment facility for severe disruptive behavior combined with psychiatric disorders. For prognostic purposes it would be relevant to know whether these inpatients belonged to the LCP or the AL group. Therefore the question arose whether it was possible to determine if the patients' disruptive behaviors were present in early life based on retrospective data. At the moment of treatment, no reliable data about their disruptive behavior earlier in life nor about the age of onset of this behavior were available. Anamnestic information gathered at admission is often subjective and unreliable: patients themselves are no reliable source on their early history and the parents' view on their child's development is often biased by their child's current condition. Therefore more objective sources of information on the child's early behavior were required. For the present study the information about the childhood disruptive behavior was drawn from youth health care files to examine its use for diagnostic purposes. The information in these files was gathered at fixed points in the child's life by youth health care professionals. In the

Netherlands, Youth Health Care (YHC) offers basic care to all children from birth until the age of nineteen. This system already exists for over a hundred years and is unique in the world. The care is offered free of charge and 95% of all children is reached. YHC is aimed at the growth and development of the child and monitors the physical, mental, social and cognitive development of children. Traditionally, the emphasis was on the physical development of the child, but in recent years, educational and psychosocial problems were also taken into account (AJN, 2009). From age five on, the schoolteacher of the second grade is asked which children need extra attention. If a child is in need of extra attention, the remarks of the teacher are recorded in the YHC files.

Aim of the study

The question addressed in this paper was whether the distinction between subjects who received residential treatment for disruptive behavior during adolescence and a non-treatment control group could be made on the basis of information in the YHC files gathered at an early age. Remarks indicating disruptive behaviors at the age of five of the patients and a control group were compared to determine whether the patients already displayed more disruptive behavior in early childhood. It was hypothesized that at the age of five more signs of disruptive behavior would have been reported by the YHC workers as well as the teachers in the YHC files of the inpatients compared to the non-treatment group.

Currently some research has been conducted to determine whether the epidemiological findings regarding LCP antisocial behavior apply within a clinical sample (De Boer, Boon, Verheij, & Donker, 2013; De Boer et al., 2012; De Boer, Verheij, & Donker, 2007). The question arose whether the distinction between individuals on the LCP and AL trajectories of antisocial behavior could be made in an inpatient sample of adolescents treated in a orthopsychiatric facility, based on retrospective data of youth health care files. This is relevant because in orthopsychiatric settings adolescents are treated who are contraindicated for regular psychiatric treatment because of their severe disruptive behavior. During adolescence these inpatients meet the broad criteria that are used in epidemiological studies on antisocial behavior. Therefore, if this behavior started early in life, they meet the criteria of the LCP group. It has been

demonstrated that orthopsychiatric treatment is effective (Boon & De Boer, 2007), so when inpatients could be assigned to the LCP group, this would indicate that they are treatable and for that reason the term life-course-persistent is too pessimistic. The information about disruptive behaviors used to assign the patients to the LCP group is taken from notes written down in their YHC files when the children were about five years of age. Due to the complexity of the disruptive behaviors and psychiatric disorders of the sample, it was expected that a relatively high prevalence of LCP would be found.

Method

Setting

Present study was conducted at De Fjord, an orthopsychiatric and forensic psychiatric youth facility near Rotterdam. In The Netherlands, orthopsychiatric facilities offer treatment to adolescents and young adults who have psychiatric disorders combined with severe disruptive behavior. Besides day treatment and outpatient treatment, De Fjord offers a specialized treatment program to 32 adolescent inpatients. The treatment program consists of various therapies and training activities, for instance, cognitive behavioral therapy, psycho-motor therapy, art therapy, drama therapy, family therapy, social skills training, aggression regulation training, job training, and education. A cognitive-behavioral treatment model is applied with an emphasis on enhancement of social competence (Bartels, 2001) extended by elements of the scheme-based therapy (Young, Klosko, & Weishaar, 2004), as developed by Young (Young, 1990). The facility offers treatment to both boys and girls, but boys are the majority.

Sample/participants

The orthopsychiatric sample

Of the 49 inpatients that agreed to participate, only 24 health care files could be used. Of 13 patients (27%) the files could not be traced and of 12 patients (24%) the information about the examination in the second grade was missing. In the present study, the orthopsychiatric sample of which the YHC information could be used was comprised of 10 female and 14 male inpatients, born between 1983 and 1992 that

were admitted to De Fjord between 2001 and 2008. The average age at admission was 17.3 year (SD = 1.13 year; range 15-19 year). They were referred to the orthopsychiatric residential treatment facility by child and adolescent psychiatric institutions, youth care or judicial institutions. About a third was judicially imposed. The patients had an average 2.6 clinical diagnoses (axis I; range 1-5, SD = 1.24). Patients were diagnosed with conduct disorders, oppositional defiant disorder, schizophrenia and related disorders, mood disorders, pervasive developmental disorders and Attention Deficit Hyperactivity Disorder (APA, 2000). Although the level of intelligence (mostly measured at the institutions that requested the admission) of the sample was about average, compared to the general population the educational attainment was relatively low.

The control sample

The control group was selected from the general population and was matched to the inpatient sample based on gender and year of birth (between 1983 and 1992). Only respondents with no reported history of behavioral or psychiatric disorders were selected. It was attempted to trace 55 files, of those 7 (13%) could not be traced and of 7 files (13%) the information about the examination in the second grade was missing. The control group used in present study consisted of 25 males and 16 females.

Procedure

After a verbal description of the study to the subjects, written informed consent was obtained to gather information from their YHC files. Respondents of the patient group were informed that they could refuse cooperation without any consequence for their treatment. The YHC files, in which all information was recorded, were usually stored at the Municipal Public Health Service (MPHS) of the district where the child resided at the age of twelve. Every MPHS used the same file format, with standard (sub)headings to register notes (e.g., length, weight, illnesses, speech, hearing, temper tantrums). Of both samples, the YHC files were requested at the designated MPHS. The tracked files were viewed by the researchers at the office of the MPHS, and screened on remarks on behavior problems. Because many of the obtained files were incomplete on a later age, it was decided to focus the study on the

information of the health scans at the second grade (the nursery school part) of the Dutch school system. In the YHC procedure this was the first time that teachers were asked which children needed extra attention because of concerns about their health or behavior. Children were also examined by a doctor or nurse. In the present study the remarks of teachers and the amnesic information from the health care doctor or nurse were used. The YHC professionals had to use a format with defined headings: “Appetite”, “Sleep”, “Toilet training”, “Playing solo”, “Playing with others”, “General impression”, “Pathology” and “Psychosocial functioning”. Apart from the remarks written under these headings, the files also contained additional remarks on developmental issues that were considered relevant by the teachers and the health care professionals. All of these, often sketchy written, remarks were categorized by the researchers in four categories: “Remarks indicating disruptive behavior”, “Positive remarks”, “Neutral remarks” and “No remarks”. Examples of remarks indicating disruptive behavior were: “Bad concentration, doesn’t listen”, “Motivation and behavior problems”, “Black sheep because of aggression”, “Needs a lot of attention”, “Has many conflicts”, “Very noisy child”. All remarks like “Does very well”, “She likes school”, “Has many friends” were labeled positive. All other remarks like: “Wears glasses”, “Does often have a cold”, “Sight of left eye needs attention” were seen as neutral from the perspective of this study. The remarks were categorized without knowledge of the background (patient or control) of the respondent. The categorized remarks from teachers and health care practitioners concerning the inpatients and the controls were compared. Children with one or more “remarks indicating disruptive behavior” before or at age five were considered as possibly belonging to the LCP group.

Statistical analysis

All analyses were performed using the Statistical Package for the Social Sciences, version 17.01 (SPSS, 2008). Chi-square tests were used to examine differences in categorical variables. ROC-curves were calculated to investigate the sensitivity and specificity of the remarks from teachers and YHC professionals in discriminating the inpatient and the control group.

Results

Table 1

Comparison of health care professionals' remarks about inpatients and control group

	Inpatients		Controls		Total	
	n	%	n	%	n	%
Positive remarks	7	29	22	54	29	45
Remarks disruptive behavior	12	50	3	7	15	23
Neutral remarks	5	21	11	27	16	25
No remarks	0	0	5	12	5	8
Total	24	100	41	100	65	100

Both the number (χ^2 (1,65) = 15.1, p=.000) and the nature (χ^2 (3,65) = 19.2, p=.000) of remarks made by teachers (see Table 1) on the patients and on the control group differed significantly. The remarks made by the health care professionals (see Table 1) only differed in nature (χ^2 (3,65) = 17.1, p=.001) between patients and controls.

Subsequently, the remarks of the teachers and the health care professionals were compared (χ^2) and although there were large differences in the number of times any remarks were given, no differences were found between the two groups of evaluators. Less than thirty percent of the files of the control group contained remarks from the teachers, opposed to about eighty percent of the inpatients files (see Table 2).

Table 2

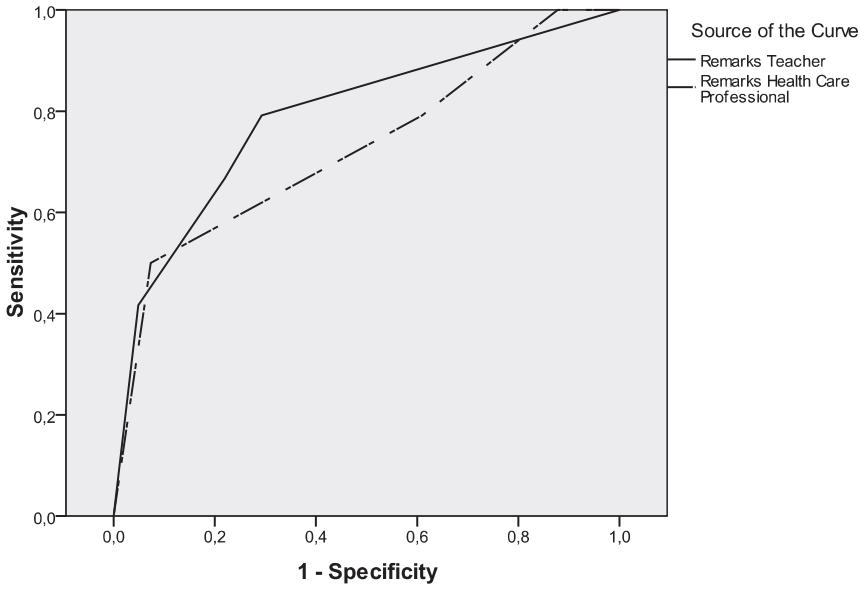
Comparison of teachers' remarks about inpatients and control group

	Inpatients		Controls		Total	
	n	%	n	%	n	%
Positive remarks	6	25	7	17	13	20
Remarks disruptive behavior	10	42	2	5	12	19
Neutral remarks	3	12	3	7	6	9
No remarks	5	21	29	71	34	52
Total	24	100	41	100	65	100

The percentage of teachers' remarks indicating disruptive behavior of the patients was eight times higher than that of the control group. Of the patient group, ten individuals (42%) had a remark indicating disruptive behavior, in the control group this was the case for two children (5%). For the health care professionals the difference in the number of remarks between the inpatient group and the control group was much smaller. This was probably due to the fact that the professionals had to fill in prearranged categories, while the teachers' remarks were only recorded when something was considered wrong with the child. The percentage remarks given by the YHC professional indicating disruptive behavior of the inpatients was almost seven times higher than that of the control group. Of the inpatient group twelve individuals (50%) had a remark indicating disruptive behavior, while for the control group this was the case for three children (7%).

Figure 1

ROC curves of the predictive value for residential treatment during adolescence of teachers' and health care professionals' observations of disruptive behaviour at age 5



To examine whether information from YHC files could be used as a predictor for orthopsychiatric treatment later in life, a ROC curve analysis was made (see Figure 1). The remarks of both teachers and YHC professionals were allocated to the following values: 1 “No remarks”, 2 “Neutral remarks”, 3 “Positive remarks”, 4 “Remarks indicating disruptive behavior”. Belonging to the inpatient group was the state variable. The area’s under the curve (AUC), indicating sensitivity (the probability that a child with disruptive behavior at the age of five will belong to the orthopsychiatric sample) and specificity (the probability that a child without disruptive behavior at the age of five will belong to the control group) was significant.

For the teachers’ remarks the AUC was .79 (p=.000, 95% CI = .67-.91), for the YHC professionals’ remarks the AUC was .73 (p=.001, 95% CI = .59-.86). The sensitivity of the teachers remarks was .42 and the specificity .70 when “remarks about disruptive behavior” was taken as a criterion. When “any remark of the teacher” was taken as the criterion, sensitivity was .79 and specificity .95. The sensitivity of the YHC professionals remarks was .50 and the specificity .92 when “remarks about disruptive behavior” was taken as a criterion. When “any remark of the doctor or nurse” was taken as the criterion, sensitivity was 1.00 and specificity .12.

Discussion

The theoretical framework of present study concerned the distinction between individuals with life-course-persistent and adolescence-limited antisocial behavior. In this light, the main goal of this paper was to examine whether an adolescent inpatient group differed from a matched, non-treatment control group on information about early disruptive behavior registered in youth health care (YHC) files. These files contained information that had been gathered at fixed times from birth to age nineteen, and were therefore considered usable to determine early-onset of disruptive behavior reliably. Because much information of a later age was missing in the files, the study focused on information of health scans at the second grade, when the infant was about five years of age.

The first finding was that of the inpatient group over half of the files could not be used, because either the files were untraceable or the information about the examination in the second grade was missing. Of the control group, the percentages of

untraceable or unusable data were about half as high. There may be several reasons why files were missing or incomplete. Parents may have refused to cooperate with the youth health care examination, or files can be untraceable because of frequent rehousing of the family or the child. It was unclear what happened to a file if a child was not at school, for instance in case of institutionalization. Although the exact reasons for untraceability of the files remained unknown, it should be considered as a first indication that the early lives of the children that would be institutionalized during adolescence were more turbulent and complicated than those of the controls.

Because the remarks of the teachers were only registered when he or she thought the child needed extra attention, the fact that majority of the inpatient group had a remark of any kind, compared to about only one third of the control group, is an indication that the inpatients already differed from their peers at a very young age. The fact that special attention had been asked for some children, but the remarks in the YHC file were positive or neutral, indicates that the files probably did not always adequately reflect the reason for extra attention.

For the inpatient group, both teachers and health care professionals have reported much more disruptive behavior. This indicates that, based on the observations at the age of five and the fact that the inpatients displayed severe disruptive behavior in adolescence, at least about half of the inpatients probably belonged to the LCP group. Only a minority (7%) of the control group displayed disruptive behavior at age five, and because the controls were selected on their absence of behavioral problems in adolescence, the problems mentioned at the age of five were probably temporarily. The data do not allow conclusions regarding children who did not display disruptive behavior in the second grade. Although the literature is inconclusive about the upper limit in the age of onset of LCP disruptive behavior (e.g., age 8, age 10, age 12), the possibility exists that the group that showed no signs of disruptive behavior at the second grade, did develop this behavior later on during primary school.

It is concluded that within the group that would eventually be treated in the orthopsychiatric residential setting, signs of disruptive behavior were already observed at the age of five by teachers or health care professionals for about half of the respondents. In this aspect, they differed significantly from the control group. More

attention should be paid to children that show signs of disruptive behavior at this early age. Although epidemiological researchers labeled this group as life-course-persistent, ergo untreatable (Moffitt, 2003; Moffitt & Caspi, 2001; Moffitt et al., 2002), they can profit from early interventions. Children with untreated behavioral problems are more likely to drop out from school, engage in delinquent activities, drug and alcohol abuse and unemployment (Lochman & Salekin, 2003; Odgers et al., 2008).

Recently the storage of information of the youth health care files in The Netherlands has been improved. Digitized storage will hopefully lead to more accurate and traceable information, so in the future more clarity about the differentiation of adolescent residential inpatients in life-course-persistent and adolescence-limited groups can be reached and the treatment programs for these groups can be further specialized.

Limitations

This study has several limitations. First, although the results of the inpatient group compared to the control group are convincing, the number of inpatient files that could be included in the study is rather small. The second limitation of this study is that, although we know from a large minority of inpatients that they showed signs of disruptive behavior at a young age, no information is available of the development of these children at a later primary school age or during early adolescence.

Chapter 3

Childhood characteristics of adolescent inpatients with early-onset and adolescent-onset disruptive behavior

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Journal of Psychopathology and Behavioral Assessment, 2012, 34 (3), 415-422. (DOI) 10.1007/s10862-012-9283-8

Abstract

Childhood characteristics are associated with life-course-persistent antisocial behavior in epidemiological studies in general population samples. The present study examines this association in an inpatient sample. The purpose is to identify easily measurable childhood characteristics that may guide choice of treatment for adolescent psychiatric inpatients with severe disruptive behavior. Patients (N=203) were divided into two groups with either early-onset (EO) or adolescent-onset (AO) disruptive behavior, based on ages at which professional care was used for disruptive behavior, referral to special education, and criminal offences. Both groups differed on several childhood characteristics. No gender differences in these characteristics were found. Logistic regression analysis indicated that individuals with grade retention in primary school, childhood impulsive behavior, and a history of physical abuse, had the highest probability of being member of the EO group. These characteristics are reasonably easy to identify, likely apply to other clinical samples as well, and may help clinicians to target their treatment.

Key words: Adolescents, Antisocial behavior, Psychiatric inpatients, Childhood characteristics

Introduction

In epidemiological research, Moffitt (1993) found that a relatively small proportion of the population engaged in antisocial behavior at a very young age. In about a quarter (Veenstra et al., 2009) to half (Moffitt et al., 1996) of these children this disruptive behavior was limited to childhood, the remainder of this group were labeled life-course-persistent (LCP), because of the continuous course of their antisocial behavior. A larger group was found to be involved in antisocial behavior only during adolescence, therefore their behavior was labeled adolescence-limited (AL). Although during adolescence these groups do not differ in frequency and seriousness of offending, it is argued that they differ in etiology, prognosis and classification of their behavior as either normative or pathological (Moffitt, 1993, 2003; Moffitt et al., 2008; Moffitt et al., 2002).

This paper tests the classification of these two hypothetical prototypes in an inpatient sample of youths who had severe disruptive behavior combined with psychiatric disorders. Disruptive behavior includes aggression, oppositional behavior, status offences (e.g., running away, truancy, substance abuse), and property violations (e.g., lying or deceiving, selling drugs, vandalism). Replication of findings from general population studies in clinical populations is important, because findings then become clinically useful (Moffitt et al., 2008). In clinical populations it is often difficult to classify adolescents as having LCP or AL disruptive behavior, as information of childhood disruptive behavior is not always present, or difficult to collect retrospectively. As persistence of the behavior is even more difficult to determine retrospectively, and it is unclear whether disruptive behavior in adolescence will persist in later life we choose to use the terms early-onset (EO) and adolescent-onset (AO). Adolescents with severe disruptive behavior who also had disruptive behavior in childhood, we label as EO; adolescents in this group have a significant chance to further develop as those in Moffitt's LCP group. The group of adolescents who did not have disruptive behaviors in childhood, we label as AO; adolescents in this group will presumably develop as those in Moffitt's AL group.

A set of risk indicators that is relatively easy to collect, or that is already collected in clinical process, and is strongly predictive of EO versus AO disruptive behavior, helps the clinician to assess the likelihood that an adolescent belongs to the

LCP or the AL group. This may be of importance for choices with regard to treatment. Moffitt argued that both groups need intervention, but that they require different intervention goals and approaches (Moffitt et al., 2008). The causes of LCP antisocial behavior may be completely different from the causes of AL antisocial behavior, but beyond that the personal, educational and social development of the LCP group may have been seriously hampered by the sheer duration of their problems. The main goal of this study is to identify factors that diagnosticians can use to differentiate between the subtypes LCP and AL disruptive behavior in a clinical setting. According to Moffitt (1993), the strongest predictors of LCP antisocial behavior were individual and family characteristics. It is expected that this will also be so for EO disruptive behavior. Individual factors include under-controlled temperament (Aguilar, Sroufe, Egeland, & Carlson, 2000; Moffitt, 2003; Moffitt & Caspi, 2001; Moffitt, Lynam, & Silva, 1994), neurological abnormalities and delayed motor development (Moffitt, 1993), low intellectual ability (Fergusson, Horwood, & Nagin, 2000; Moffitt, 2003; Moffitt & Caspi, 2001; Moffitt, Lynam, & Silva, 1994; Nagin & Farrington, 1992; Odgers et al., 2008), reading difficulties (Moffitt, 2003; Moffitt & Caspi, 2001; Moffitt et al., 1994; Odgers et al., 2008), low school achievement (Chung, Hill, Hawkins, Gilchrist, & Nagin, 2002; Moffitt, 1993; Vaughn et al., 2011), poor scores on neuropsychological tests, caused by birth complications for example (Moffitt, 2003; Moffitt & Caspi, 2001; Moffitt, et al., 1994; Tibbetts & Piquero, 1999), hyperactivity and/or attention problems (Fergusson et al., 2000; Moffitt & Caspi, 2001; Moffitt et al., 1994; Nagin & Tremblay, 2001; Odgers et al., 2008; Wiesner & Capaldi, 2003), low heart rate (Moffitt, 2003; Moffitt & Caspi, 2001; Moffitt, et al., 1994; Odgers, et al., 2008), psychopathic personality traits, violent behavior (Moffitt & Caspi, 2001; Moffitt et al., 2002; Moffitt et al., 1994), and broad psychiatric comorbidity (Vaughn et al., 2011).

Family and context factors associated with LCP antisocial behavior include: having a teenage single parent (Fergusson, et al., 2000; Moffitt & Caspi, 2001; Nagin & Tremblay, 2001), having a single parent at birth (Aguilar, et al., 2000; Fergusson, et al., 2000; Kjelsberg, 1999; Tibbetts & Piquero, 1999), maltreatment (mothers who were harsh or neglectful, harsh or inconsistent discipline, physical abuse, sexual abuse, child abuse) (Aguilar, Sroufe, Egeland, & Carlson, 2000; Dean et al., 1996; Moffitt & Caspi, 2001; Odgers et al., 2008; Patterson, Forgatch, Yoerger, & Stoolmiller, 1998; Wiesner &

Capaldi, 2003), much family conflict (Fergusson, et al., 2000; Moffitt & Caspi, 2001; Odgers, et al., 2008), inadequate parenting (low parental supervision, inconsistent discipline)(Chung, et al., 2002; Moffitt & Caspi, 2001; Moffitt, et al., 2002; Nagin & Farrington, 1992; Odgers, et al., 2008; Patterson, et al., 1998; Wiesner & Capaldi, 2003), many changes of primary care taker (Kjelsberg, 1999; Moffitt & Caspi, 2001; Nagin & Farrington, 1992; Patterson, et al., 1998; Tibbetts & Piquero, 1999), and sibling deviance (Moffitt, 1993).

Parental characteristics associated with LCP antisocial behavior were: mothers with poor mental health (Moffitt & Caspi, 2001; Odgers et al., 2008; D. Shaw, Owens, Vondra, Keenan, & Winslow, 1996), parental criminal conviction (Fergusson, et al., 2000; Kjelsberg, 1999; associated with AL: Nagin & Farrington, 1992; Odgers, et al., 2008), parental deviance (Moffitt, 1993), parental alcoholism, alcohol problems or illicit drug use (Fergusson et al., 2000), low educational attainment or IQ of the mother (Fergusson, et al., 2000; Nagin & Tremblay, 2001; Odgers, et al., 2008), and low family socio-economic status (SES) (Fergusson et al., 2000; Fontaine, Carbonneau, Vitaro, Barker, & Tremblay, 2009; Kjelsberg, 1999; Moffitt & Caspi, 2001; Odgers et al., 2008; Patterson et al., 1998; Tibbetts & Piquero, 1999).

Individuals on the AL path tended to have backgrounds that were normative (Moffitt & Caspi, 2001). AL offending was assumed to be most strongly related to associations with deviant peers. Attitudes toward adulthood and autonomy, cultural and historical context and age were considered the strongest predictors of short-term offending (Moffitt, 1993).

Thus far, the distinction in EO and AO antisocial behavior has hardly been made in clinical practice. We expect that both groups are represented in our sample and that factors that were found to associate with LCP antisocial behavior in epidemiological studies are also associated with EO disruptive behavior in a clinical sample. The purpose of the present study is to find individual, parental, and family and context risk factors that were present in childhood, that are relatively easy to collect, and are strongly predictive of EO versus AO disruptive behavior in a clinical sample of adolescents with severe disruptive behavior.

Method

Setting

The present study was conducted at De Fjord, an orthopsychiatric and forensic youth treatment facility in Rotterdam, The Netherlands. In The Netherlands, the term orthopsychiatry entails specialized treatment of youngsters diagnosed with severe disruptive behavior (that may or may not include offending) in combination with one or more psychiatric disorders. De Fjord offers outpatient and day treatment, and a specialized residential treatment program. Patients are eligible for treatment if they are referred by other specialized youth care institutions, i.e., institutions that are predominantly focused on developmental, psychiatric or criminal problems in children and adolescents. In addition to referral, patients must meet the following inclusion criteria: age between 16 and 20 years, presence of severe behavioral as well as psychiatric problems, and (a history of) previous treatment. These criteria result in a patient sample with severe and complex problems that were not resolved by treatments elsewhere. Patients functioning below borderline intellectual level (IQ <70), with predominant addiction problems, or with severe recidivist criminal conduct for which specialized, individual forensic treatment is indicated, are not eligible for treatment.

Procedure

All patients admitted between 1995 and 2008 were included in the study. After a verbal description of the study to the subjects, written informed consent was obtained. All patients (N=223) agreed to participate. When patients were under age 16, in accordance with the statutory requirement in the Netherlands, informed consent was also obtained from the parents. The statistical analyses in present study were performed for 203 patients for whom the age of onset was determined (91.0% of the sample).

Disruptive behavior during childhood, its age of onset, and other childhood characteristics were obtained by using multi-informant (adolescent, parent and therapist), multi-method (self-report, interview, records from mental health care institutions where patients had previously been treated) information. The adolescent was interviewed by the researcher, and the therapist reported all known

characteristics of the youngster via a questionnaire. This information was partly based on information reported by parents and/or referring professional (e.g., guardian or probation officer) during the intake procedure. Information from records was obtained by the researcher. A behavior or characteristic was considered present when mentioned by at least one of the sources, and absent when not present according to all sources. When information was not available, it was coded unclear (or missing, depending on the reason for unavailability). Some characteristics were considered too aggravating to be asked directly by the researcher (e.g., sexual abuse, physical abuse), and were therefore obtained from the therapist (i.e., via the therapist who asked the adolescent) and from records.

Measures

Presence of disruptive behavior during childhood was determined, based on the age at which help was sought because of disruptive behavior, special education was indicated due to disruptive behavior, and the age at which the youngster started to commit criminal offences. For each individual the presence and age of onset of disruptive behaviors was determined. For age of onset the earliest age reported by any of the sources was used. Disruptive behavior included aggression (*overt, destructive*: e.g., physical abuse, sexual offences, threatening someone), oppositional behavior (*overt, non-destructive*: e.g., disobedient, doing things own way), status offences (*covert, non-destructive*: e.g., running away, truancy, substance abuse), and property violations (*covert, destructive*: e.g., lying or deceiving, selling drugs, vandalism)(Frick et al., 1993). Subsequently, a distinction was made in two groups labeled early-onset (EO) and adolescent-onset (AO). The EO group will most likely develop as a LCP group and the AO group as an AL group. Patients with disruptive behavior starting prior to age 12 were considered members of the EO group and those whose disruptive behavior started from age 12 on were members of the AO group (De Boer et al., 2007). In the sample, both EO (n=134, 66%) and AO (n=69, 34%) groups were found.

To describe the sample, information on current DSM diagnoses, type of referral, prior experience with institutionalized care, and penal and civil measures was collected. Penal measures comprised: "*probation*", "*mandatory treatment order*", and

"*conditional mandatory treatment order*". Civil measures comprised "*supervision order*", and *"involuntary commitment"*.

The childhood risk indicators were grouped into four categories: individual, family and context, parental, and system characteristics.

Individual child characteristics

Information on gender, IQ (70,9% had an IQ score measured by former institutions – WAIS: 48.6%; WISC-R: 18.5%; Raven: 6.9%; or other measures: 36.0%), school achievement (grade retention in primary school, and age at grade retention), and the presence of impulsive behavior and/or concentration problems was collected. The latter was considered present when professional help was sought because of this behavior.

Family and context characteristics

Information on single parenthood at birth, parent's divorce (birth – age 11), the number of changes in caregiver or changes of home environment, and maltreatment was collected. Maltreatment was divided into whether or not patients had been either physically or sexually abused.

Parental characteristics

Information on mental health care received by at least one parent, and parental conviction(s) for crimes was collected. Parents occupational level was coded into five categories (no occupation, housekeeper, without work or unfit for work; occupation without qualification; low vocational occupation; intermediate vocational occupation; high vocational or academic occupation) and subsequently, the highest level of occupation of the parents was determined, indicating social economic status (SES). Next to occupational level we asked for the mother's employment status.

System characteristics

System characteristics included placement outside of the home before age 12 (yes/no). Also, when relevant, the age at court custody (placement outside of the home) was recorded.

Table 1

Characteristics of the sample

N=203	N[1]	n *Mean*	(%) (SD)
Characteristic			
Sex (male)	203	155	(76.4%)
Age (years)	203	*17.7*	(1.2)
Ethnicity Dutch	203	148	(72.9%)
Educational level	198		
Not attending school		32	(16.2%)
Special education		18	(9.1%)
Pre-vocational or junior general secondary education		125	(63.1%)
Senior general secondary or pre-university education		23	(11.6%)
Referral	203		
Youth care		92	(45.3%)
Youth mental health care		76	(37.4%)
Judicial institutions		35	(17.2%)
Penal measure	203	43	(21.2%)
Civil measure	203	102	(50.2%)
Penal and civil measure	203	11	(5.4%)
Number of DSM diagnoses (Axis I)	197	*2.7*	(1.2)
DSM diagnoses (Axis I)	197		
Conduct disorder		79	(40.1%)
Oppositional defiant disorder		55	(27.9%)
Schizophrenia and related disorders		45	(22.8%)
Mood disorder		34	(17.3%)
Autism spectrum disorder		33	(16.8%)
Attention-deficit/hyperactivity disorder (ADHD)		31	(15.7%)
Anxiety disorder		21	(10.7%)
Personality disorders (NOS and cluster B)	198		
Diagnosed		57	(28.8%)
Suspected		102	(51.5%)
Institutionalized care (prior to De Fjord)	202		
Yes		197	(97.5%)
Former admissions		*2.9*	(2.0)
Onset of disruptive behavior	203		
Early-onset (< 12 years)		134	(66.0%)
Adolescent-onset (> 11 years),		69	(34.0%)

[1] Number of patients for whom information about the characteristic was available

Statistical analysis

All analyses were performed using the Statistical Package for the Social Sciences, version 17.0 (SPSS, 2008). As all of the characteristics were risk indicators for onset of disruptive behavior at a young age, it was expected that they would be more present in the EO group than in the AO group, and we tested one-sided for differences. Although many childhood factors that were associated with LCP antisocial behavior seem to apply to females as well, there are indications that gender differences exist (e.g., Barnes & Beaver, 2010; Eme, 2007; Odgers et al., 2008). For this reason we checked for gender specificity of the characteristics. First, with chi-square tests (categorical variables) or student *t*-tests (continuous variables), the EO group was compared with the AO group. A level of significance of $p<.003$ (Bonferroni correction) was chosen to account for the number of characteristics tested. Second, in a logistic regression analysis (dependent EO vs AO), all characteristics were included that differed significantly ($p<.05$) between EO and AO groups as independent variables, as well as sex. We tested for sex specific characteristics by including interaction terms with sex. Interactions with a *p*-level of <.10 were included in the model. The Nagelkerke *R*-square of the model was used as measure for effect size.

Results

Over 20% of the sample had a penal measure and approximately 50% had a civil measure. Some of these individuals had a civil measure and a penal measure. In addition to their psychiatric problems, all patients in the sample displayed severe disruptive behavior.

Table 2 shows the characteristics by EO and AO classification. Males were overrepresented in the EO group (82% vs 18% females) and in the AO group (65% vs 35% females). Table 2 shows that EO and AO groups differed on individual characteristics (in occurrence and age at grade retention in primary school, and in impulsive behavior), family and context characteristics (parental divorce (before child age 11), the number of changes in home environment, and physical abuse), parental characteristics (employment of the mother), and system characteristics (age at first placement outside of the home). The EO and AO groups did not differ on IQ, single

parent at birth, sexual abuse, mental health care received by at least one of the parents, parental conviction, or SES.

Table 2

Childhood characteristics by onset of disruptive behaviors and by gender (n=203)

		EO ♂ (n=110)	AO ♂ (n=45)	EO ♀ (n=24)	AO ♀ (n=24)	EO vs AO
	N[1]	n (%) / *M* (SD)	n (%) / *M* (SD)	n (%) / *M* (SD)	n (%) / *M* (SD)	*p-value*
Individual						
Intellectual ability (IQ)	135	*99.16*	*97.94*	*98.17*	*98.36*	*.344*
		(12.97)	(12.51)	(11.93)	(15.13)	
Grade retention in primary school	146	20 (26.7%)	4 (12.1%)	5 (27.8%)	2 (10.0%)	*.023**
Age at grade retention	72	*8.85* (3.83)	*10.80* (2.65)	*8.67* (3.80)	*10.33* (15.13)	*.004**
Impulsive behavior	177	57 (59.4%)	6 (14.3%)	9 (42.9%)	1 (5.6%)	*.000***
Family and context						
Single parent at birth	195	9 (8.4%)	2 (5.0%)	4 (16.7%)	4 (16.7%)	*.500*
Parents divorced (birth – age 11)	202	54 (49.5%)	12 (26.7%)	16 (66.7%)	10 (41.7%)	*.004**
Number of changes in home environment	201	*3.58* (2.52)	*2.49* (1.92)	*4.46* (2.83)	*3.83* (2.94)	*.022**
Physical abuse	178	47 (47.5%)	10 (25.6%)	11 (55.0%)	7 (35.0%)	*.009**
Sexual abuse	164	10 (11.1%)	6 (15.8%)	12 (63.2%)	11 (64.7%)	*.092*
Parental						
Mental healthcare parents	124	35 (52.2%)	10 (31.3%)	5 (45.5%)	8 (57.1%)	*.131*
Conviction parents	124	7 (11.5%)	1 (3.2%)	7 (41.2%)	2 (13.3%)	*.065*
Highest occupation of both parents	177	-	-	-	-	*.190*
No		8 (8.2%)	2 (11.8%)	5 (12.2%)	4 (18.2%)	
Without qualification		6 (6.2%)	0 (0%)	3 (7.3%)	4 (18.2%)	
Low qualification		26 (26.8%)	6 (35.3%)	9 (22.0%)	5 (22.7%)	
Intermediate qualification		40 (41.2%)	8 (47.1%)	19 (46.3%)	7 (31.8%)	
High qualification		17 (17.5%)	1 (5.1%)	15 (12.2%)	2 (9.1%)	
Working mother	174	71 (74.0%)	22 (55.0%)	10 (62.5%)	11 (50.0%)	*.009**
System						
Placement outside of home < age 12	202	15 (13.6%)	2 (4.5%)	6 (25.0%)	4 (16.7%)	*.129*
Age placement outside of home < age 12	27	*5.60* (3.18)	*9.50* (0.71)	*4.50* (2.26)	*7.50* (3.11)	*.020**

EO = early-onset; AO = adolescent-onset

[1] Number of patients for whom information about the characteristic was available

** p < .05* (one-tailed)

*** p < .003* (one-tailed), significant after Bonferroni correction

Sex

When subsequently males and females of the EO group were compared, two differences in childhood characteristics were found: compared with EO males significantly more EO females had a parent who had been convicted of a crime (41% versus 12%, *p*=.014) and significantly (*p*<.0001) more females (63%) had been sexually abused compared with males (11%). This was also found for the AO group (65% females, 16% males, *p*=.001).

Logistic regression

The significant characteristics of Table 2 were entered into a logistic regression equation. The logistic regression analysis was performed to test the predictive value of the variables on (the dichotomous dependent variable) EO disruptive behavior. No significant differences between males and females were found after testing for interaction effects.

Table 3

Logistic regression analysis of the associations between childhood characteristics and EO and AO disruptive behavior

		Model 1			Model 2	
	n	**OR**	**95% CI**	**R2**	**OR**	**95% CI**
Sex	203	2.44	(1.26-4.75)*	.05	1.43	(0.39-5.32)
Grade retention in primary school	146	2.88	(1.10-7.56)*	.05	4.18	(1.12-15.68)*
Age at grade retention[1]	72	.82	(.69-.97)*	.12		
Impulsive behavior	177	9.80	(4.11-23.36)**	.26	6.01	(1.91-18.91)**
Parents divorced	203	2.41	(1.31-4.43)*	.06	1.49	(0.52-4.30)
Number of changes in home environment	201	1.14	(1.00-1.29)*	.03	1.01	(0.80-1.29)
Physical abuse	178	2.35	(1.20-4.58)*	.05	3.64	(1.09-12.18)*
Working mother	174	2.30	(1.20-4.39)*	.05	2.29	(0.76-6.88)
Age placement outside of home < age 12[1]	27	.68	(.45-1.01)	.25		

Model 1: univariate; model 2: multivariate. Multivariate model: n=98; EO = early-onset; AO = adolescent-onset; OR = odds ratio; 95% CI = 95% confidence interval; R^2 = Nagelkerke R^2

* *p < .05*

** *p < .003*, significant after Bonferroni correction. Nagelkerke R^2 model 2: 0.36

[1] Due to small n not included in the multivariate model

The first model shows the bivariate odds ratios. Each of the characteristics significantly predicted membership of the EO group, except for age at placement

outside of the home. Odds ratios ranged from 1.14 (number of changes in the home environment) to 9.80 (impulsive behavior), with effect sizes ranging from .03 to .26.The multivariate model showed three significant independent predictors of EO-membership: grade retention, impulsive behavior and physical abuse (Table 3). The model was statistically significant (χ^2 (7, N=98) = 29.72, p<.0001), indicating that the model was able to distinguish the patients with EO from those with AO disruptive behavior. The model as a whole explained 36% (Nagelkerke R square) of the variance in onset, and correctly identified 75.5% of cases.

Discussion

In previous research, in our clinical sample of inpatient adolescents with disruptive behavior and psychiatric disorders, we were able to make the distinction in EO and AO based on retrospective data (De Boer et al., 2007).The main goal of this paper was to identify factors that diagnosticians can use to differentiate between the subtypes EO and AO disruptive behavior in a clinical setting. This was done to help clinicians identify characteristics relevant to the choice of treatment for each group. Because of this practical purpose, we looked for characteristics that may easily be available in routine clinical practice.

As expected, the EO group showed higher levels of risk in childhood, compared to the AO group, including characteristics indicating inherited or acquired neuropsychological deficits and environmental risk factors (i.e., mean age at grade retention, grade retention in primary school, and prevalence of impulsive behavior). Besides, the EO and AO groups differed significantly on many of the other childhood risk factors (the number of changes in home environment, parental divorce (before age 11 years), physical abuse, employment of the mother, and mean age at placement outside of the home). Logistic regression yielded grade retention in primary school, impulsive behavior and physical abuse to be significantly correlated to EO disruptive behavior.

Differences in IQ were not found, but youngsters with very low cognitive ability were not included in this study because they were not eligible for treatment at De Fjord. Furthermore, the EO and AO groups did not differ on single parent at birth,

sexual abuse, mental health care received by at least one of the parents, parental conviction, or SES.

It is important to note that early-onset (and probably life course persistence) of disruptive behavior does occur in females. Females with EO disruptive behavior resembled their male counterparts to a great extend, they only differed on two characteristics. Compared with males of the EO group, more females with EO disruptive behavior had a parent who had been convicted of a crime. Sexual abuse was much more prevalent in females than in males, but this was found for both EO and AO groups, indicating that it was not related to the age onset of disruptive behavior. When tested for interaction effects, no significant sex differences were found. The number of girls in our sample, and the selection of characteristics were limited, but our findings do not support gender differences in these characteristics in their value for signaling EO disruptive behavior in adolescents. Gender differences may be present in biological or neurodevelopmental factors involved in the development of EO disruptive behavior (Eme, 2007, 2009; Kjelsberg, 1999).

It has to be noted that, methodologically, our set of variables did not permit an exhaustive test of all childhood variables that have been pinpointed to be involved in the development of LCP and AL antisocial behavior (e.g., peer characteristics, biological influences or neurodevelopmental factors). Also, the variables were not gathered at fixed moments during the early life of the patients as in epidemiological studies, but obtained retrospectively after admission. Some variables may have varied over time (e.g., child abuse, mental health of parents), but we presume that they have been considerably stable. Finally, comparison of our retrospective findings with epidemiological findings must be made with caution, because some retrospective measures (e.g., psychosocial variables) have low levels of agreement with prospective measures (Henry et al., 1994). In the present study, this was partly intercepted by using multi-informant information.

Many of the factors of epidemiological research that were found to be associated with EO disruptive behavior were also found to be associated with EO disruptive behavior in a highly selective clinical sample with severe disruptive behavior and co-occurring psychiatric disorders. This suggests that the factors associated with EO disruptive behavior probably also apply to other clinical (and non-clinical) samples

with less severe psychiatric disorders and disruptive behavior. More research should be conducted among clinical and non-clinical samples to confirm this generalization.

In our study, we found characteristics that distinguish patients with EO from those with AO. We identified three independent childhood characteristics that predicted membership of the early-onset group: grade retention in primary school, impulsive behavior and being physically abused. Other characteristics partly overlap in their ability to identify EO disruptive behavior. As these characteristics are not systematically collected in clinical practice, clinicians should attempt to collect information on as many as possible. The chance that the adolescent has EO disruptive behavior strongly increases in the presence of one or more of these characteristics. Because the characteristics are reasonably easy to identify, they may help clinicians to target their treatment. Adolescents with EO disruptive behavior probably benefit from interventions aimed at personality traits (psychopathic traits, impulsivity, hostility, alienation, and callousness), developing social skills (unless the individual has callous, unemotional psychopathic personality traits), aggression regulation, and education. Whereas adolescents with AO disruptive behavior probably benefit from interventions that prevent truancy or dropout from school, assertiveness therapy, or interventions that help to prevent (further) delinquent behavior.

In conclusion, in routine clinical practice information should be collected on early impulsive behavior, grade retention in primary school, and physical abuse, as this background of adolescents with severe disruptive behavior can help distinguish adolescents with early-onset from those with adolescent-onset disruptive behavior.

Chapter 4

Treatment outcome of adolescent inpatients with early-onset and adolescent-onset disruptive behavior

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Journal of Clinical Psychology, 2017, 73 (4), 466-478.
(DOI) 10.1002/jclp.22341

Abstract

Objective: Unlike adolescents with adolescent-onset (AO) disruptive behavior, adolescents with early-onset (EO) disruptive behavior may not benefit from treatment. **Method:** Using Symptom Checklist (SCL-90-R) ratings at admission and discharge of adolescent inpatients with EO (n=85) and AO (n=60) disruptive behavior treatment outcome was determined by (a) a change in mean scores, and (b) the Reliable Change Index. For a subgroup, ratings on the Satisfaction Questionnaire Residential Youth Care for Parents (TOR-J) (n=83) were used to verify the treatment outcome. **Results:** Inpatients with EO disruptive behavior had a higher risk of dropout (44.4%) from treatment than the AO group (24.7%). Among the treatment completers, both onset groups reported improvements on the SCL-90-R, with 26.9% recovering and 31.7% improving. Inpatients who reported improvement were mostly rated as improved by their parents (*r*=.33). **Conclusion:** As EO inpatients are more likely to drop out, interventions should aim at motivating youngsters to continue treatment, particularly given the poor outcome in this group. Treatment may benefit both groups, because those EO youths who stayed in treatment improved to the same extent as AO inpatients.

Keywords: Adolescent psychiatry, Early-onset, Adolescent-onset, Disruptive behavior, Treatment outcome, SCL-90-R

Introduction

In an attempt to explain disruptive behavior, several theoretical models have been posited, among which the developmental theory of Moffitt (1993). Compared to others, this theory offers an extra dimension because it explains patterns of disruptive behavior over the course of an individual's life. Several studies have, however, questioned the usefulness of the developmental theory for clinical practice (Fairchild et al., 2013; López-Goñi, Fernández- Montalvo, Illescas, Landa, & Lorea, 2008; Vermeiren, 2003).

In epidemiological research, Moffitt (Moffitt, 1993, 2003) found that a small part of the population (6.2%) engaged in disruptive behavior at a very young age, which was likely to persist later on. This group was labeled life-course-persistent (LCP). A larger group (23.6%), labeled as adolescence-limited (AL), involved in disruptive behavior only during adolescence. During adolescence the groups did not differ in frequency and severity of criminal offending, although it was argued that they differed in etiology, developmental course, prognosis, and classification of their behavior as either normative or pathological (Fergusson et al., 2000; Moffitt, 1993, 2003; Moffitt et al., 2008; Moffitt & Caspi, 2001). Most studies on trajectories of disruptive behavior were consistent with the taxonomy of Moffitt (Aguilar et al., 2000; Barnes & Beaver, 2010; Bongers, Koot, Van der Ende, & Verhulst, 2004; Broidy et al., 2003; Dandreaux & Frick, 2009; Fairchild et al., 2013; Fergusson et al., 2000; Fontaine et al., 2009; Jennings & Reingle, 2012; Kratzer & Hodgins, 1999).

Initially, it was suggested that LCP individuals were less likely to benefit from treatment once their conduct problems had persisted into adolescence (Moffitt et al., 1996). The assumption that LCP individuals are untreatable does not comply with the view of most therapists. More recently, Moffitt adjusted her assertions and argued that in adolescence both LCP and AL groups need intervention, although they require different intervention goals and approaches (Moffitt et al., 2008). Because individuals on the LCP antisocial behavior pathway have an increased risk to encounter social and mental health problems later in life (e.g., Bardone, Moffitt, Caspi, Dickson, & Silva, 1996), developing effective interventions for this group carries clinical and societal relevance.

To date, not much is known about the effectiveness of treatment of adolescents with specifically LCP and AL disruptive behavior. Existing knowledge on the effectiveness of interventions targeting childhood onset disruptive behavior in clinical practice is predominantly based on studies with a younger population (e.g., Beauchaine et al., 2005; Hawes, Dadds, Brennan, Rhodes, & Cauchi, 2013). Although both the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV; American Psychiatric Association, 1994) and the *International Classification of Diseases 10th revision* (ICD-10; World Health Organization, 2010) Conduct Disorder classifications included specifiers based on the distinction between childhood and adolescent onset, this has seldom been applied to treatment of adolescents. This is unfortunate, since differentiation in subgroups may result in more individualized and appropriate intervention and, consequently, better treatment results (Vermeiren, 2003).

The aim of the present study is thus to examine the treatment outcomes of adolescent inpatients with early-onset (EO) versus adolescent-onset (AO) disruptive behavior, who received residential treatment in a specialized facility for youths with severe behavioral problems. It was hypothesized that the outcome of treatment for individuals with EO disruptive behavior would be less satisfactory because their problems are enduring and have higher likelihood of being persistent. Interestingly, the assumption that individuals with EO disruptive behavior have worse prospects or may even be "therapy-resistant" has never been tested in clinical practice. The terms EO and AO were used because the course of the adolescent inpatients' future disruptive behavior is as yet unknown. Adolescents diagnosed with severe disruptive behavior who also displayed this behavior during childhood, were labeled as EO. We expect that these adolescents are at increased risk of becoming LCP group members. Thus, although EO and LCP are not equivalent, EO is a risk factor for LCP. The inpatients with severe disruptive behavior who did not display disruptive behavior during childhood, were labeled as AO. Adolescents in this group will presumably develop as those in the AL group, even though it is not guaranteed that AO is equivalent to AL.

Methods

Setting

The present study was conducted at a specialized residential treatment facility in Rotterdam (the urban area) in The Netherlands, for youth with severe disruptive behavior (i.e., aggressive, oppositional defiant, delinquent, and/or rule breaking behavior), and comorbid psychiatric disorders. Inclusion criteria for treatment were as follows: aged between 16 and 20 years and displaying a combination of disruptive behavior, comprising aggressive behavior (e.g., physical abuse, sexual offences), oppositional behavior (e.g., disobedience), status offences (e.g., truancy, substance abuse), and property violations (e.g., stealing, vandalism) that is severe enough to require treatment.

In addition, a (combination of) psychiatric disorder(s) (e.g., schizophrenia, mood disorder, anxiety disorder, autism spectrum disorder), and previous (a history of) treatment by child welfare institutions or child and adolescent psychiatric institutions were required. Patients functioning below borderline intellectual level (IQ<70), with predominant addiction problems, or with severe recurrent criminal conduct for which specialized, individual forensic treatment is indicated, were not eligible for treatment. All youngsters that met the inclusion criteria and have been admitted to the treatment were included in this survey.

Because of the heterogeneous composition of the target group, every subject had a personalized treatment program. The treatment itself was mainly offered in a group context. A cognitive-behavioral treatment model was applied with an emphasis on enhancement of social competence (Bartels, 2001), extended with elements of the schema-based therapy (Young, 1990; Young et al., 2004). Because many of the youngsters come from disharmonious parenting situations, therapists also focused on a good, functional working relationship with the family system (Boon & Haijer, 2008). Following new insights, the treatment program evolved during the 14-year period that it was provided, and inevitably some changes in therapists did occur. The treatment program was conducted by qualified therapists and consisted of a variety of verbal and nonverbal therapies and training activities, e.g., cognitive behavioral therapy, psycho-motor therapy, art therapy, drama therapy, family therapy, social skills training, aggression regulation training, pharmacological treatment, job training, and education

(e.g., Hornsveld, 2004; Muller & Colijn, 1999). The training activities emphasized, for instance, the unlearning of aggressive behavior and the acquiring of behavior alternatives. Also, de-escalation schedules were used to record individualized agreements on learning to deal with aggression (Boon & Haijer, 2008).

Measures

To describe the sample, information was gathered from interview, file review, and therapist questionnaire. The biodemographical information was gathered on standardized forms used in the context of ongoing program evaluation research conducted at the facility. These forms were based on common formats used in the Netherlands (e.g., classification according to Centraal Bureau voor de Statistiek, the national institution that centralizes the collection, processing and publication of statistics for government, science and industry).

To capture the relevant behavior characteristics as comprehensive as possible, this information (e.g., criminal offending, substance usage) was obtained from more than one source.

Interview

Research assistants interviewed patients on characteristics (e.g., sociodemographic information, substance usage, and criminal offending). Most characteristics were coded present, absent or unclear.

File review

Current DSM classifications were collected from patient files. The attending psychiatrist made these DSM classifications during the course of treatment, which were based on direct evaluations of the subjects. Research assistants, psychology students in the final year of their master, who were trained and supervised by the researcher, collected the classifications from file. They screened the files on age at admission, ethnicity (native Dutch/non-native), intellectual ability (IQ), social economic status (indicated by the highest occupational level of the parents), criminal offences, substance usage, and duration of treatment.

Therapist questionnaire

To assess relevant patient variables (e.g., substance use, criminal offending), therapists filled out a questionnaire based on information they gathered directly from the patients, parents and the referring professional (e.g., guardian or probation officer) during the intake procedure.

At discharge, therapists indicated how the treatment was terminated: (a) termination recommended or supported by the therapist, (b) patient was expelled, (c) treatment was aborted by the patient (e.g., ran away), or (d) another reason (e.g., patient was arrested, deceased).

Distinction in the onset of disruptive behavior

Presence of disruptive behavior during childhood was determined based on the age when treatment was sought for disruptive behavior, or when special education was indicated due to this behavior, and the age at which the youngster started to commit criminal offences. The disruptive behavior was categorized according to the framework of Frick and colleagues (Frick et al., 1993), and included aggression (e.g., physical abuse, sexual offences), oppositional behavior (e.g., disobedient), status offences (e.g., truancy, substance abuse), and property violations (e.g., stealing, vandalism) (De Boer et al., 2013; De Boer et al., 2012; Frick et al., 1993). The main researchers made the distinction in the EO and AO groups. For each patient the presence and age of onset of disruptive behavior were determined based on information from file and the interview. Disruptive behavior was considered present when it was mentioned by at least one of the sources. When no information was available, it was coded as unclear (or missing, depending on the reason for unavailability).

The earliest age reported by any source was used as the age of onset. Subsequently, patients with disruptive behavior starting prior to age 12 were considered belonging to the EO group, and those whose disruptive behavior started from age 12 on were considered belonging to the AO group (De Boer et al., 2013; De Boer et al., 2012; De Boer et al., 2007). Using age 12 as the cut-off was in accordance with Moffitt (Moffitt, 1993; Moffitt et al., 1996) and with Dean, Brame and Piquero (1996), who found that differences between the EO and AO groups were only evident

when the threshold was set at age 12. We determined the interrater reliability (Cohen's Kappa .79) by calculating the correlation among ratings, independently done by two researchers, on a random subset of the sample (n=11).

Discharge status

Discharge status was determined by the researcher and was based on length of treatment and the way treatment was terminated according to the therapist involved. Intended duration of treatment was at least half a year. This resulted in two groups of patients: those who terminated treatment positively (i.e., termination in accordance with the therapist, and length of treatment ≥ 6 months), and those who terminated treatment negatively (i.e., termination not in accordance with the therapist and/or length of treatment < 6 months).

Treatment outcome

Treatment outcome was measured with the Symptom Checklist Revised (SCL-90-R; Arrindell & Ettema, 2003), and for a subgroup with the "treatment result" scale of the Satisfaction Questionnaire Residential Youth Care for Parents (TOR-J; Boon et al., 2010).

The SCL-90-R is a standardized self-report questionnaire for the assessment of psychological and related physical problems and is often used in evaluation research (e.g., Arrindell & Ettema, 2003; Arrindell et al., 2003; Boon & Colijn, 2001; Boon & De Boer, 2007; Bruinsma & Boon, 2001; Grünwald & Von Massenbach, 2003). When applied at admission and discharge, change in psychological and physical complaints during treatment can be assessed (e.g., Arrindell et al., 2003; Boon & De Boer, 2007). Originally, the instrument was developed for adult populations. Over the last decades, the instrument has increasingly been applied to adolescent populations as well (Biegel, Brown, Shapiro, & Schubert, 2009; Biskin, Paris, Renaud, Raz, & Zelkowitz, 2011; Boon & Colijn, 2001; McGough & Curry, 1992), including adolescent inpatients with severe behavioral problems (Boon & De Boer, 2007; Bruinsma & Boon, 2001).

Each item is rated on a 5-point Likert scale ranging from 0 (*not at all*) to 4 (extremely) to indicate the severity of the symptom over the past week. The global total score constitutes a Global Severity Index (GSI), which was used in the study to

report changes between admission and discharge. The GSI has good reliability (Arrindell & Ettema, 2003) and has become one of the most widely used measurements of psychological distress (Holi, 2003; Prinz et al., 2013).

The TOR-J (Boon et al., 2010) is a self-report questionnaire for parents to assess satisfaction with their child's treatment in (semi) residential mental health care facilities. The TOR-J consists of 17 items that are rated on a 5-point scale ranging from 1 (*does not apply to me*) to 5 (*does apply to me*). The instrument yields scores on three main scales (transference of parental care, treatment result, and parent guidance), and a total scale. The total scale has moderate validity (convergent r = .29, divergent r = .05 and .03) and good reliability (internal consistency α = .95, test-retest reliability r = .78; Boon et al., 2010). In the present study, only the main scale "treatment result" was used. This scale represents the extent to which the youngster has improved during treatment from the perspective of the parents.

Procedure

During a 14-year period (1995-2009), all newly admitted patients were approached to participate in the study. According to legislation and the institution's policy, ethical approval has been obtained prior to the research. After a verbal description of the study to the subjects, written informed consent was obtained. All patients (n=234) agreed to participate and in concordance with the institutional policy, they participated without receiving incentives or rewards.

The SCL-90-R (Arrindell & Ettema, 2003) was administered at intake (T0), admission (T1) and discharge (T2). It is known that repeated measurements with the SCL-90-R cause a not yet adequately explained test-retest effect between the first time it is applied and a second measurement at any given time (Arrindell, 2001; Koeter, Ormel, & Van den Brink, 1988), wherein the second measurement (usually a lower score) should be regarded as the most representative. Therefore, in order to overcome the (possible) test-retest effect, T0 was applied only to obviate this effect and T1 was used as the baseline score. Outcome was presented in two different ways: (a) change in mean scores between admission and discharge, and (b) number of inpatients that recovered, improved, remained stable, or deteriorated between admission and discharge according to the reliable change index.

At discharge the TOR-J (Boon et al., 2010) was administered to parents to verify their opinion of the treatment outcome compared to the youngsters' assessments (i.e., SCL-90-R). This was done because the use of self-report instruments like the SCL-90-R within samples diagnosed with severe disruptive behavior may not yield reliable scores in juvenile delinquent samples (Breuk, Clauser, Stams, Slot, & Doreleijers, 2007), because they are subject to under-reporting and errors of memory (Moller, Tait, & Byrne, 2012). On the other hand, Crowley, Mikulich, Ehlers, Whitmore, and MacDonald (2001) found that although some patients minimized their symptoms, youths' self-reports significantly discriminated patients from controls in DSM-IV conduct disorder and they concluded that patients' self-reports (of conduct disorder) had good discriminative validity.

Overall, treatment outcome may vary across types of respondents (adolescent, parent, or therapist) or instruments. The proportion showing improvement, for instance, may differ across measures, and the measures may vary on which individuals improve (Rosenblatt & Rosenblatt, 2002). Moreover, the reliability of self-report inventories for measuring constructs such as psychopathology has been found to increase from childhood through adolescence (Frick, Barry, & Kamphaus, 2009; Kamphaus & Frick, 2002). Parent reports often disregard the adolescent's own perspective. Covert acts and internalizing behavior, for example, are generally obscure to third-party informants.

Statistics

All analyses were performed using SPSS (version 18.0; 2009). Chi-square tests were used to examine differences between categorical variables and *t*-tests (two-tailed) were used to examine differences between responders and nonresponders regarding age, and length of treatment and between the EO group and the AO group on the SCL-90-R total score (GSI), and the TOR-J score "treatment results". When TOR-J scores of both parents were available, the average of those scores was used. Improvement on the GSI of the EO and AO group was examined using mixed between-within subjects analysis of variance (ANOVA). Also, correlations (Pearson product-moment) were used to relate SCL-90-R treatment outcome to TOR-J "treatment results".

To determine clinically significant change, the Reliable Change Index was used on the GSI. Clinically significant change has been defined as "the extent to which therapy moves someone outside the range of the dysfunctional population or within the range of the functional population" (Jacobson & Truax, 1991, p. 12). The improved index for individual reliable change (RCINDIV) introduced by Hageman and Arrindell (1999) was used. The retest reliability of the norm group's scores (Boon & De Boer, 2007) was used to calculate the standard error of measurement (SE) and the cut-off point type C. Patients with RCINDIV < -1.65 were considered "improved" and those with RCINDIV > +1.65 were considered "deteriorated". Patients with a RCINDIV between -1.65 and +1.65 were categorized as "no reliable change." Patients with a reliable change (RCINDIV < -1.65) whose scores were above the cutoff point at T1 and below this point at T2, were considered "recovered". All other patients were classified as showing "no clinically significant change".

To control for possible differences in population and treatment over the course of 14 years (i.e., the natural design in which patients enrolled in the treatment program at different times), the sample was divided in three cohorts of patients admitted during 1995-1998 (n=44), 1999-2002 (n=47) and 2003-2008 (n=54). To check for changes over time, an ANOVA was performed on the following variables: age at admission, number of previous admissions, length of treatment, GSI at admission.

Results

All 234 inpatients admitted in the residential facility between 1995 and 2009 were approached to participate in the research, 145 of whom participated at both initial assessment and follow-up. For 211 (90.2%), the age of onset of disruptive behavior was determined; 203 (96.2%) completed the SCL-90-R at admission and 145 patients (145/211 = 68.7%) at discharge.

Nonresponse at admission (n=8) was mainly caused by patients who were unable to fill in the questionnaire, e.g., because of active psychotic symptoms. Nonresponse at discharge (n=66) was mainly due to drop out (patients who ran away and could not be traced) or refusal. Two patients committed suicide during treatment. No significant differences were found between the nonresponders and the final sample on sex, age, duration of treatment, and SCL-90-R score at admission. Table 1

describes the 145 patients included in the study. The sample comprised 39 female and 106 male patients with a mean age of 17.7 years at admission. Although the level of intelligence (mostly measured at the institutions that requested admission) of the sample was average (IQ=100.1, SD=13.0, n=109), compared to the general Dutch population, the educational attainment was relatively low. In addition to their psychiatric problems, all patients in the sample displayed severe disruptive behavior.

Table 1 shows the characteristics by EO and AO classification. Compared to the AO group, significantly more youths in the EO group were males (χ^2 (1, *N*=145) = 6.81, *p*=.009). Both groups differed significantly on the age of onset of the disruptive behavior (*t*(141.9) = -21.21, *p*<.000), and in the number of DSM diagnoses (Axis I) (*t*(143) = 2.34, *p*<.021), with the EO group showing significantly more often a diagnosis of conduct disorder (χ^2 (1, *N*=145) = 5.63, *p*=.018). No significant differences were noted between the groups on other diagnostic categories.

Table 1

Characteristics of the sample (n=145)

		Total n=145		Early-onset (EO) n=85		Adolescent-onset (AO) n=60	
	N[1]	n	(%)	n	(%)	n	(%)
		Mean	(SD)	*Mean*	(SD)	*Mean*	(SD)
Characteristic							
Sex (male)	145	106	(73.1%)	69	(81.2%)	37	(61.7%)
Age (years)	145	*17.7*	(1.2)	*17.6*	(1.1)	*17.8*	(1.2)
Ethnicity Dutch	145	111	(76.6%)	67	(78.8%)	44	(73.3%)
IQ	109	*100.1*	(13.0)	*99.7*	(12.3)	*100.7*	(14.1)
Highest occupation of both parents (SES)	136						
No		13	(9.6%)	6	7.6	7	12.3
Without qualification		11	(8.1%)	5	6.3	6	10.5
Low qualification		29	(21.3%)	21	26.6	8	14.0
Intermediate qualification		63	(46.3%)	36	45.6	27	47.4
High qualification		20	(14.7%)	11	13.9	9	15.8

SD = standard deviation;

[1] Number of patients for whom information about the characteristic was available

Significantly more patients with EO disruptive behavior dropped out of the treatment, i.e., 44.4% of the EO group versus 24.7% of the AO group (χ^2 (1, *N*=211) =

8.53, *p*=.003). Many were nonresponders (i.e., failing to complete the SCL-90-R at discharge; 78.0% of the EO nonresponders dropped out versus 48.0% of the AO nonresponders). No significant difference was found in nonresponse between the EO group (32.5%) and the AO group (29.4%).

Mean change

To check for changes over time, the three cohorts of patients (i.e., those admitted between 1995-1998, 1999-2002, and 2003-2008) were compared on age at admission, number of previous admissions, length of treatment, and GSI at admission. Of these variables only length of treatment showed significant changes over time: for cohort 1995-1998, the length of treatment was 481 days; for cohort 1999-2002, it was 603 days; and for cohort 2004-2008, it was 443 days. The difference between the middle and the last cohort was significant (*F* (2, 143) = 4.68, *p*=.011). The other variables showed no significant differences, with *F* values ranging from 0.45 to 2.61.

Table 2

Comparison between *T-score*s of the total group on SCL-90-R total score at admission and discharge

n=145	Measurement	*M*	(SD)	t (df), *p*	ES
SCL-90-R total score	Admission	152.14	*(61.42)*	2.51 (144), *.007*	.20
	Discharge	139.84	*(61.01)*		

M = mean; SD = standard deviation; df = degree of freedom; SCL-90-R = Symptom Checklist 90 Revised; ES = Effect size (Cohen's d)

Paired *t*-tests (one-tailed) for outcome results were performed for the total group (n=145). The differences in T-scores between admission (T1) and discharge (T2) on the GSI are shown in Table 2. The effect size (Cohen's *d*) between T1 and T2 for the total score was small.

Next, a mixed between-within subjects ANOVA was conducted to assess outcome on the GSI for the EO and the AO groups between the two time periods (admission and discharge). There was no significant interaction between onset group and time period, Wilks Lambda = 1.00, *F* (1, 143) = .07, *p*=.80, partial eta squared = .000. There was a small main effect for time period, Wilks Lambda = .97, *F* (1, 143) =

4.20, *p*=.042, partial eta squared = .029, with both groups showing a reduction on the total problem score between admission and discharge (see Table 3).

The main effect comparing the EO group with the AO group was not significant, *F* (1, 143) = 2.21, *p*=.140, partial eta squared = .015, suggesting no differences in outcome between the onset groups.

Table 3

SCL-90-R Total-scores of the EO and AO groups at admission and discharge

n=145			EO			AO	
	Measurement	n	*M*	SD	n	*M*	SD
SCL-90-R	Admission	85	*143.92*	56.17	60	*163.80*	66.94
	Discharge	85	*133.51*	52.07	60	*148.82*	71.31

M = mean; SD = standard deviation; df = degree of freedom; SCL-90-R = Symptom Checklist 90 Revised; EO = early-onset; AO = adolescent-onset

At discharge, parents involved in the treatment of their child were sent a TOR-J. Because the TOR-J was introduced in October 1997, parents of 22 patients have not received a questionnaire because their child was already discharged. Besides, five patients had no parents involved. Therefore, the TOR-J was sent to 113 parents. Of them, 83 (73.5%) completed and returned the questionnaire. The relationship between treatment outcome on the GSI and the TOR-J "treatment results" scale was examined using Pearson product-moment correlation coefficient. There was a weak but positive correlation between both variables (*r*=.33, n=83, *p*=.002).

Clinical significance of change

To reveal how many patients deteriorated or recovered during treatment, the procedure of clinically significant change was used, to examine whether the patients post-test scores crossed the cutoff point toward better functioning (Jacobson & Truax, 1991). Based on the mean and standard deviation of the normal population, the true difference and the true post-score were calculated. At discharge, the majority of the sample (58.6%) had recovered or improved (GSI; see Table 4).

Subsequently, to control for the staggered design, a chi-square analysis was performed between the three time cohorts (1995-1998, 1999-2002, and 2003-2008) and the categories of clinical significant change of the GSI (i.e., recovered, improved,

no reliable change, and deteriorated). No significant changes were found over time (χ^2 6, N=145) = 5.72, p=.46).

Table 4

Comparison between EO and AO groups of clinically significant change between admission and discharge on the SCL-90-R total-scores

Change from pre- to posttreatment	Outcome	EO n	EO %	AO n	AO %	Total n	Total %	χ^2(df), p
SCL-90-R total score	Recovered	24	28.2	15	25.0	39	26.9	*2.8* (3), *.42*
	Improved	24	28.2	22	36.7	46	31.7	
	No reliable change	13	15.3	12	20.0	25	17.2	
	Deteriorated	24	28.2	11	18.3	35	24.1	
	Total	85	100.0	60	100.0	145	100.0	

df = degree of freedom; SCL-90-R = Symptom Checklist 90 Revised; EO = early-onset; AO = adolescent-onset

When the EO and AO groups were considered separately, both groups showed similar percentages of reported improvement or recovery. This was confirmed by the TOR-J results of the parents, which showed that according to parents, 71.4% of the EO group (score ≥ 6) and 68.3% of the AO group improved. Because not all parents had returned the TOR-J questionnaires, chi-square analysis was performed to verify whether the ones returned came predominantly from one parent group (e.g., AO group) versus the other (e.g., EO group). Significantly more TOR-J questionnaires came from parents of the AL group (p=.036); 69.5% of the parents of the AO group returned the TOR-J questionnaire compared to 51.9% of the parents of the EO group.

Discussion

The purpose of this study was to examine treatment outcome of adolescent inpatients with EO and AO disruptive behavior. Based on epidemiological research, individuals on the LCP pathway were suggested to be 'therapy-resistant' (Moffitt, 1993, 2003; Moffitt et al., 1996) or in need of more intensive intervention (Moffitt et al., 2008). However, these assumptions have never been tested in clinical practice. Therefore, it was hypothesized that adolescent inpatients with AO disruptive behavior would have better treatment outcome than those with EO disruptive behavior. Our study showed that EO youths tended to end treatment prematurely more often than

the AO youths. It thus seems that the EO group is more problematic compared to the AO group in terms of treatment adherence.

In itself this is not a surprising finding; EO youngsters are probably more inclined to lack the necessary support from their social environment and may thus feel less supported to complete treatment. Moreover, most of the EO patients already had a long treatment history that so far had little success. This will certainly have had an impact on the expectations of the patients regarding their treatment. Future research should be conducted on the relationship between EO disruptive behavior and dropout.

Patients of the EO group who stayed in treatment improved to the same extent as patients with AO disruptive behavior. Thus, for this selective group, no support was found for the hypothesis. More than half of both onset groups reported improvement or recovery during treatment, which was for most confirmed by their parents. This conclusion should be treated with caution, because parents of the EO group had a lower response rate than those of the AO group. It is likely that this difference in response rate relates to the severity of the problems (and etiological differences) of the EO group.

The finding that there were no differences in treatment outcome between the onset groups may be caused by several factors. Possibly the AO group responded less well on treatment because they were negatively influenced by the EO group. Besides, both onset groups (and not just the EO group) were highly problematic, because in addition to disruptive behavior, they were also affected by psychiatric disorders. Undoubtedly, this had an effect on the treatment outcomes of both groups. Maybe the EO group responded better to the treatment than may be expected because the environmental risk was eliminated by the admission. However, being admitted in an institution likely exacerbates problems (e.g., there is a concentration of juvenile delinquents to learn from, causing more environmental risks to arise).

Furthermore, the EO group staying in treatment may be a selective group that is more susceptible to interventions, which in part may explain why no differences were found between the onset groups. Also, all patients had a history of previous (unsuccessful) treatment. Therefore, the AO group members could not be considered the “promising candidates for intervention programs” where Moffitt was referring to (Moffitt et al., 1996). Maybe some of them belonged to the subgroup of patients with

AO disruptive behavior that persists into adulthood, as described by Odgers (Odgers et al., 2008). The fact that a proportion of both groups did improve during treatment, might be because of the intensive, highly specialized, tailored treatment that was provided.

Another potentially important factor is the manner in which the constructs were operationalized. Collins and Vermeiren (2013), for instance, indicated that EO and AO can be operationalized in different ways and that outcomes may vary depending on whichever operationalization is applied. Inherent limitations in the operationalization of the (retrospective) EO and AO reporting and the (prospective) LCP and AL group differentiation may have influenced our ability to confirm the hypotheses. It cannot be ruled out that some AO group members were actually members of the EO group. For instance, some AO group members might have committed crimes for which they were not prosecuted because they had not yet reached the age of criminal responsibility (Van Domburgh, Vermeiren, et al., 2009). When these crimes and their onset were also not reported during the study, the actual age of onset of the disruptive behavior may have been earlier than reported.

However, some children who have committed a single offence do not exhibit concurrent or persistent disruptive behavior. It has, for instance, been found that many childhood first-time arrestees did not re-offend (within 2 years) and about two third of them were not diagnosed with an externalizing disorder (Moffitt et al., 2002; Van Domburgh, Loeber, Bezemer, Stallings, & Stouthamer-Loeber, 2009). It is thus possible that some of the patients in our study have committed a single offense at a young age, while actually starting worrisome disruptive behavior from adolescence on. Also, recall bias cannot entirely be ruled out, leading to an overestimation of early disruptive behavior.

Limitations

Findings of this study need to be considered in light of some limitations. First, because the EO and AO groups had additional and often multiple psychiatric problems, they must be considered as a specific subsample of the groups described by Moffitt (Moffitt, 1993; Moffitt et al., 2008). It is very likely that the psychiatric disorders and disruptive behavior interact with each other, and because there was a variety of

psychiatric problems, the sample should be considered heterogeneous. We therefore do not know to what extent the treatment adherence and treatment results were influenced by the comorbid psychiatric disorders. We recommend extending future research to larger groups and examining the effect of specific disorders and comorbidity. Further, a standardized instrument (e.g., Structured Clinical Interview for DSM-IV Axis I Disorders; Spitzer, Gibbon, & Williams, 1998) to reliably assess the psychiatric disorders should be used. Such an instrument was not used in the present study and although the psychiatrists involved have diagnosed conscientiously, this should be seen as a limitation.

Second, because of the naturalistic design with absence of a control group, it is not possible to determine which part of the outcome was attributable to the treatment. Besides, changes in treatment program did occur over time because of experience and new insights. Also, during the 14-year period there were changes in therapists, which obviously must have affected the treatment and hence the treatment outcome. Also, it is not clear what outcomes were in the long term, because no follow-up data were examined.

Third, it would have been informative if specific disruptive behaviors had been assessed over the course of the treatment. Unfortunately, there is a lack of instruments that can be used to measure changes in specific disruptive behaviors in a reliable way. Obviating this by assessing change in externalizing problems between admission and discharge, for example through the Child Behavior Checklist or Youth Self Report (Achenbach & Rescorla, 2001), would also encounter problems. It has been found that the majority of adolescents with disruptive behavior do not report high levels of externalizing problems on such instruments (e.g., Vreugdenhil, Van den Brink, Ferdinand, Wouters, & Doreleijers, 2006).

Querying the parents in this sample would also have created difficulties, because only a portion of them had sufficient insight into how their child was functioning. Prior to the admission, many youngsters have not lived with their parents for a long time. Besides, parents may have been reluctant to cooperate or would be difficult to reach, as was found in research among conduct disordered samples (Colins et al., 2012).

Conclusion

In patient groups with severe disruptive behavior (e.g., juvenile delinquents, adolescents with conduct disorder), it is important to distinguish between those whose disruptive behavior started before age 12 (EO group) and those starting at the age of age 12 on (AO group), because the EO group is at a significantly higher risk to drop out from treatment. EO group members who do stay in treatment, however, do improve during treatment to the same extent as patients with AO disruptive behavior. It is finally worth emphasizing that a substantial number of adolescents of the LCP group, that is often considered untreatable, is likely to change over time, possibly because of intensive treatment.

Chapter 5

Treatment adherence in adolescent psychiatric inpatients with severe disruptive behaviour

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Clinical Psychologist, 2018, 22, 55-62.
(DOI) 10.1111/cp.12111

Abstract

Objective: To examine pre-treatment characteristics associated with dropout in 224 adolescent psychiatric inpatients (mean age 17.1 years) with severe disruptive behaviour. To date, little is known about the factors predicting dropout among adolescents treated for severe disruptive behaviour. This is surprising, as dropout is a major problem in this specific group. **Method:** Dropouts (n=77) and completers (n=147) were compared on known risk factors for dropout, such as severity of externalising problems and disorders, ethnic minority status, male gender, and lower academic functioning, as well as on other factors considered relevant: behavioural characteristics, including age of onset and different types of disruptive behaviour. Within dropout, withdrawal (termination against the advice of the therapist; n=40) and pushout (termination against the wish of the client; n=37) were distinguished. **Results:** Two characteristics significantly predicted dropout: early-onset of disruptive behaviour and cannabis usage prior to treatment. Within the dropout group no differences were found between withdrawals and pushouts. **Conclusions:** Predicting dropout among adolescent psychiatric inpatients with severe disruptive behaviour is difficult. The two predictors found were already present at the time of admission and are therefore considered unalterable. However, they can be used to pinpoint individuals with higher chance at dropout, who in turn can be offered tailored interventions aimed at improving the therapeutic relationship.

Key words: Adolescent psychiatry, Antisocial behaviour, Dropout, Pushout

Key Points

Dropout is a major problem in treatment of adolescents with severe disruptive behaviour; however, little is known about the factors predicting dropout in this specific group.

Early-onset (before the age of 12) of disruptive behaviour and cannabis usage prior to treatment predict dropout in residential treatment of adolescents with severe disruptive behaviour.

For the clinician, there is a difference between withdrawal and pushout, but in the present research no differences were found between these subgroups of dropout.

Introduction

Adolescent psychiatric inpatients with severe disruptive behaviour are likely to drop out (i.e., premature termination of treatment). Although dropout is known to be high within this group, research on this subject is scarce. Existing research predominantly concerns treatment on substance abuse, with few focusing on predictors of dropout (Orlando, Chan, & Morral, 2003; Schroder, Sellman, Frampton, & Deering, 2009). Just one article that described characteristics of adolescents with behavioural problems predicting completion of residential treatment was found (Van den Reijen et al., 2013), in which no differences between completers and dropouts were found. In a meta-analysis (De Haan et al., 2013) on dropout in non-residential outpatient settings, several pre-treatment client characteristics have been associated with dropout. Many of these characteristics are dominant in patients with disruptive behaviour, that is, the presence of an externalising disorder, intensity of self-reported externalising and total problems, ethnic minority status, gender (male), lower academic functioning, higher number of diagnoses, referral source, and lower social functioning (De Haan et al., 2013). As behavioural problems substantially contribute to dropout, high dropout rates are expected in adolescents with severe disruptive behaviour treated in residential settings. Up to this date, however, little is known about dropout and characteristics predicting dropout within this group.

In youths treated for disruptive behaviour, factors predicting dropout are unclear. Therefore, it is of interest to detect specific differentiating factors. Such knowledge is relevant for clinicians working with these youths, as it may help them to tailor interventions to their needs. Evidently, specific types of disruptive behaviour are likely to play a role. For example, the age of onset should be taken into account, as this aspect assumingly determines treatment accomplishment. Based on age of onset, Moffitt (Moffitt, 1993) developed one of the most influential theories concerning disruptive behaviour. Disruptive behaviour starting early and persisting into adulthood was called life-course-persistent disruptive behaviour (LCP), while disruptive behaviour only occurring during adolescence was labelled as adolescence-limited (AL). During adolescence, however, the LCP and AL group present similar in frequency and seriousness of offending, making both groups hard to distinguish based on their behaviour (Moffitt, 1993). Nevertheless, the underlying mechanisms leading to the

behaviour differ and it is argued that the LCP behaviour is more tenacious (Moffitt, 1993, 2003; Moffitt et al., 2008; Moffitt et al., 2002). Therefore, one could argue that attrition rates may be different for both groups. This was already implied by Moffitt et al. (2008), as she stated that "Clinical trials are needed to identify whether potential CD (Conduct Disorder) diagnostic criteria can predict treatment compliance or treatment response (p.31)".

Dropout

Particularly in youths with disruptive behaviour, early termination of residential treatment may not only be initiated by the client but also by the therapist (Van den Reijen et al., 2013). A client may for instance be pushed out by the therapist because of incidents, or lack of commitment which in turn may lead to transferal to another, more restrictive facility (e.g., prison). In most studies, dropout is simply defined as premature termination of treatment (De Haan et al., 2013), without differentiation. However, significant differences may be expected between youths who drop out on their own initiative (i.e., withdrawal), compared to those dropping out on their therapists initiative (i.e., pushout) (Boon & Colijn, 2001). For this reason, in the present study, a distinction was made within the dropout group between withdrawal and pushout.

The aim of the present study was to examine treatment adherence in a sample of adolescent psychiatric inpatients with severe disruptive behaviour. It was expected that a substantial part of the sample would drop out of treatment, and can be characterized by pre-treatment characteristics previously associated with dropout (De Haan et al., 2013). Because disruptive behaviour comprises all kinds of behaviour (e.g., oppositional defiant behaviour, delinquent behaviour, and aggressive or violent behaviour), besides early-onset disruptive behaviour, we also looked into the specific types of disruptive behaviour and their relation to dropout. Also, a distinction was made between withdrawal and pushout, because of the assumed differences between these concepts.

Methods

Setting

The present study was conducted at a residential orthopsychiatric and forensic psychiatric youth facility that offers specialized care for youth with severe disruptive behaviour (i.e., aggressive, oppositional defiant, delinquent, and/or rule breaking behaviour), and co-morbid psychiatric disorders. Participants were referred by other specialized youth care institutions, i.e., institutions that predominantly focus on developmental, psychiatric or criminal problems in children and adolescents. In order to be eligible for treatment, the youngsters had to meet the following criteria: age between 16 and 20 years, severe disruptive behaviour combined with psychiatric problems, and (a history of) previous treatment. Exclusion criteria for treatment were functioning below borderline intellectual level (IQ <70), addiction problems that need primarily substance abuse-related treatment, or severe recidivist criminal conduct for which specialized forensic treatment was indicated.

The treatment program of the facility was based on a cognitive-behavioural treatment model with emphasis on enhancement of social competence (Bartels, 2001), extended with elements of the schema-based therapy (Young, 1990; Young et al., 2004) and consisted of a variety of therapies and training activities, for example, cognitive behavioural therapy, psycho-motor therapy, art therapy, drama therapy, family therapy, social skills training, aggression regulation training, pharmacological treatment, job training, and education.

Procedure

The research had been presented to the internal medical ethics committee. Because it was qualified as non-invasive survey research using instruments that are part of the overall clinical assessment, the committee decided that official submission was not designated. Written informed consent was obtained according to legislation and the institution's policy, after a personal description of the study to the subjects. All inpatients agreed to participate and in concordance with the institutional policy, they participated without receiving incentives or rewards. According to the research protocol (Bruinsma & Boon, 2001) the measurements were conducted within the first weeks of admission. Discharge status was determined shortly after discharge.

To describe the sample, participants were interviewed by research assistants to gather bio-demographical information. These research assistants were psychology students in the final year of their master program, who were trained and supervised by the researcher.

Participants

All 226 inpatients admitted during a 14-year period (1995-2009) were approached to participate. Two had committed suicide during treatment and were therefore excluded. The sample was comprised of 52 female and 172 male participants with a mean age of 17.7 years. Although the level of intelligence (mostly measured at the institutions that requested the admission) of the sample was approximately average, the educational attainment was relatively low. In addition to their psychiatric problems, all participants displayed severe disruptive behaviour.

Measures

Data for the study were collected with different instruments. Some of the data originated from a client interview, some of the data were collected through file review and some by self-report instruments. In order to capture the relevant behaviour characteristics as comprehensive as possible, some information (e.g., criminal offending, substance use) were obtained from interview as well as file review. This information was gathered on standardized forms used in the context of ongoing program evaluation conducted at the facility. Drug usage was queried by type and age at onset. Criminal offending was queried by type, frequency and age at onset.

Interview

Participants were interviewed on socio-demographic information (e.g., sex, age, ethnicity), academic functioning, substance usage, and criminal offending by research assistants. During the intake procedure, the participant, his parents and the referring professional (e.g., guardian or probation officer) were also interviewed by the therapist involved, in order to obtain elaborate information about relevant characteristics as complete as possible (e.g., substance use, criminal offending).

File review

To determine the psychiatric classification at admission, information on current Diagnostic and Statistical Manual of Mental Disorders (DSM) diagnoses were collected from file. These DSM classifications were made by the attending psychiatrist within the first 2 months of treatment and were based on direct evaluations of the subjects. The research assistants also screened the files on referral (i.e., referral by youth care, youth mental health care, or judicial institutions), age at admission, criminal offences (type, frequency, and age at onset), substance usage (type and age at onset), and duration of treatment.

Self-report instrument

Participants filled in the youth self report (YSR; Achenbach & Rescorla, 2001; Verhulst et al., 1997) in the first week of admission. The YSR includes 108 items covering a broad range of emotional and behavioural problems, each rated on a scale of 0–2. The YSR yields scores on eight syndrome scales, two broadband scales (internalising and externalising problems), and a total scale. The internalising scale reflects inward directed problems (i.e., anxiety, depression, withdrawn behaviour, and somatic complaints), the externalising scale reflects outward directed problems (i.e., rule breaking and aggressive behaviour). Summing scores of problem items results in a total problem score. Only the main scale "externalising problems" and the total problem scale were reported in this study. To indicate social functioning, the syndrome scale "social problems" of the YSR was also used. The Dutch version of the YSR has good validity and reliability (Ferdinand, Verhulst, & Wiznitzer, 1995).

Encoding of the data

Ethnicity was determined by the native country of the participants and their (biological) parents. If the country of birth of both parents was The Netherlands (independently of the country of birth of the child) the child was seen as Dutch. If one of the parents was born abroad, the child was seen as non-native Dutch. A division was made between native Dutch and non-natives.

Academic functioning was determined based on the highest level of education attended prior to the admission (i.e., not attending school, special education, pre-

vocational or junior general secondary education, senior general secondary, or pre-university education).

Disruptive behaviour

Presence of (types of) disruptive behaviour was determined, based on the age when treatment was sought for disruptive behaviour or special education was indicated due to this behaviour, and the age at which the youngster started to commit criminal offences. The disruptive behaviour of the adolescent inpatients that were examined was categorized according to the framework of Frick et al. (1993), and included aggression (i.e., homicide attempt, assault, robbery, physical abuse, sexual offences, threatening someone), oppositional behaviour (i.e., disobedient, doing things their own way, stubbornness), status offences (i.e., running away, truancy, substance usage), and property violations (i.e., selling drugs, lying, possession of weapons, stealing, setting fires, vandalism, fencing stolen goods, traffic offences) (De Boer et al., 2013; De Boer et al., 2012; Frick et al., 1993). The categories of disruptive behaviour were used to compare the subgroups. Also, for each participant the presence and age of onset of disruptive behaviour was determined. Disruptive behaviour was considered present when it was mentioned by at least one of the sources (i.e., file, therapist, or participant), and absent when not present according to all sources. When no information was available, it was coded as unclear (or missing, depending on the reason for unavailability). The earliest age reported by any source was used as the age of onset. Because the course of the adolescent inpatients' future disruptive behaviour was as yet unknown, the terms early-onset (EO) and adolescent-onset (AO) were used instead of LCP or AL. Participants with disruptive behaviour starting prior to age 12 were considered belonging to the EO group and those whose disruptive behaviour started from age 12 on were labelled AO (De Boer et al., 2013). This was in accordance with Moffitt (1993; Moffitt et al., 1996), and also with Dean (Dean et al., 1996), who found that differences between the EO and AO groups were only evident when the threshold was set to age 12. The distinction in the EO and AO groups was performed by the main researchers. For 195 of the 224 participants the age of onset of disruptive behaviour could be determined (87.1% of the sample), resulting in 139 early-onset (71.3%) and 56 adolescent-onset youths (28.7%). The inter-rater reliability (Cohen's

Kappa: .79) has been determined between ratings independently done by two researchers on a random subset of the sample (n=11), based on the available multi-informant (adolescent, parent, and therapist), and multi-method (self-report, interview) information.

Dropout

Dropout was determined in line with the preferred definition of dropout of De Haan et al. (2013), based on how treatment was terminated according to the therapist involved. This resulted in three groups: those who terminated treatment in accordance with the therapist (i.e., completers), those who terminated treatment against the advice of the therapist (i.e., withdrawals), and those who were expelled (i.e., pushouts). The withdrawal group and the pushout group combined were labelled as the dropout group, which thus can be defined as all patients who prematurely terminated treatment.

Statistical analysis

All analyses were performed using the Statistical Package for the Social Sciences, version 20.0 (IBM, 2011). The variables of interest that had been associated with dropout in previous studies and the behavioural factors that were considered relevant were tested two-sided for differences, with a level of significance of $p<.05$. A Holm-Bonferroni correction was used to account for the number of characteristics tested.

First, with chi-square tests (categorical variables) and *t*-tests (continuous variables), the completer group was compared to the dropout group. Subsequently, a binary logistic regression analysis was performed (dependent completer and dropout), and all characteristics were included as independent variables.

The Nagelkerke R-square of the model was used as measure for effect size. To examine assumed differences between withdrawals and pushouts, with chi-square tests (categorical variables) and *t*-tests (continuous variables), the withdrawal and pushout groups were compared.

Results

Table 1 shows the pre-treatment client characteristics previously found to associate with dropout. Almost one third of the participants ended treatment prematurely (34.4%). The dropouts were significantly more often male than the completers. With regard to the pre-treatment characteristics on the types and onset of the disruptive behaviour (see Table 2), cannabis usage prior to admission was more common within the dropout group (77.9%) compared to the completer group (57.8%).

Table 1

Pre-treatment client characteristics by discharge status

		Total (n=224)	Dropout (n=77)	Completer (n=147)	Completer vs dropout
	N[1]	n (%) / *M* (SD)	n (%) / *M* (SD)	n (%) / *M* (SD)	*p-value*
Sex (male)	224	172 (76.8%)	65 (84.4%)	107 (72.8%)	*.05**
Age at admission (years)	224	*17.7* (1.2)	*17.6* (1.3)	*17.7* (1.2)	*.603*
Minority status (ethnicity non-Dutch)	224	59 (26.3%)	25 (32.5%)	34 (23.1%)	*.132*
Intellectual ability (IQ)	163	*98.5* (13.2)	*98.5* (11.5)	*98.6* (14.1)	*.973*
Academic functioning	219				*.537*
Not attending school		34 (15.5%)	14 (8.7%)	20 (13.9%)	
Special education		20 (9.1%)	7 (9.3%)	13 (9.0%)	
Pre-vocational/junior general secondary		139 (63.5%)	48 (64.0%)	91 (63.2%)	
Senior general secondary/pre-university		26 (11.9%)	6 (8.0%)	20 (13.9%)	
Referral	224				*.099*
Youth welfare institution		96 (42.9%)	40 (51.9%)	56 (38.1%)	*.088*
Youth mental healthcare institution		90 (40.2%)	24 (31.2%)	66 (44.9%)	*.058*
Judicial institution		38 (17.0%)	13 (16.9%)	25 (17.0%)	*.826*
Number of diagnoses	221	*2.7* (1.2)	*2.8* (1.2)	*2.6* (1.2)	*.210*
Diagnosed with externalising disorder	221	149 (67.4%)	54 (71.1%)	95 (65.5%)	*.404*
YSR total score (T-score)	214	*56.0* (12.2)	*55.0* (11.9)	*56.6* (12.1)	*.338*
YSR externalising score (T-score)	214	*57.5* (11.0)	*57.0* (11.1)	*57.3* (10.9)	*.671*
YSR social problem score (T-score)	214	*57.1* (8.6)	*55.6* (8.0)	*57.9* (8.8)	*.062*

[1] Number of patients for whom information about the characteristic was available

* $p \leq .05$ (two-tailed)

Further, the dropout group significantly more often displayed disruptive behaviour prior to age 12 and more often showed disruptive behaviour at school. These three characteristics significantly predicted membership of the dropout group

(see Table 3), with odds ratios ranging from 2.28 to 3.02, corresponding with effect sizes ranging of .02 to .07. The dropouts and completers differed neither on types nor in the number of types of disruptive behaviour.

Table 2

Pre-treatment disruptive behaviour characteristics by discharge status

		Total (n=224)	Dropout (n=77)	Completer (n=147)	Completer vs dropout
	N[1]	n (%) / *M* (SD)	n (%) / *M* (SD)	n (%) / *M* (SD)	*p-value*
Cannabis usage (prior to treatment)	224	145 (64.7%)	60 (77.9%)	85 (57.8%)	*.003***
Disruptive behaviour reported at school	197	154 (78.2%)	58 (86.6%)	96 (73.8%)	*.041**
Disruptive behaviour (framework Frick)					
Aggressive behaviour	224	189 (84.4%)	69 (89.6%)	120 (81.6%)	*.118*
Oppositional behaviour	206	98 (47.6%)	40 (55.6%)	58 (43.3%)	*.093*
Status offences	213	196 (92.0%)	69 (94.5%)	127 (90.7%)	*.331*
Property violations	211	187 (88.6%)	67 (89.3%)	120 (88.2%)	*.810*
Number of disruptive behaviours	186	*3.1* (0.9)	*3.3* (0.8)	*3.0* (0.9)	*.058*
Early-onset (< age 12) disruptive behaviour	195	139 (71.3%)	59 (84.3%)	80 (64.0%)	*.003***

[1] Number of patients for whom information about the characteristic was available

* $p \leq .05$ (two-tailed)

** $p < .01$ (two-tailed, Holm-Bonferroni correction)

Table 3

Logistic regression analysis of the associations between client characteristics and completion and dropout

		Model 1			Model 2	
	N	OR	95% CI	R^2	OR	95% CI
Early-onset (< age 12) of disruptive behaviour	195	3.02	(1.44-6.32)*	.07	2.93	(1.39-6.18)*
Cannabis usage (prior to treatment)	224	2.57	(1.37-4.84)*	.06	2.14	(1.10-4.16)*
Disruptive behaviour reported at school	197	2.28	(1.02-5.10)*	.03		

Model 1: univariate; model 2: multivariate. Multivariate model: n=195; OR = odds ratio; 95% CI = 95% confidence interval; R^2 = Nagelkerke R^2

* $p < .05$; Nagelkerke R^2 model 2: 0.10

Binary logistic regression (dropout and completion)

The logistic regression analysis was performed to test the predictive value of the variables on (the dichotomous dependent variable) dropout. The multivariate model showed two significant independent predictors of dropout: early-onset of disruptive behaviour and cannabis usage prior to treatment (Table 3; χ^2 (2, N=195) =

14.87, *p*=.001). The model as a whole explained 10.1% (Nagelkerke *R*-square) of the variance, and correctly identified 64.1% of cases.

Withdrawal versus pushout

About half of 77 participants of the dropout group were expelled from treatment (n=37; 16.5% of the total sample) because of incidents or complete lack of commitment. Many of them were transferred to a more restrictive residential facility (judicial institution or adult mental healthcare institution: 37.8%) and a quarter of the pushouts (24.3%) ended up in a crisis centre, wandered around or had a unknown residence. The other half of the dropouts (n=40; 17.8% of the total sample) withdrew from treatment. They ran away, did not return from leave or decided unilaterally and against the advice of the therapist to terminate the treatment. The dropout groups were compared on all pre-treatment client and disruptive behaviour characteristics listed in Tables 2 and 3. None of the pre-treatment client and disruptive behaviour characteristics differed, except the YSR Externalising score, which was higher for the pushouts (*M*=60.2, SD=9.9 versus *M*=55.9, SD=11.8, *p*=.05).

Discussion

Although not all clients benefit from psychiatric treatment or interventions aimed at reducing behavioural problems, treatment increases the likelihood that psychiatric and behavioural problems get resolved (e.g., Kazdin et al., 1994; M. Shaw et al., 2012). Hence, when clients drop out, their disorders might persist or even worsen later in life, because children with untreated behavioural problems are more likely to leave school without a qualification, tend to engage in delinquent activities more often, have high incidence of drug and alcohol abuse, and are likely to become unemployed as adults (De Haan et al., 2013; Moffitt et al., 2002). Therefore, preventing dropout and its negative consequences carries clinical relevance, with advantages for both the individual and the society as a whole. Especially among samples with a high incidence of disruptive behaviour, the stakes are high, because if left untreated, these individuals tend to cause substantial social turmoil.

In the meta-analysis on dropout among non-residential child and adolescent outpatients of De Haan et al. (2013), dropout percentages of 28-75% were shown.

Also, in a comparable residential sample of psychiatric inpatients with severe disruptive behaviour of Van der Reijen et al. (2013), a dropout percentage of 59.1% was found (14.2% withdrawal and 44.9% pushout). In this light, the dropout percentage of 34.4% (17.9% withdrawal and 16.5% pushout) in our study was on the low end. The low percentage of pushout was probably partly due to what the facility describes as "retentive treatment" (Boon & Haijer, 2008) which, among other things, reflects the way the facility regards the youngsters and their disruptive behaviour. Employees of the institution are well aware not to walk into the common pitfall to send the youngsters away when they exhibit the behaviour for which they were initially admitted.

Among the sample, there was a high prevalence of risk factors for dropout known from outpatient settings, that is, the majority was male, two third had an externalising disorder, and about a quarter was not attending school or attended special education. With this in mind, one would actually expect a high percentage of dropout. In order to find predictors of dropout within this high risk group, it was of clinical relevance to investigate specific predictors for dropout, which would apply to psychiatric inpatients with disruptive behaviour. It was found that the dropouts differed significantly from the completers on only one of the known pre-treatment patient characteristics (i.e., sex) and on three of the behavioural characteristics, namely cannabis usage prior to admission, disruptive behaviour reported at school, and EO disruptive behaviour. Of all characteristics, after multivariate regression analysis only EO disruptive behaviour and cannabis usage prior to admission remained as predictors of dropout. The explained variance of 10% indicates that many other factors play a role. This, of course, raises the question to what the extent the findings can be used to predict behaviour of individual youths.

We found no differences between pushouts and withdrawals, or at least, not in the pre-treatment client characteristics or predictors that were examined. However, both groups may differ in factors that are characteristic but were not examined, such as parent or family factors (e.g., SES, parenting), therapist factors (e.g., the quality of the therapeutic alliance), and also motivation for treatment, having a purpose in life, or distrust of adults. We therefore think it is useful to distinguish between the two

ways of ending treatment. After all, to prevent dropout, it may be advisable to approach potential withdrawals and potential pushouts differently.

While cannabis usage prior to treatment turned out to be a predictor of dropout, usage by itself was not a contra-indication for treatment, unless there were severe addiction problems that needed primarily substance abuse related treatment. In the Netherlands, cannabis usage is not a criminal offence and is fairly common among adolescents. Research showed that 27% of all 16 year olds and 29% of all 17 year olds have used cannabis occasionally. These percentages are higher for 17 year old adolescents admitted in judicial institutions, as about 70% of them was reported to use cannabis (Van Laar et al., 2014). In our sample, about two thirds used cannabis prior to treatment, which is just a little lower than in adolescents admitted to judicial institutions. Among the participants who dropped out, this percentage was higher (77.9%) compared to those who completed treatment (57.8%). During treatment, extra attention should thus be given to the group that is familiar with cannabis usage, in order to reduce the risk of dropout.

Limitations

While studies in naturalistic settings carry substantial clinical relevance because of their ecological validity, methodological limitations hamper interpretation of findings. It affects the representativeness and replicability of the study and it makes it virtually impossible to draw causal inferences. The main limitation of this study relates to the assessment of variables. Data were derived from files, and collected by several clinicians. Also, we do not know to what extent the inclusion of youths in the clinic has influenced our results.

Chapter 6

Treatment adherence and general daily functioning at follow-up in youths with severe disruptive behavior

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Manuscript submitted for publication.

Abstract

Objective: As follow-up research focuses predominantly on patients who completed treatment, we lack information on outcomes of treatment dropouts. Therefore, general daily functioning was examined of former inpatients (n=196) of a psychiatric institution specialized in treatment of youth with severe disruptive externalizing. **Method:** Regression analyses were used to assess whether completion of treatment could predict general daily functioning at 18 months follow-up. Additionally, the influence of early-onset (i.e., prior to age 12) disruptive behavior, cannabis usage prior to admission and male sex was examined. **Results:** Treatment completion (versus dropout) was the best predictor for good general daily functioning at follow-up. Early-onset disruptive behavior, cannabis usage prior to admission and male sex, added to the explained variance. **Conclusions:** Because treatment dropout related to poorer functioning at follow-up, preventing dropout is clinically relevant. One way to achieve this may be to focus on the reduction and prevention of drug use.

Keywords: Follow-up, Dropout, General daily functioning, Residential adolescent psychiatry, Antisocial behavior

Introduction

Because between a quarter to as much as three quarters of the outpatients terminate treatment prematurely (De Haan et al., 2013), treatment dropout can be considered a major problem in Child and Adolescent Mental Health. Not much however is known about dropout in residential psychiatric care for patients with severe disruptive behavior, albeit a dropout percentage as high as 59.1% was found in one study (Van den Reijen et al., 2013). Assuming that accurate treatment reduces symptoms and improves functioning, these findings suggest that a considerable number of patients may not benefit fully from evidence based psychiatric interventions. Children and adolescents with untreated behavioral problems have poor prospects. They are more likely to leave school without a qualification, to engage in delinquent activities more often, to abuse drugs and alcohol, and to become unemployed as adults, while their disorders might persist or even worsen later in life (De Haan et al., 2013; Moffitt et al., 2002). If premature termination of treatment entails that behavioral problems are left untreated, it may be assumed that patients who drop out are worse off in the period after discharge. To our knowledge, no research has been conducted in which completers and dropouts were compared on the daily functioning in the period after discharge.

Dropout can be an indication of the severity of the problems, as was indicated by Kazdin (1994), who found that children with externalizing problems who dropped out of outpatient treatment showed greater pretreatment impairment at home, school and community compared to completers. They also had greater clinical dysfunction at discharge. Previous research among residential psychiatric inpatients with severe disruptive behavior, the group followed-up in this study (De Boer, Boon, Verheij, Donker, & Vermeiren, 2017), showed that two factors are related to premature termination of treatment, i.e., early-onset disruptive behavior (i.e., exhibiting disruptive behavior prior to age 12; OR 2.9) and cannabis usage prior to the admission (OR 2.1) (De Boer et al., 2017). Therefore in the present study these variables were taken into account, because the relation between treatment adherence and general daily functioning at follow up might be confounded by them. Sex was also included in the analyses, as in previous studies sex differences were found in dropout as well as in

early-onset disruptive behavior (De Boer et al., 2017; De Haan et al., 2013; Odgers et al., 2008).

In residential samples with high incidence of disruptive behavior, the initiative to prematurely terminate treatment may not only lie with the patient (i.e., withdrawal), but also with the therapist (pushout). It has been argued that it is of relevance to distinguish both forms of dropout (Boon & Colijn, 2001; Van den Reijen et al., 2013), because withdrawal may be related to lack of commitment, while pushout will often be the result of incidents. Further, patients may withdraw because they feel that their treatment is completed. In some cases of pushout, the persons involved (e.g., the therapist, the referring agency, or criminal court) may deem it necessary to transfer the patient to another, more restrictive residential facility such as prison. The patient does not necessarily have to agree and may still feel the need of treatment by the expelling institution. This implies that it is of interest to distinguish between two types of dropout.

In the present study, the general daily functioning in the eighteen months following discharge was examined in a sample of former adolescent psychiatric inpatients who had been admitted to a residential institution specialized in youth with psychiatric disorders combined with severe disruptive behavior. Based on what is known about areas of life on which individuals with untreated behavioral problems function worse later in life (De Haan et al., 2013; Moffitt et al., 2002; Odgers et al., 2008; Piquero, Farrington, Nagin, & Moffitt, 2010), good general daily functioning was considered to consist of having daytime activities (education, work), not using substances (alcohol, drugs), abstaining from criminal offending, and stability of the living conditions since discharge. In order to investigate whether dropouts and completers differed in severity of dysfunction at admission and discharge, as was found by Kazdin (1994), the degree of psychological distress of dropouts and completers was compared in the first and last week of the treatment.

To control for its possible effect, early-onset disruptive behavior was included in the analyses. The concepts of early-onset disruptive behavior (i.e., disruptive behavior prior to age 12) and adolescent-onset disruptive behavior (i.e., disruptive behavior after age 11) are based on the extensive longitudinal research of Moffitt and colleagues (Moffitt, 1993; Moffitt et al., 2008; Moffitt et al., 2002; Odgers et al., 2008;

Piquero et al., 2010). Individuals with an early-onset are likely to become life-course-persistent (LCP) offenders, for whom general daily functioning is more compromised than for late onset or Adolescent Limited (AO) offenders. Individuals with LCP have worse mental health, worse physical health, and more economic problems at several assessment occasions (e.g., Moffitt et al., 2002; Odgers et al., 2008). High-rate chronic offenders - who may be considered similar to individuals with LCP disruptive behavior – were also found to have a less satisfactory accommodation and cohabitation history, were less often employed, more often reported fights and offences, had problematic alcohol and drug use, had less satisfactory mental health, and had more convictions (Piquero et al., 2010).

Methods

Setting

The present study was conducted at a residential orthopsychiatric and forensic psychiatric youth facility that offers specialized care for youth with severe disruptive behavior, and co-morbid psychiatric disorders. The disruptive behavior included aggressive, oppositional defiant, delinquent, and rule-breaking behavior. The psychiatric disorders consisted mainly of conduct disorders, oppositional defiant disorder, attention-deficit/hyperactivity disorders (ADHD), autism spectrum disorders, schizophrenia and related disorders, mood disorders, and anxiety disorders. To be eligible for treatment, at admission the youngsters had to meet the following criteria: being in the age of 16 to 20 years, exhibiting severe disruptive behavior as well as psychiatric problems, and having (a history of) previous treatment. Exclusion criteria for treatment were: functioning below borderline intellectual level (IQ <70), and having shown severe recidivist criminal behavior for which specialized forensic treatment was indicated. Drug abuse was no contraindication, nor was it a reason for dismissal. However, being afflicted by predominant addiction problems was a contraindication.

The treatment program of the facility was based on a cognitive-behavioral treatment model with emphasis on enhancement of social competence (Bartels, 2001). Over time, elements of the schema-based therapy were added (Young, 1990; Young et al., 2004). A variety of therapies and training activities were offered, e.g., cognitive behavioral therapy, psycho-motor therapy, art therapy, drama therapy, family therapy,

social skills training, aggression regulation training, pharmacological treatment, job training, and education.

Participants

All 296 inpatients admitted and discharged during a seventeen year period (1995-2012) were approached to participate. Two had committed suicide during treatment and were therefore excluded. Hence, the total group that was eligible for research comprised of 77 females and 217 males.

Table 1

Characteristics of the sample

N=294	N[1]	n	(%)
		Mean	(SD)
Characteristic			
Sex (male)	196	147	(75.0%)
Ethnicity Dutch	196	147	(75.0%)
Onset of disruptive behavior	175		
Early-onset (< 12 years)		122	(69.7%)
Adolescent-onset (> 11 years)		53	(30.3%)
Cannabis usage prior to admission	196	130	(66.3%)
Age at discharge (years)	196	*19.0*	(1.4)
Discharge status	196		
Completion of treatment		129	(65.8%)
Withdrawal[2]		40	(20.4%)
Pushout[3]		27	(13.8%)
Duration of treatment (days)	196	*444.3*	(283.8)

[1] Number of patients for whom information about the characteristic was available
[2] Premature termination of treatment against the advice of the therapist
[3] Premature termination of treatment against the whishes of the patient

Over sixty percent (60.2%) of these 294 individuals completed the treatment, leaving about forty percent (n=117, 39.8%) of them to be entitled dropout. Of the 294 individuals eventually 196 (66.7%) participated in the follow-up study. The participants (N=196) had a mean treatment duration of 14.8 months (444 days; min. 25 - max. 1481 days) and the majority of them was of Dutch origin (see Table 1).

The 98 non-responders were compared to the 196 participants on the variables used in present study. No significant differences were found on sex, early-onset

disruptive behavior, cannabis usage prior to treatment, or duration of treatment. The non-responders did differ on discharge status: 27.1% of the completers did not participate at follow-up compared to 42.7% of the dropouts (χ^2 (1, N=294) = 7.73; p=.005). Further analysis revealed that the difference between completers and dropouts was almost entirely caused by the pushouts (50.0% did not participate) and not by the withdrawals (non-participation rate of 36.5%).

Procedure

All inpatients admitted from the start of the facility in 1995 were approached to participate in the study. The research was in accordance with Dutch medical ethical research regulation. Information gathered was handled according the regulation of the Personal Data Protection Act (Wet Bescherming Persoonsgegevens). After a personal description of the study to the subjects, written informed consent (asking for the use of their information for research) was obtained according to legislation and the institution's policy. All inpatients agreed to participate and in concordance with the institutional policy, they participated without receiving incentives or rewards. The data were used of those who had been discharged up to and including 2012 (N=294).

According to the study protocol (Bruinsma & Boon, 2001) the measurements were conducted within the first weeks of admission, and one and a half year after discharge (follow-up). Discharge status (i.e., completion and dropout) was determined shortly after discharge. The measurements were conducted by research assistants. These research assistants were psychology students in the final year of their master program, and were trained and supervised by the researcher.

Some of the data originated from patient interview, some was collected through file review and some by self-report instruments. The information was gathered on standardized forms used in the context of ongoing program evaluation research conducted at the facility.

In the first week of the admission, participants were interviewed on socio-demographic information (e.g., sex, age, ethnicity), substance usage (drugs and alcohol) and previous criminal offending. The period for which the information was collected was from birth to admission. To obtain an indication of the psychological functioning, in the first week of the admission and at discharge, participants filled in

the SCL-90-R (Arrindell & Ettema, 2003). The SCL-90-R total score at admission and discharge was used to examine possible differences in the degree of psychological distress at the start and end of the treatment between completers and dropouts. On average, at one and a half year follow-up (*M*=1.51 years, SD=0.69, min. 0.91 - max. 4.55 years), the participants were interviewed on living conditions, daytime activities (e,g., school, work), substance usage, and criminal offending. The period for which the information was collected was from discharge to follow-up. To obtain a fair image of how the participant was doing and to ensure the reliability of the data, the interview at follow-up took place at the residence of the participant.

Besides the patient interview, the research assistants also screened the patient files on age at admission, criminal offences (type, frequency and age at onset), substance usage (type and age at onset), and duration of treatment.

Psychological problems

The Symptom Checklist Revised (SCL-90-R) (Arrindell & Ettema, 2003) is a standardized self-report questionnaire for the assessment of psychological and related physical problems and was initially intended for adult populations. In recent decades, it has become increasingly common to use the questionnaire with adolescent populations as well, including adolescent inpatients with severe behavioral problems (Boon & De Boer, 2007; Bruinsma & Boon, 2001). The SCL-90-R consists of 90 items that can be rated on a five-point Likert scale (“not at all” to “extremely”) to indicate the severity of the symptom over the previous week. The total score is known as the Global Severity Index (GSI), which has good reliability (Arrindell & Ettema, 2003), and has become the most commonly used measure of psychological distress (Holi, 2003; Prinz et al., 2013).

Early-onset of disruptive behavior

Presence of disruptive behavior was based on the age when treatment was sought for disruptive behavior or special education was indicated because of such behavior, or the age at which the youngster started to commit criminal offences. The data with regard to disruptive behavior was collected by research assistants and based on patient interview and file review. To obtain the fullest possible picture, the

therapist involved also inquired about this information with the participant, his parents and the referring professional (e.g., guardian or probation officer) during the intake procedure. The disruptive behavior of the participants was categorized according to the framework of Frick and colleagues (Frick et al., 1993), and included aggression (i.e., homicide attempt, assault, robbery, physical abuse, sexual offences, threatening someone), oppositional behavior (i.e., disobedient, doing things their own way, stubbornness), status offences (i.e., running away, truancy, substance usage), and property violations (i.e., selling drugs, lying, possession of weapons, stealing, setting fires, vandalism, fencing stolen goods, traffic offences).

For each participant the presence and age of onset of disruptive behavior had been determined. Disruptive behavior was considered present when it was mentioned by at least one of the sources (i.e., file, therapist or patient). When no information was available, it was coded as unclear (or missing, depending on the reason for unavailability). Participants with disruptive behavior starting prior to age 12 were considered belonging to the EO group and those whose disruptive behavior started from age 12 as being part of the AO group (De Boer et al., 2013; De Boer et al., 2012; De Boer et al., 2007). The distinction in the early-onset (EO) and adolescent-onset (AO) groups was made by the main researchers and was done independently from the data collection. The interrater reliability (Cohen's Kappa .79) had been determined based on independent ratings by two researchers on a random subset of the sample (De Boer et al., 2012).

Cannabis usage prior to the admission

Data with regard to cannabis usage prior to the admission was collected by research assistants and was based on patient interview and file review. The age at which cannabis was used for the first time as well as the frequency of use was queried. The therapist involved also inquired about this information with the participant, his parents and the referring professional (e.g., guardian or probation officer) during the intake procedure.

Discharge status

Discharge status was determined based on how treatment was terminated according to the therapist involved. In line with the preferred definition of dropout of De Haan and colleagues (De Haan et al., 2013), this resulted in two groups of participants: completers, those who terminated treatment in accordance with the therapist, and dropouts, those who prematurely terminated treatment while the therapist (or the patient) thinks further treatment is actually needed. The latter group was further subdivided into those who terminated treatment against the advice of the therapist (withdrawals), and those who were expelled (pushouts) (Boon & Colijn, 2001).

General daily functioning in the eighteen months after discharge

In order to have an indication of the general daily functioning of the participants in the eighteen months after discharge, four components were distinguished: 'stability of living condition', 'daytime activities', 'substance usage', and 'criminal offending'. Each of the four components was rated (positive = 2, dubious = 1, or negative = 0) by the research assistant. The components combined formed an estimation of general daily functioning, with a score ranging from 0 to 8.

The component 'stability of living condition' was coded as positive when there had been a stable living condition (e.g., living with parents or family, living independently or in sheltered housing), with no more than one or two changes. It was coded as negative when the participant had been incarcerated, had been admitted to a restrictive psychiatric facility or a crisis shelter, in case of having no fixed abode, or when there had been ongoing changes of housing situation. It was coded dubious when there had been more than two changes in housing situation, but the nature of the living conditions in itself was favorable.

Having any kind of 'daytime activities' since discharge was coded as positive. These activities may include work or education, but also volunteer activities or occupational therapy. When the participant had no daytime activities most of the eighteen months or if the daytime activities consisted of committing crimes or other rule violations, this was coded as negative. In the case of alternating having and not having a daytime activity, this was coded as dubious.

The component 'substance usage' was coded as positive when there was no drug use since discharge, if the participant had occasionally used alcohol (not on a regular basis, not more than 1 or 2 drinks per occasion) or sporadically had used cannabis (once or twice a year). Occasional usage of other drugs (e.g., XTC, speed, cocaine, heroin), or regular use of cannabis or alcohol was coded as negative. If there for instance had been a short period of regular use of cannabis or alcohol after discharge, but subsequently it changed for the better resulting in abstinence, this was coded as dubious.

'Criminal offending' was coded as positive if the participant reported that he did not commit any crimes or offences. If there had been violations such as traffic offences, fare dodging or fighting, this was coded as dubious. If the participant reported crimes, offences or violations for which prosecution would be justified, this was coded as negative. It was based on offending that was indicated by the respondent and was rated regardless whether or not persecution actually took place.

Statistical analysis

All analyses were performed using the Statistical Package for the Social Sciences, version 23.0 (IBM, 2015). The inter rater reliability (Cohen's Kappa) of the components of the general daily functioning scale was determined. To compare the completer and dropout groups on the four (categorized) components of general daily functioning, chi-square tests were performed. Independent-samples t-tests were conducted to compare the completer and dropout groups on the quasi-interval variable general daily functioning at follow-up, and on the continuous variables (e.g., GSI at admission and discharge). First, the completers were compared to the dropouts, and because of the assumed difference between withdrawals and pushouts, both dropout groups were also compared with each other. To compare the completer and dropout groups on (dichotomized) categorical variables (cannabis usage prior to admission, early-onset disruptive behavior prior to age 12, and sex), chi-square tests were performed. To investigate the relationship between the dichotomized categorical variables (cannabis usage prior to admission, early-onset disruptive behavior prior to age 12, and male sex) and general daily functioning at follow-up, independent-samples

t-tests were used. A level of significance of $p<.05$ (two-sided) was chosen, with a Holm-Bonferroni correction to account for the number of characteristics tested.

Univariate regression analysis was conducted with discharge status (completer versus dropout), as independent variable, and the general daily functioning score as dependent variable. Preliminary analyses were conducted to ensure no violation of the assumptions of normality, linearity, multicollinearity and homoscedasticity. Subsequently, to control for the possible effect of cannabis usage prior to treatment, early-onset disruptive behavior, and male sex, these dichotomized variables were each included as independent variables in separate regression analyses. Finally, a multiple regression analysis was performed, in which the discharge status (completer versus dropout), was included as independent variable, and the general daily functioning score as dependent variable, controlling for the possible joint effect of cannabis usage prior to treatment, early-onset disruptive behavior, and male sex. The Nagelkerke R-square of the model was used as measure for effect size.

Results

General daily functioning

Scores on general daily functioning were normally distributed (Skewness = -.58 Kurtosis = -.73), with a mean of 5.3 (range 0-8; SD=2.4). The inter rater reliability (Cohen's Kappa) of the four components by two research assistants on a random subset of the sample (n=15) showed that the inter rater reliability of the 'stability of living condition' was moderate (Cohen's Kappa .55), of 'daytime activities' excellent (Cohen's Kappa .88), and those of 'substance usage' (Cohen's Kappa .64), 'criminal offending' (Cohen's Kappa .75), as well as the sum of the components, 'general daily functioning' (Cohen's Kappa .75), good (Fleiss, 1981).

Completion and dropout

About one third of the 196 participants had dropped out of treatment (34.2%). Completers had a higher score on the general daily functioning scale at follow-up (see Table 2), indicating that in the eighteen months after discharge they functioned better than those who had dropped out.

Table 2

Completers versus dropouts

		Completers (n=129)	Dropouts (n=67)	Completers vs Dropouts
	N[1]	n (%) / *M* (SD)	n (%) / *M* (SD)	*p-value* , ES[2]
Sex (male)	196	94 (72.9%)	53 (79.1%)	*n.s.*
Early-onset disruptive behavior (< age 12)	175	72 (63.2%)	50 (82.0%)	*.010*, phi* = -.20
Cannabis prior to treatment	196	77 (59.7%)	53 (79.1%)	*.006*, phi* = -.20
Duration of treatment	196	*539.7* (271.0)	*260.6* (208.6)	*.000**, Cohens d* = -1.15
General daily functioning at follow up	193	*5.80* (2.19)	*4.16* (2.56)	*.000**, Cohens d* = .69

ES = Effect Size; *n.s.* = not significant

[1] Number of patients for whom information about the characteristic was available

* $p < .03$ (two-tailed), significant after Holm-Bonferroni correction (with 2 variables: $p < .03$)

** $p < .000$ (two-tailed), significant after Holm-Bonferroni correction (with 5 variables: $p < .01$)

[2] ES = phi coefficient for 2x2 tables; small = .10 ; medium = .30; large = .50; Cohen's d; small = .20 ; medium = .50; large = .80

Considering the separate components of general daily functioning (see Table 3), completers functioned significantly better than the dropouts on three of the four components ('stability of living condition', 'daytime activities', and 'criminal offending'). Further, completers and dropouts did not differ in the degree of psychological distress (SCL-90-R total score) at the start and end of the treatment. Also, no differences between completers and dropouts were found on the subscales of the SCL-90-R at both measurements.

Early-onset disruptive behavior and the relationship with discharge status and general daily functioning

For 175 of the 196 participants the age of onset of the disruptive behavior could be determined (89.3% of the sample), which resulted in 122 early-onset (122/175 = 69.7%) and 53 adolescent-onset (30.3%) participants. Participants with early-onset disruptive behavior more often dropped out of treatment than participants with adolescent-onset disruptive behavior (χ^2 (1, N=175) = 6.66; p=.01).

At follow-up, no significant difference was found between the mean score on general daily functioning of the early-onset group (M=5.32, SD=2.48) and the adolescent-onset group (M=5.15, SD=2.37) (t (173) = -.42, p=.674). When the separate components of general daily functioning were considered, one significant difference

Table 3

Percentages of positive ratings on the components of general daily functioning of the key variables

	Discharge status (n=196)			Onset of disruptive behavior (n=175)			Cannabis usage prior to treatment (n=196)			Sex (n=196)		
	Dropout (n=67)	Completion (n=129)		EO (n=122)	AO (n=53)		Yes (n=130)	No (n=66)		Male (n=147)	Female (n=49)	
Positive rating	*%*	*%*	*p-value*	*%*	*%*	*p-value*	*%*	*%*	*p-value*	*%*	*%*	*p-value*
Stability of living condition	*47.8*	*76.0*	*.000***	*71.3*	*52.8*	*.018**	*63.1*	*72.7*	*n.s.*	*63.9*	*73.5*	*n.s.*
Daytime activities	*31.8*	*52.7*	*.006**	*49.6*	*37.7*	*n.s.*	*43.4*	*50.0*	*n.s.*	*45.2*	*46.9*	*n.s.*
Substance usage	*43.1*	*54.0*	*n.s.*	*50.4*	*57.7*	*n.s.*	*37.8*	*75.0*	*.000***	*43.4*	*70.8*	*.001**
Criminal offending	*58.2*	*79.8*	*.001**	*69.7*	*79.2*	*n.s.*	*66.2*	*84.8*	*.006**	*68.0*	*85.7*	*.016**

n.s. = not significant; EO = Early-onset (< age 12), AO = Adolescent-onset (> age 11)

* $p < .05$ (two-tailed)

** $p < .000$ (two-tailed)

was found (see Table 3). Participants with EO disruptive behavior more often had a positive rating on 'stability of living condition', indicating that they functioned better compared to participants with AO disruptive behavior.

Cannabis usage prior to admission and the relationship with discharge status and general daily functioning

Two third of the participants had used cannabis prior to admission (see Table 1), which was not associated with early-onset disruptive behavior, nor with duration of treatment. Participants who had used cannabis before admission more often dropped out of treatment (χ^2 (1, N=196) = 7.44; p=.006). Furthermore cannabis usage prior to treatment was associated with a lower score on general daily functioning (M=4.8, SD=2.5 versus M=6.1, SD=2.2) (t (143.65) = 3.57, p=.000) at follow-up. This indicated that cannabis usage prior to treatment might be a confounding factor in the relation between completion of treatment and general daily functioning at follow-up. Table 3 shows that participants who had used cannabis prior to treatment, functioned significantly worse on 'substance usage' and 'criminal offending' at follow-up.

Sex and the relationship with discharge status and general daily functioning

Males and females did not differ on completion or dropout from treatment, or on cannabis usage prior to treatment, nor did they differ on duration of treatment. Males more often displayed disruptive behavior before age 12 (i.e., early-onset disruptive behavior) (χ^2 (1, N=175) = 5.14; p=.023) and more males (94.9%) than females (81.6%) had offended prior to treatment (χ^2 (1, N=294) = 12.66; p=.000). On general daily functioning at follow-up, females had a higher score (M=6.0, SD=2.1) than males (M=5.0, SD=2.5)(t (193) = 2.39, p=.018), indicating that female participants functioned better than the male group. As shown in Table 3, males functioned significantly worse on 'substance usage' and 'criminal offending' at follow-up. No sex differences we found on the other two components.

Withdrawals versus pushouts

No significant differences were found between withdrawals and pushouts on sex, early-onset of disruptive behavior, cannabis usage prior to admission, duration of

treatment, GSI at admission and GSI at discharge, or general daily functioning eighteen months after discharge.

Regression analyses

Completion of treatment significantly predicted general daily functioning at follow-up (F (1, 193) = 22.66, p<.001), explaining 10.1% of the variance.

After controlling for early-onset disruptive behavior, completion of treatment explained 11.0% of the variance in general daily functioning at follow-up (F (2, 172) = 10.65, p<.001).The model with cannabis usage prior to admission as control variable, was statistically significant as well (F (2, 192) = 14.81, p<.001), with 13.4% of the variance explained. When the influence of male sex was taken into account, 12.3% of the variance in general daily functioning at follow-up was explained (F (2, 192) = 13.44, p<.001).

After controlling for the combined influence of early-onset disruptive behavior, cannabis usage prior to admission and male sex, the total variance explained was 17.1%, F (4, 170) = 8.76, p<.001. These factors combined explained an additional 7.0% of the variance in general daily functioning at follow-up (R squared change = .07, F change (1, 170) = 4.78, p=.003). In this model, all variables were statistically significant related to daily functioning, with the exception of early-onset disruptive behavior (which almost reached significance). Discharge status recorded the highest beta value (β = .30, p<.001), followed by cannabis usage prior to treatment (β = -.19, p=.01), male sex (β = -.17, p=.021), and early-onset disruptive behavior (β = .13, p=.066).

Discussion

The present paper reports whether dropout is associated with poorer general daily functioning at follow-up in youth with severe disruptive behavior. To our knowledge this has not been examined before, since follow-up research is usually conducted among patients who completed the treatment. It was found that former patients who completed a treatment for psychiatric disorders and severe disruptive behavior functioned better in the eighteen months after discharge than those who dropped out. This finding remained when controlling for other factors that previously have been associated with dropout.

Compared to previous studies on dropout (De Haan et al., 2013) and in particular a sample that may be considered similar (Van den Reijen et al., 2013), the dropout percentage of 39.8% was low. In studies on dropout of treatment for reducing disruptive behavior, dropouts had more problems, both prior to treatment and at discharge (e.g., Kazdin et al., 1994). Present results indicated that dropouts also functioned worse in the period after discharge and that dropout had a unique relationship with general daily functioning at follow-up. This implicates that, in the treatment of conduct disordered youths, preventing dropout should be an important focus. For instance, individuals with increased risk of dropout could be offered interventions primarily aimed at motivational enhancement, or at enhancing the therapeutic alliance (e.g., De Haan et al., 2013), since this is likely to play a role. Also, an important focus of treatment in conduct disordered youth should be prevention and treatment of substance use. After all, cannabis usage prior to treatment not only predicted dropout, it also affected general daily functioning at follow-up by adding the most variance. In this light, evidence-based treatment modalities such as Multidimensional Family Therapy (MDFT) are recommendable since it simultaneously addresses substance use, delinquency, and antisocial and aggressive behavior.

In conduct disordered youth, it may also be important to discern withdrawal and pushout, as both forms of dropout may need a different approach in order to reduce it. In present study however, no differences were found between those who had withdrawn and those who had been expelled. At least, not on the variables that were examined. This does not necessarily mean that there are no differences between these groups, and more research is indicated.

Since early-onset disruptive behavior predicted dropout (De Boer et al., 2017), and dropout was associated with poorer general daily functioning, one would think that patients with early-onset disruptive behavior would function worse compared to those with adolescent-onset behavior. Especially since other research also showed that individuals with (equivalents of) life-course persistent disruptive behavior performed worse on general daily functioning. Surprisingly we found the reverse. After controlling for cannabis usage prior to admission, male sex and discharge status, patients with early-onset disruptive behavior functioned better at follow-up. This was attributable to the stability of living conditions. Based on the information available, there is no

explanation for this finding. It may be related to the operationalization of early-onset and adolescent-onset disruptive behavior, because retrospective classification increases the probability of a recall bias. In this light, several studies have questioned the usefulness of the developmental theory for clinical practice (Fairchild et al., 2013; Fernández-Montalvo et al., 2008; Vermeiren, 2003). Also, several studies indicate that life-course persistent disruptive behavior is associated with problematic alcohol use, drugs use, more self reported offences, and convictions (e.g., Piquero et al., 2010). This was not replicated, since in present study participants with early-onset disruptive behavior did not differ from those with adolescent-onset disruptive behavior on the components 'criminal offending', and 'substance usage'. An explanation for this could be the specificity of the sample, all were individuals with severe disruptive behavior. It cannot be ruled out that of the individuals whose disruptive behavior started in adolescence, the behavior persists into adulthood.

Although it is unlikely that treatment is by definition useful to everyone that qualifies, at the very least it is important to prevent dropout and its negative consequences for many individuals that are considered eligible. Preventing dropout is likely to result in more (cost) effective care, since daily functioning will be improved in more individuals, resulting in lower costs of care in the future. After all, any treatment that fails costs money while it probably yields nothing. Also, it is likely to serve the public interest. Especially among samples with high incidence of disruptive behavior the stakes are high, because if left untreated, these individuals tend to cause much social turmoil.

Limitations

Findings of this study need to be considered in light of some limitations. First, other factors, that were not included in this study, are important in the relation between dropout, completion of treatment and general daily functioning after treatment (e.g., treatment factors, and patient characteristics, such as personality traits, psychotropic medication use).

Another limitation is the operationalization of general daily functioning. The four components that were used give roughly an indication hereof, however, general daily functioning is a concept that is composed of multiple facets that were not all

taken into account (e.g., the level of functioning in a social network, having a partner relationship).

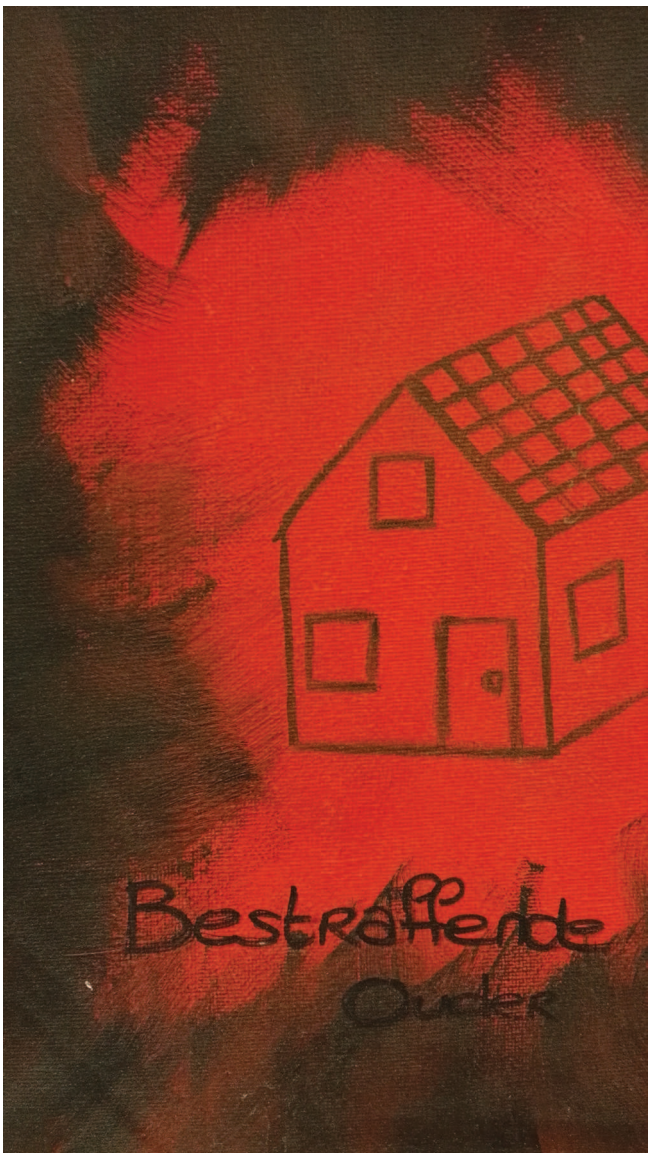
As already mentioned, the early-onset (EO) and adolescent-onset (AO) constructs can be operationalized in different ways, leading to outcomes that may vary depending on whichever operationalization is applied (Colins & Vermeiren, 2013). It is therefore unclear to what extent the results of the present study using the retrospective EO and AO distinction can be generalized to other (prospective) onset groups. Besides, it cannot be ruled out that some individuals in the AO group actually belonged to the EO group and vice versa (Cohn, Van Domburgh, Vermeiren, Geluk, & Doreleijers, 2012; Van Domburgh, Vermeiren, et al., 2009).

During the seventeen year period, due to experience and new insights, the approach to subjects that could potentially drop out may have evolved over time. Undoubtedly, there were changes in therapists, which obviously must have affected the treatment and hence the treatment outcome as well as the attrition. Nevertheless we believe that the results of our study are useful in clinical practice, not in the least because it was a naturalistic study.

Clinical implications

The findings of present study have implications for institutions specialized in treatment of youth with disruptive behavior. It was found that patients who completed treatment functioned better at follow-up and it thus seems important to prevent dropout. In order to realize this, patients with high chance at dropout should be identified so they can participate in an intervention to foster retention. For the purpose of identifying patients with high chance at dropout, the EO and AO distinction can be used, since it was found that early-onset disruptive behavior was associated with dropout. One way to reduce the chance at dropout is probably to invest substantially in the therapeutic alliance with the identified members of the early-onset group. It has to be noted that the distinction in age of onset seems of less importance for the further course of the treatment. Once the early-onset group stays in treatment, the treatment results appear to be as good as those of the adolescent-onset group, in the short term (De Boer et al., 2017) and at eighteen months follow-up.

Since cannabis usage prior to treatment was associated with dropout as well as with poor general daily functioning at follow-up, a treatment goal of adolescents treated for disruptive behavior should be reduction and prevention of drug use. This would hopefully lead to reduction of dropout and to improvement in general daily functioning at follow-up.



An assignment from the schema therapy: Imagine your critical side. At De Fjord we have chosen to use the term “side” instead of “mode”. This is understandable language for the youngsters and by using this term, it also implies that there is another side. The word takes away the blame, while it shows that it can still be prohibitive. Like in this case, the punitive parent. The maker of this artwork comes from a closed community where everyone keeps a close eye on each other. Because of this, the parents were very critical and punitive. In this artwork you experience the lack of a warm, stimulating parent, and the severe insecurity of home is depicted.

Chapter 7

Summary and general discussion

References

Nederlandse samenvatting (summary in Dutch)

List of publications

Dankwoord (acknowledgements in Dutch)

Curriculum Vitae

Summary and general discussion

This dissertation aimed at identifying subgroups, within an inpatient cohort of youths characterized by psychiatric disorders combined with severe disruptive behavior, based on the age of onset of their disruptive behavior. The question was, whether the distinction between life-course persistent (LCP) and adolescence-limited (AL) antisocial behavior (Moffitt, 1993; Moffitt et al., 1996), was relevant in clinical practice for predicting severity of problems and treatment outcome. After dividing the clinical sample into subgroups of early-onset (EO) disruptive behavior and adolescent-onset (AO) disruptive behavior, subgroups were compared on proximal (i.e., dropout, and psychosocial functioning at discharge) and distal outcomes (i.e., social functioning 18 months after discharge). It was hypothesized that the outcomes for individuals with EO disruptive behavior would be worse than for individuals with AO disruptive behavior. EO was expected to have a higher chance at dropout and when treated, their problems would have a higher likelihood of persistence. The incentive to differentiate within the patient population was asked for by clinicians of the orthopsychiatric facility, who felt encouraged by results from previous research conducted at their facility (Bruinsma & Boon, 2001). It was assumed that further differentiation based on age of onset of disruptive behavior, enables individualization of interventions and optimization of treatment results.

Summary of main findings

In chapter 2, the aim was to examine whether a subsample of our inpatient group could be discriminated from a non treatment control sample based on information recorded early in their lives. In most cases this information was recorded before these children came into contact with mental health care because of their behavioral problems. At two specific moments (i.e., April 2006 and March 2009), all adolescents who were then in treatment at the institution (n=49) were asked for permission to access their youth health care files. All youth health care files traced containing complete data, were examined (n=24). These files were kept from early infancy on to monitor the growth and development of children. Our analyses focused on written descriptions made by health professionals and teachers at the time that the

respondents were five years of age. Contrary to nowadays practice in The Netherlands, professionals at that time did not specifically report on disruptive behavior, although they had the opportunity to indicate any striking features of the child. The files of the subsample were compared to those of a control group matched on their date of birth and sex, who in adolescence had no reported history of behavioral or psychiatric problems. Results indicated that both teachers and professionals made significantly more remarks regarding disruptive behavior in the files of the future inpatients. The area's under the curve (AUC), indicating sensitivity (the probability that a child with disruptive behavior at the age of five will belong to the orthopsychiatric sample) and specificity (the probability that a child without disruptive behavior at the age of five will belong to the control group) were significant. For the teachers' remarks the AUC was .79, and for the YHC professionals' remarks the AUC was .73.

Next, chapter 3 aimed to examine whether participants admitted to the orthopsychiatric facility (n=203) with EO disruptive behavior (n=134) differed from individuals with AO disruptive behavior (n=69) on childhood characteristics. Results showed that the two groups differed on a number of childhood characteristics that previously have been associated with life-course persistent and adolescence-limited antisocial behavior. Individuals with grade retention in primary school, childhood impulsive behavior, and a history of physical abuse, had the highest probability of being in the EO group.

The aim of chapter 4 was to examine the outcome (i.e., reduction of symptoms between admission and discharge) of individuals with EO (n=85) versus AO disruptive behavior (n=60). This was prompted by the suggestion that individuals with LCP antisocial behavior would be less susceptible to treatment (Moffitt et al., 2008; Moffitt et al., 1996). Outcome of the sample was determined using change in mean scores between admission and discharge as well as the Reliable Change Index (Hageman & Arrindell, 1999, 1999a; Jacobson & Truax, 1991) on the Symptom Checklist (SCL-90-R)(Arrindell & Ettema, 2003). Dropout was included because it indicates likelihood of being treated. The results showed that the EO group more often dropped out than the AO group (44.4% versus 24.7%). As regards outcomes on the SCL-90-R, improvements in both onset groups were similar.

In chapter 5**,** the aim was to examine differences between dropouts (n=77) and completers (n=147) on known risk factors. In addition, EO disruptive behavior, and specific types of disruptive behavior and their relation to dropout were considered. The dropout group was further sub classified into withdrawal (n=40) and pushout (expulsion, n=37). It was found that dropouts compared to completers more commonly were male, showed more frequent cannabis use prior to treatment, more often displayed disruptive behavior at school and belonged more often to the EO group. Also, individuals with EO disruptive behavior dropped out almost three times as often as AO counterparts. Further, adolescents who had used cannabis prior to treatment dropped out twice as often as those without previous cannabis use. Within the dropout group, no differences in risk factors or types of disruptive behavior were found between withdrawals and pushouts.

The aim of the study in chapter 6 was to examine the 18 month outcome of the dropouts (n=67) and completers (n=129) after leaving the orthopsychiatric facility. General daily functioning was the outcome assessed. It was found that compared to dropout, treatment completion was associated with more stable living conditions, having a daytime activity, and absence of delinquent behavior. To control for the possible effect of the covariates (of chapter 5) associated with dropout in our sample, EO disruptive behavior, cannabis usage prior to admission and male sex were also examined. The results indicated that treatment completion, compared to dropout, was the best predictor for good general daily functioning at follow-up explaining 10.1% of the variance. EO disruptive behavior, cannabis usage prior to admission and male sex, added to the explained variance over and above treatment completion.

General discussion

Overall, this thesis shows that differentiating between individuals with EO and AO disruptive behavior, within a specific orthopsychiatric sample carries some clinical relevance. Although our group is highly selective, which hampers generalizability, the results are informative at group level. The distinction between EO and AO, together with the other predictors (i.e., cannabis use prior to treatment, male sex), was mainly relevant in the relation to dropout. As the explained variances were low, it must be recognized that other unknown factors carry relevance as well. Nevertheless, at the

start of treatment, practitioners could take these predictors into account to assess whether there is an increased risk of dropout. The finding that individuals with EO disruptive behavior had higher chance at dropout, may indicate that for them the treatment was less effective. In reverse, individuals with EO disruptive behavior who completed treatment reported similar outcome as those with AO disruptive behavior. Although the EO and AO groups were not identical to the LCP and AL groups, this finding seems to contradict the idea (Moffitt et al., 2008; Moffitt et al., 1996) that individuals with LCP antisocial behavior would be less susceptible to treatment.

Usefulness of age of onset in clinical practice

The developmental taxonomy of Moffitt has influenced the DSM IV (and subsequently the DSM 5) classification of conduct disorder, by subdividing the conduct disorder classification into childhood onset versus adolescent onset (before or after age 10). By incorporating this sub classification in the DSM, it was assumed that the onset of behavioral problems carries clinical importance. In reverse, the usefulness for clinical practice has up till now not been demonstrated, and has even been questioned by some (e.g., Colins & Vermeiren, 2013; Jambroes et al., 2016).

In the current thesis, some evidence supporting the age of onset classification is presented. The fact that we found fewer differences between the EO and AO groups than we had expected, may partly be due to the severity of the AO group's pathology. After all, the sample examined in the present thesis is a very specific clinical group with complex and severe behavioral problems. Although we knew this beforehand, it nevertheless seemed relevant to examine whether the distinction between EO and AO was important in this complex group.

Although for youth with disruptive behavior specific treatment was shown effective overall (Bennett & Gibbons, 2000; Kazdin, 2016; Kazdin et al., 1994; McCart et al., 2006; Serketich & Dumas, 1996; M. Shaw et al., 2012; Van der Pol et al., 2017), individual differences are substantial. In accordance with the risk-need-responsivity model (see e.g., Andrews & Bonta, 2010), treatment should address the needs of the individuals to whom the treatment is targeted. In this light, it makes sense to differentiate in order to get a better view on individuals who may or may not benefit from a specific treatment. Our findings show that a distinction based on the onset of

behavioral problems in a sample with psychiatric disorders and severe disruptive behavior is only partially useful in clinical practice. Both onset groups changed to the same extent by the end of treatment (i.e., self reported symptom reduction between admission and discharge) (chapter 4). As we have no control group, we do not know whether the improvement is due to the intensive, highly specialized, tailored treatment that was provided. The distinction in onset only seemed relevant in relation to dropout (chapter 4 and chapter 5). As explained variances were low, there were several other factors involved beside the onset of the behavioral problems. As described later in this chapter, there are limitations regarding the retrospective determination of the age of onset and these undoubtedly affected the meaningfulness of the distinction. Also, age of onset has very likely less value in our high risk sample than in a normal population, since all subjects had severe problems.

In youth with severe disruptive behavior, other differentiating factors are likely to be helpful as well, for instance callous unemotional (CU) traits (Frick, Ray, Thornton, & Kahn, 2014; Hawes, Price, & Dadds, 2014) or the related DSM specifier limited prosocial emotions. The "with Limited Prosocial Emotions (LPE)" specifier was added to the conduct disorder (CD) diagnosis of the DSM 5. Individuals with LPE are most likely to show elevated rates of CU traits (Dandreaux & Frick, 2009) and thus considered to comprise a severe antisocial subgroup of CD. It has been argued that the LPE specifier is informative regarding the effectiveness of interventions (Frick et al., 2014). Indeed, CU traits were demonstrated to be related to poor treatment outcome for both children and adolescents (Hawes et al., 2014). Furthermore, the LPE subtyping does seem to be limited to the childhood onset CD group (Frick, 2016). In this regard, subdividing the EO group into an EO group with and without LPE is considered to go beyond the distinction solely based on age of onset. However, research on the added value of the LPE specifier for clinical practice is still sparse and there are studies that question the clinical relevance and predictive value of the LPE specifier (Colins & Vermeiren, 2013; Jambroes et al., 2016). Beside, the LPE specifier was shown to explain just a limited part of the variance (Jambroes et al., 2016), as was the case with the EO versus AO distinction. Therefore, a subdivision based on this specifier will probably again be of limited value for clinical samples. Also, the question is whether it

is useful at all to make a division into age or into LPE, because reality is obviously too complex to be captured in dichotomies.

Dropout

While Moffitt (2008) previously suggested a relation between EO disruptive behavior and dropout, this had thus far not been objectified. Recently however, Kazdin (2016) stated that the greater the impairment of children and their families, the greater the challenge to keep them in treatment. He also argued that some factors (e.g., current stressors in the home, socioeconomic disadvantage) tended to have more impact on dropping out than on treatment outcomes in terms of reduction of symptoms. In this light it makes sense that individuals with EO disruptive behavior, who are more likely to lack the necessary support from their social environment, feel less inclined to complete treatment. Maybe the higher chance at dropout of the EO group is above all associated with their long history of a diversity of often failing treatments. Presumably, their experiences thwarted their expectations of another mental health intervention. Such a history on itself probably increases the risk of dropout during treatment at De Fjord, regardless of the onset of the disruptive behavior. Additionally, this may also be related to levels of callous unemotional traits of the EO group. These traits have for instance been associated with higher levels of aggression (Jambroes et al., 2016), increasing the likelihood of expulsion. The latter was not confirmed in the present thesis (chapter 5), because the ratio between both types of dropout were the same for both onset groups.

Finding ways to motivate the youngsters for treatment is of utmost importance. Reducing dropout is a necessity, as it is a likely indicator of effectiveness. Perhaps some of the individuals need a different approach, other than restrictive intervention in an institution that is far away from their home. An intensive, outpatient intervention as Multi Systemic Therapy (MST)(Henggeler, Melton, & Smith, 1992) or Multidimensional Family Therapy (MDFT)(Liddle et al., 2001) may be an alternative for some, although thus far there is no evidence that these approaches are effective for this specific group. Therapists and policymakers do think that at least some of the target group may better off in outpatient care. In The Netherlands, the substitution of residential facilities with outpatient care is stimulated for many years now and is an

ongoing process. In itself this can be regarded as a favorable development, provided that intensive home care is offered. A great advantage may be that, when the personal situation allows, individuals can stay in their own environment. This may have a positive effect on clients as well as their families. Outpatient treatment necessitates that the facility is within easy traveling distance, which in a practical sense makes it easier to apply a systemic approach, compared to inpatient facilities that likely are at a greater travel distance. Also, it increases the likelihood, for those in an outpatient facility, of organizing a gradual transition back to the home environment. Overall, residential treatment should only be indicated if intensive outpatient intervention, such as MDFT (Liddle et al., 2001) and MST (Henggeler et al., 1992), has been considered first. Considering the severity of problems and in many cases the lack of a supportive parent system, there will remain cases where residential treatment cannot be avoided.

One may wonder if it is really that harmful if someone drops out of treatment. Among children and adolescents who completed interventions aimed at reducing disruptive behavior, the effectiveness (i.e., reduction of symptoms) has clearly been demonstrated (Bennett & Gibbons, 2000; Kazdin, 2016; Kazdin et al., 1994; McCart et al., 2006; Serketich & Dumas, 1996; M. Shaw et al., 2012; Van der Pol et al., 2017). When disruptive behavior and psychiatric problems are not treated however, these problems are likely to persist or even get worse later in life (De Haan et al., 2013; Moffitt et al., 2002). With this in mind, we hypothesized that an individual completing treatment is better off than someone who prematurely drops out. To the best of our knowledge this had never been demonstrated, and thus far little to nothing was known about the course of symptoms after termination of treatment of individuals who dropped out prematurely. The present thesis (chapter 6) showed that dropout was related to poorer functioning at follow up, and therefore we concluded that it is of clinical relevance to prevent it. Thus, we do know that 18 months after (premature) discharge, a considerable part of the dropout group functioned worse than the completer group. This could be because this specific group had more problems initially. Also, we do not know whether these dropouts would have been helped with treatment. Further research is warranted to investigate whether alternative interventions are useful for this group. It could be that more outreaching interventions

like MDFT or MST work better for young people who have high risk of dropout. Moreover, it is important to realize that there will probably always be an unreachable group. It is important to bring this group to a minimum.

Cannabis usage

Research indicated that in The Netherlands about half of all youngsters age 17 or 18 have used cannabis (Verdurmen et al., 2011), and among groups of troubled youth the prevalence is even higher (Van Laar et al., 2014). As there is a strong relation between substance use and disruptive behavior (Disney et al., 1999; Grant et al., 2015; Kendler et al., 2003), it was not surprising that many youngsters admitted to De Fjord used cannabis. The use of cannabis in itself was not a reason for expulsion, on the contrary, relapse prevention was an important part of the treatment. Not surprisingly, we found that cannabis use prior to treatment was related to dropout. It was already known that individuals using cannabis after discharge had almost 6 times higher likelihood at worsening of symptoms (SCL-90-R) at one-year follow-up (Boon & De Boer, 2007). Also, individuals who had not used cannabis after discharge were over 11 times more likely to improve their (SCL-90-R) symptoms at one-year follow-up (Boon & De Boer, 2007). Cannabis use is thus a crucial determinant that has an influence on the outcome. Therefore, reduction or prevention of cannabis use is of clinical relevance. Treatment and relapse prevention of cannabis use should be an important focus during treatment of youth with severe disruptive behavior and psychiatric disorders, as well as for other groups of vulnerable youth. Ideally, such interventions are not only effective in reducing cannabis use, but also in terms of symptom reduction. For youth with a combination of psychiatric problems, disruptive behavior and substance use, community care and multidimensional interventions such as MDFT (Liddle et al., 2001) and MST (Henggeler et al., 1992) can be very beneficial.

Strengths and Limitations

There are several limitations to this study. Most of them were related to the **observational design** of the study. It has been shown that treatment works for behavioral problems (in specific Conduct Disorder) (Bennett & Gibbons, 2000; Eyberg et al., 2008; Frick et al., 2014; McCart et al., 2006; Serketich & Dumas, 1996). As we did

not include a control group, we cannot conclude about the effectivity of our interventions. Further, adolescents received a diversity of interventions, therefore a possible effect cannot be related to specific components. Unlike in RCTs, in which the effect of a single intervention is studied, the treatment of De Fjord consists of a combination of practice-based and evidence-based interventions, which have often been adjusted on the basis of experience and insight to make them suitable for the specific target group of De Fjord and utmost, for an individual. Also, in clinical institutions like De Fjord, no uniform sample without comorbidities exists. Thus, although evidence-based interventions were used, we are not sure to what extent the specific combination of interventions actually work for our heterogeneous target group.

Because of the naturalistic design, we cannot conclude about the representativeness and replicability of the study. Nevertheless, we believe that the results of the present thesis are relevant for a specific subgroup of youths, since several of our findings were in line with literature.

Next, the **long period of research** has likely affected the representativeness and replicability. During seventeen years, we conducted program evaluation research in a naturalistic context, which provided a wealth of valuable information. At the same time, the clinical practice was undoubtedly subject to substantial change, due to changes in policy, management, therapeutic climate, therapists and adolescents. We do not know to what extent changes over time in the influx of youths in the clinic has influenced our results. Changes in therapists obviously must have affected the treatment and hence the treatment outcome as well as the attrition. Besides, due to experience and new insights, the approach to subjects that could potentially drop out may have evolved over time.

Other limitations concern the restrictions attached to **the way in which the classification in EO and AO was made**. In the present thesis the EO and AO division was based on specific information that was obtained from the youngsters, parents and professionals, as well as information available in files. Of course, this information is likely to differ in other studies and in other circumstances. Because the EO and AO constructs can be operationalized in different ways, the outcomes may vary (Colins & Vermeiren, 2013). It is not only unclear to what extent the results of the retrospective

EO and AO distinction can be generalized to the (prospective) onset groups, since studies also differ in the kind of information that is used to identify the disruptive behavior (e.g., self report, police records, criterion characteristic of conduct disorder). As with all studies, in the present thesis (elaborated in chapter 2), the identified age of onset depended on external factors and is therefore an approximation of the actual age of onset of the disruptive behavior. It is likely that some adolescents have been identified as AO while their actual disruptive behavior started much earlier. It may for instance be that a teacher at school was able to handle behavioral problems to a certain extent. In such a case, no special education may have been advised or just at a later time, than it would have been with another teacher. Also, in case of adequate or strict parental supervision, the age of onset of a first crime may have been postponed as it were. Also, one parent may indicate more problems than the other, depending on his or her own carrying load and subjective perspective. Such factors have not been taken into account in the present thesis. It should be noted that similar mechanisms would also have played a part in the population research.

There were also limitations with regard to the **number and nature of factors** that were associated with the EO and AO distinction. All individuals of the sample had encountered a vast amount of accumulating and interacting risk factors that, at most, were only partly covered by this study. Also, we only studied risk factors, neglecting the possible influence of protective factors (see e.g., De Vries Robbé, De Vogel, & Stam, 2012; Dubow, Huesmann, Boxer, & Smith, 2016; Lösel & Farrington, 2012; Monahan, Oesterle, Rhew, & Hawkins, 2014; Portnoy, Chen, & Raine, 2013) that are related to disruptive behavior. Risk factors as well as protective factors that were not included in the study (e.g., treatment factors, and patient characteristics, e.g., personality traits, psychotropic medication use, psychiatric disorders, family factors, pathology of parents) were probably also important in the relation between dropout, completion of treatment and general daily functioning after treatment. The explained variances of the factors found in the present thesis were relatively low, which suggests that many other factors played a role. This also indicates that the findings can only be used to a limited extent to predict behavior of the individual youths.

Clinical Implications

Detection of conduct problems at an early age

In the Netherlands, the GGD (Municipal Health Service) protects, monitors and promotes the health of all residents. It identifies and prevents health risks, provides assistance in the event of an incident, e.g., after an outbreak of food poisoning or infectious diseases, and also provides rapid assistance in case of disasters. In addition to tasks such as advising municipalities on health policy, the GGD also conducts health investigations, gives vaccinations and supports schools, among other things, with their care for a healthy learning environment for children. In the context of health research that takes place as standard among all children, children are seen at regular times by Youth Health Care (YHC) professionals of the GGD. At specific times, teachers are also asked information about how the children function at school. When youngsters are in high school, they are approached by the GGD for health screening with the aim of detecting problems early. Not only physical health is considered, but also lifestyle themes such as alcohol, smoking, nutrition and exercise. Besides, the emotional development, for example resilience, independence, mood swings and social problems such as bullying, are also considered. In the extension of this health research, results of the present thesis (chapter 2) indicated that YHC professionals and teachers already observed signs of disruptive behavior as early as the age of five in half of the children that would eventually be treated in the orthopsychiatric residential setting.

Since 2015, in The Netherlands, district teams (i.e., wijkteams) have been set up. These teams are organized by the municipality and, among other things, have the task of timely identifying and guiding vulnerable families. District teams aim to activate and support residents in their social functioning. Often these teams have a broad preventive task, and there is common ground with activity of the GGD and district teams. This task could be better utilized in practice, by stimulating collaboration between GGD and the district teams. YHC professionals for instance could involve the district teams when they receive signals of psychosocial problems. District teams on the other had could benefit from regular screening of children by the YHC, which offers a picture of the children from birth up to 18 years. District teams could improve insights about individual children by using that knowledge. Children showing signs of disruptive behavior at an early age can be identified by the YHC and be referred to

interventions initiated by the district teams. This is recommended, because research increasingly indicates that early detection of behavioral problems and subsequent early intervention is important for preventing future aggressive behavior and antisocial behavior (Beauchaine et al., 2005; Houghton et al., 2017; Kazdin, 2016; Kolko et al., 2009; Lochman & Salekin, 2003; Odgers et al., 2008). It has been found that the group of children with conduct problems that is most aggressive and that is most likely to continue their antisocial behavior into adulthood, often begin with mild conduct problems very early in childhood (Eyberg et al., 2008; Frick, 2016). The results of current thesis are in line with this finding (chapter 2). Also, children with untreated behavioral problems are more likely to drop out from school, engage in delinquent activities, drug and alcohol abuse and unemployment later in life (Lochman & Salekin, 2003; Odgers et al., 2008).

Interventions initiated by the district teams should address the needs of children and their parents in terms of content and intensity (Andrews & Bonta, 2010; Frick, 2016). Several interventions, aimed at the parents of these young children, have been proven effective in treating early emerging conduct problems (see e.g., Eyberg et al., 2008; Kazdin, 2016). Although it is certainly not the solution for all young children displaying disruptive behavior, it is important to intervene when children are young. It has for instance been found that the effectiveness of parenting programs is substantially reduced as the child grows older. Of course, there will always be children that do not respond to interventions.

Prevention of Dropout

The youngsters admitted to De Fjord often had a long history of previous (often unsuccessful) care. Admission to De Fjord is often considered as the last option for help within youth mental healthcare and also a last opportunity to finish school. For adolescents, their parents as well as for the therapists involved, the importance of staying aboard was considerable. Treatment certainly does not catch on with all adolescents with disruptive behavior (chapter 4), however, it is important to limit dropout to a minimum. When these youngsters are left untreated, they tend to cause much social turmoil. Our findings indicated that dropouts functioned worse in the period after discharge and had higher chance at poor general daily functioning at

follow-up. Therefore, in the treatment of conduct disordered youths, preventing dropout should be a main focus. This will be a challenging task, because these individuals are characterized by many risk factors associated with dropout, that likely interact with problems in multiple areas of life, negative experiences with previous youth care and overall lack of motivation. It is hypothesized that by preventing dropout, daily functioning will be improved in more individuals, additionally resulting in lower costs of care in the future. Therefore, preventing dropout will likely result in more (cost) effective care, especially since treatment that fails costs money while it probably yields nothing.

As concerns dropout prevention, the distinction in age of onset of disruptive behavior can aid to pinpoint youngsters at risk of dropout. Our study shows that both EO disruptive behavior and a history of cannabis use predicts treatment dropout. For these youngsters with high risk at dropout, practitioners should develop an intensive motivation trajectory, for instance consisting of components that appeal to the desire to change, the readiness to change, and the perceived ability to change (Nock & Kazdin, 2005).

Prevention and relapse prevention of substance use

A focus of treatment in conduct disordered youth should be prevention and treatment of substance use. In the present thesis we found that cannabis usage prior to treatment not only predicted dropout, it also affected general daily functioning at follow-up. In previous research, substance use in the year after discharge predicted aggravation of symptoms (Boon & De Boer, 2007). In this light, treatment of substance use and relapse prevention may help to reduce dropout and may also prevent worsening of symptoms. Evidence based treatment modalities that simultaneously address substance use, antisocial and aggressive behavior, and delinquency, such as Multidimensional Family Therapy (MDFT)(Henggeler et al., 1992; Van der Pol et al., 2017) and Multisystemic Therapy (MST)(Asscher et al., 2013; Liddle et al., 2001), are recommendable.

Directions for Future Research

The present thesis aimed at identifying subgroups within a clinical inpatient cohort of youths characterized by both psychiatric disorders and severe disruptive behavior based on the age of onset of their disruptive behavior. This was prompted by the idea that differentiation in subgroups may benefit intervention and may eventually result in more individualized and appropriate intervention and as a consequence better treatment results (Vermeiren, 2003). Results of the present thesis indicated that in clinical practice, the EO and AO sub classification has limited value for such differentiation. Beside the finding that EO disruptive behavior was predictive of dropout, the EO and AO sub classification did not seem to yield much in terms of outcome. However, we cannot generalize our findings to other clinical samples. For that purpose, research should focus on other clinical samples, for instance those with predominantly disruptive behavior and specific psychiatric disorders or minor psychiatric problems. Given previous research questioning the clinical usefulness of the age of onset distinction (Colins & Vermeiren, 2013; Jambroes et al., 2016), it is unlikely that such research will give positive results. For this reason, it is of interest to focus on other factors as well, such as the recently promoted LPE specifier (DSM 5).

Although one may wonder whether making any subdivision is useful at all, dividing into subgroups should help clinicians to develop and offer more tailor made, comprehensive and individualized interventions. Hence the question is how we can sub-classify a very complex clinical sample with severe disruptive behavior and co-occurring psychiatric disorders in such a way that treatment can be applied more effectively. Instead of examining dichotomous subdivisions, dimensional approaches are probably more useful. Brazil and colleagues for instance, advocate an approach that describes each individual as a combination of multidimensional traits (Brazil, Van Dongen, Maes, Mars, & Baskin-Sommers, 2018). In this, a combination of interacting biological (e.g., genetic, brain, and physiological) and cognitive (e.g., executive functioning, social cognition) dimensions should be considered (Brazil et al., 2018), which is in line with the vision of the Research Domain Criteria (RDoC)(Insel et al., 2010). This RDoC project was launched by the National Institute of Mental Health (NIMH) to create a new classification framework for research on mental disorders. In

order to investigate an interplay of a large number of variables, large samples are needed, which ask for collaborative efforts of multiple institutes and research groups.

One of the factors that could be considered is the aforementioned LPE subtyping or degree of CU traits (Caldwell, Skeem, Salekin, & Van Rybroek, 2006; Hawes & Dadds, 2005; Houghton et al., 2017), which relates to a dimension of psychopathy (Frick, Bodin, & Barry, 2000). This factor should be considered dimensional, and in combination with other dimensional factors, such as impulsivity. Impulsivity (accompanied by irresponsibility) is another dimension of psychopathy (Frick et al., 2000), and is characteristic for individuals with ADHD. A significant part of the sample we examined was diagnosed with ADHD. By abandoning the dichotomous idea that there is or is not an attention deficit disorder, a dimensional approach could be applied and the degree of impulsivity could be determined and used for sub classification. This fits well with the transformative effort as proposed by the RDoC to implement a neuroscience-based psychiatric classification (Insel et al., 2010). Indeed, research among offender populations already suggested that it is important to differentiate between antisocial individuals with and without high levels of psychopathy, especially since their disruptive behavior may look the same on the outside, while the underlying mechanisms leading to their disruptive behavior may be different (Brazil et al., 2018). This certainly also applies to our target group. Furthermore, it is relevant for clinicians, because findings also suggest that individuals with high levels of psychopathy are unresponsive to certain types of interventions and individuals with disruptive behavior can diverge greatly in the treatment interventions to which they respond best (Brazil et al., 2018).

In the present thesis, a considerable part of the sample dropped out of treatment. Of course, dropout can never be completely prevented, nevertheless it is recommended to make efforts to reduce it. To enable reduction, more knowledge is needed about mechanisms causing dropout. Although we did not find differences between pushouts and withdrawals in the factors we examined, both types of dropout probably differ in underlying mechanisms. In order to prevent the different types of dropout, these mechanisms should be further investigated. Research can provide support in this, as well as in the evaluation of deployed motivational trajectories.

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Nederlandse samenvatting (summary in Dutch)

Het doel van dit proefschrift was om subgroepen te onderscheiden binnen een groep klinisch opgenomen jongeren met psychische stoornissen en disruptief (ontwrichtend) gedrag. Gebaseerd op onderscheid tussen levenslang (life-course persistent; LCP) en tot de adolescentie beperkt (adolescence-limited; AL) antisociaal gedrag, is binnen de onderzoeksgroep een onderscheid gemaakt op basis van de aanvangsleeftijd van het disruptief gedrag. De vraag was of dit onderscheid relevant was voor de klinische praktijk ten aanzien van het voorspellen van de ernst van problemen en het behandelresultaat. Er werd een onderverdeling gemaakt in een subgroep met disruptief gedrag ontstaan op jonge leeftijd (early-onset; EO) en een subgroep met disruptief gedrag ontstaan in de adolescentie (adolescent-onset; AO). Deze subgroepen werden vergeleken op korte termijn (i.e., voortijdig afbreken van de behandeling (dropout) en psychosociaal functioneren bij beëindiging van de behandeling) en lange termijn uitkomsten (i.e., sociaal functioneren 18 maanden na beëindiging van de behandeling). De verwachting was dat de uitkomsten voor de EO groep slechter zouden zijn dan die voor de AO groep. Ook werd verwacht dat personen met EO disruptief gedrag een grotere kans hadden op dropout. Bij diegenen van de EO groep die de behandeling wel zouden afronden, was de verwachting dat hun problemen persistenter zouden zijn. De behoefte om te differentiëren binnen de patiëntenpopulatie werd aangegeven door de behandelaren van de onderzochte orthopsychiatrische instelling (De Fjord). Er werd aangenomen dat verdere differentiatie op basis van de aanvangsleeftijd van het disruptieve gedrag de mogelijkheid zou bieden om interventies te individualiseren en de behandelresultaten te optimaliseren.

Orthopsychiatrie

In de jaren negentig van de vorige eeuw werd De Fjord opgericht als het eerste centrum voor orthopsychiatrie in Nederland. Er was behoefte aan gespecialiseerde behandeling voor adolescenten met complexe problematiek, jongeren die niet terecht konden in instellingen voor jeugdpsychiatrie vanwege de ernst van hun disruptief gedrag en die niet in een justitiële jeugdinrichting of orthopedagogische setting

geplaatst konden worden vanwege de psychische problemen. Er werd gekozen voor de term Orthopsychiatrie, een behandeling die zich richt op jongeren met zowel psychische stoornissen als ernstig disruptief gedrag, in een stevig gestructureerde omgeving.

Aanvankelijk kreeg De Fjord een experimentele status voor vijf jaar en moest haar bestaansrecht bewijzen. Vanaf de opening in november 1995 werd daarom programma-evaluatieonderzoek verricht om inzicht te krijgen in de kenmerken van de doelgroep en in de uitkomsten van de behandeling. Er werd onderzocht in welke mate behandeldoelstellingen werden bereikt en wat het psychosociale functioneren was van de jongeren in het jaar na beëindiging van de behandeling (follow-up). De eerste evaluatie leidde tot een rapport op basis waarvan De Fjord structurele financiering kreeg van het ministerie van Volksgezondheid. Hierna is het onderzoek in aangepaste vorm gecontinueerd, omdat het waardevolle kennis over de doelgroep genereert. Het huidige proefschrift maakt gebruik van een deel van de verzamelde data.

Samenvatting van de belangrijkste bevindingen

In hoofdstuk 2 werd bij een steekproef uit de patiëntengroep nagegaan of het mogelijk was deze te onderscheiden van een controlegroep op basis van informatie die vroeg in hun leven is vastgelegd. Deze informatie was in de meeste gevallen vastgelegd voordat deze kinderen in contact kwamen met de geestelijke gezondheidszorg vanwege hun gedragsproblemen. Op twee specifieke momenten (i.e., april 2006 en maart 2009) werd aan jongeren die op dat moment in behandeling waren bij De Fjord (n=49) toestemming gevraagd voor inzage in hun jeugdgezondheidszorgdossiers (JGZ-dossiers) die zich bevonden bij de Gemeentelijk Gezondheidsdienst (GGD). Alle JGZ-dossiers die getraceerd konden worden en die volledige gegevens bevatten, werden onderzocht (n=24). Deze dossiers waren vanaf de vroege jeugd bijgehouden om de groei en ontwikkeling van het kind te volgen. Onze analyses waren gericht op schriftelijke beschrijvingen van JGZ-professionals en leerkrachten op het moment dat de respondenten vijf jaar oud waren. In tegenstelling tot wat tegenwoordig in Nederland gebruikelijk is, rapporteerden JGZ-professionals op dat moment niet specifiek over disruptief gedrag, hoewel ze de mogelijkheid hadden om opvallende kenmerken van het kind aan te geven. De JGZ-dossiers van de orthopsychiatrische

groep werden gematcht op geboortedatum en geslacht met dossiers van een controlegroep, die in de adolescentie geen gerapporteerde geschiedenis van gedrags- of psychische problemen hadden. Uit de resultaten bleek dat zowel leerkrachten als JGZ-professionals aanzienlijk meer opmerkingen maakten over disruptief gedrag in de dossiers van de toekomstige residentiele groep. De “area’s under de curve” (AUC), die de sensitiviteit (de kans dat een kind met disruptief gedrag op vijfjarige leeftijd tot de orthopsychiatrische groep behoort) en specificiteit (de waarschijnlijkheid dat een kind zonder disruptief gedrag op vijfjarige leeftijd zal behoren tot de controlegroep) weergeeft, waren significant. Voor de opmerkingen van de leerkrachten was de AUC .79 en voor de opmerkingen van de JGZ-professionals was de AUC .73. Dit betekende dat gerapporteerde problemen op vijfjarige leeftijd een redelijk goede voorspeller waren voor latere gedragsproblemen.

In hoofdstuk 3 werd onderzocht of de jongeren opgenomen in de orthopsychiatrische instelling (n=203) met EO-disruptief gedrag (n=134) verschilden van jongeren met AO-disruptief gedrag (n=69) met betrekking tot kenmerken aanwezig in de kindertijd. De resultaten toonden aan dat de twee groepen verschilden in een aantal kenmerken in de kindertijd die eerder in verband zijn gebracht met LCP en AL antisociaal gedrag. Jongeren die in het verleden zijn blijven zitten op de basisschool, met impulsief gedrag in de kindertijd en een geschiedenis van fysieke mishandeling, hadden de grootste kans om deel uit te maken van de EO-groep.

Het doel van hoofdstuk 4 was om de behandeluitkomst (i.e., vermindering van symptomen tussen opname en beëindiging van de behandeling) van individuen met EO (n=85) versus AO-disruptief gedrag (n=60) te onderzoeken. Eerder werd namelijk gesuggereerd dat personen met LCP antisociaal gedrag minder vatbaar zouden zijn voor behandeling. Met de Symptom Checklist (SCL-90-R) werd verandering gemeten in de gemiddelde scores tussen opname en beëindiging van de behandeling en werd de Reliable Change Index berekend. Er werd rekening gehouden met dropout. De resultaten toonden aan dat bij de EO-groep vaker sprake was van dropout dan bij de AO-groep (44,4% versus 24,7%). Bij de jongeren die in behandeling bleven waren er, wat de uitkomsten op de SCL-90-R betreft, geen verschillen tussen beide groepen.

In hoofdstuk 5 zijn verschillen tussen dropouts (n=77) en voltooiers (completers, n=147) onderzocht op bekende risicofactoren voor dropout. Daarnaast

werden EO-disruptief gedrag en specifieke types disruptief gedrag onderzocht in relatie tot dropout. De dropoutgroep werd onderverdeeld in terugtrekkers (n=40) en pushouts (weggestuurd, n=37). Er werd vastgesteld dat dropouts vergeleken met voltooiers vaker man waren, vaker cannabis gebruikt hadden voorafgaand aan de behandeling, vaker disruptief gedrag vertoonden op school en vaker tot de EO-groep behoorden. Bij personen met EO-disruptief gedrag was bijna driemaal zo vaak sprake van dropout vergeleken met hun AO-tegenhangers. Daarnaast was twee keer zo vaak sprake van dropout bij adolescenten die vóór de behandeling cannabis gebruikt hadden ten opzichte van degenen waarbij geen sprake was geweest van cannabisgebruik. Binnen de dropoutgroep werden geen verschillen in risicofactoren of soorten disruptief gedrag gevonden tussen terugtrekkers en pushouts.

Het doel van de studie in hoofdstuk 6 was om de uitkomsten 18 maanden na het verlaten van de orthopsychiatrische instelling te onderzoeken bij de dropouts (n=67) en de voltooiers (n=129). Algemeen dagelijks functioneren werd gebruikt als uitkomstmaat. Voltooien van de behandeling werd, in vergelijking met dropout, geassocieerd met stabielere leefomstandigheden, het hebben van dagbesteding en afwezigheid van delinquent gedrag. Om te controleren op het mogelijke effect van de covariaten (van hoofdstuk 5) die verband hielden met dropout in de onderzochte groep, werden EO-disruptief gedrag, cannabisgebruik voorafgaand aan de behandeling en mannelijk geslacht ook onderzocht. De resultaten gaven aan dat voltooiing van de behandeling (ten opzichte van dropout) de beste voorspeller was voor goed algemeen dagelijks functioneren bij de follow-up, waarbij 10,1% van de variantie werd verklaard. Bovenop het voltooien van de behandeling voegden EO disruptief gedrag, cannabisgebruik voorafgaand aan behandeling en mannelijk geslacht extra toe aan de verklaarde variantie.

Bij elkaar genomen laat dit proefschrift zien dat het onderscheiden van individuen met EO en AO disruptief gedrag binnen een specifieke orthopsychiatrische groep enige klinische relevantie heeft. Samen met de andere voorspellers, was het onderscheid vooral relevant in relatie tot dropout. De grotere kans op dropout van de EO-groep zou erop kunnen wijzen dat de behandeling voor hen minder effectief was. Echter, cliënten met EO-disruptief gedrag die de behandeling voltooiden rapporteerden een vergelijkbaar resultaat als degenen met AO-disruptief gedrag. Deze

bevinding lijkt in tegenspraak met het idee dat personen met LCP antisociaal gedrag minder vatbaar zouden zijn voor behandeling.

Implicaties voor de klinische praktijk

Detectie van gedragsproblemen op jonge leeftijd

De GGD beschermt, bewaakt en bevordert de gezondheid van alle inwoners. Naast taken als het adviseren van gemeenten over gezondheidsbeleid, voert de GGD ook gezondheidsonderzoeken uit, geeft vaccinaties en ondersteunt scholen onder meer bij hun zorg voor een gezonde leeromgeving voor kinderen.

Sinds 2015 zijn er in Nederland wijkteams opgezet. Deze teams worden georganiseerd door de gemeente en hebben onder andere tot taak om kwetsbare gezinnen tijdig te identificeren en begeleiden. Wijkteams hebben tot doel de bewoners te activeren en te ondersteunen in hun sociaal functioneren. Vaak hebben deze teams een brede preventieve taak en er is overlap met de activiteiten van de GGD en de wijkteams. Deze taak zou in de praktijk beter kunnen worden benut door samenwerking tussen GGD en de wijkteams te stimuleren. JGZ-professionals zouden bijvoorbeeld de wijkteams kunnen betrekken bij signalen van psychosociale problemen. Wijkteams aan de andere kant zouden kunnen profiteren van de regelmatige screenings van kinderen door de JGZ. Door deze kennis te gebruiken, kunnen wijkteams een beter beeld krijgen van individuele kinderen. Kinderen die op jonge leeftijd tekenen van disruptief gedrag vertonen, zouden door de JGZ kunnen worden geïdentificeerd en worden verwezen naar interventies die door de wijkteams worden geïnitieerd. Dit is van belang, omdat onderzoek in toenemende mate laat zien dat vroege detectie van gedragsproblemen en daarop volgend vroege interventie belangrijk is voor het voorkomen van toekomstig agressief en antisociaal gedrag. Bovendien lopen kinderen met onbehandelde gedragsproblemen meer kans op uitval op school, het zich schuldig maken aan delinquente activiteiten, drugs- en alcoholmisbruik en werkloosheid later in het leven. Hoewel het zeker niet de oplossing is voor alle jonge kinderen die disruptief gedrag vertonen, is het belangrijk om in te grijpen als kinderen jong zijn. Het is van belang dat de interventies die door de wijkteams worden geïnitieerd, qua inhoud en intensiteit aansluiten op de behoeften van kinderen en hun ouders.

Preventie van dropout

Hoewel behandeling niet bij alle jongeren met disruptief gedrag aanslaat (hoofdstuk 4), blijft het belangrijk om dropout tot een minimum te beperken. Wanneer deze jongeren onbehandeld blijven, is de kans groot dat ze veel maatschappelijke onrust veroorzaken. Onze bevindingen gaven bovendien aan dat dropouts meer klachten ervoeren in de periode na ontslag en dat zij een grotere kans hadden op slecht algemeen dagelijks functioneren bij follow-up. Om deze reden moet preventie van dropout een belangrijk aandachtspunt zijn in de behandeling van jongeren met gedragsproblemen. Dit zal een uitdaging zijn, omdat juist deze individuen gekenmerkt worden door een grote hoeveelheid risicofactoren die samenhangen met dropout. Bovendien zullen deze risicofactoren waarschijnlijk een wisselwerking hebben met problemen op meerdere levensdomeinen, negatieve ervaringen met eerdere jeugdzorg en algeheel gebrek aan motivatie. Echter, door dropout te voorkomen zal vermoedelijk het dagelijks functioneren bij meer personen verbeteren. Ook denken wij dat het voorkomen van dropout zal leiden tot meer (kosten) effectieve zorg, met name omdat een behandeling de voortijdig stopt wel kosten met zich meebrengt terwijl het waarschijnlijk weinig oplevert.

Onze studie laat zien dat zowel EO-disruptief gedrag als een geschiedenis van cannabisgebruik voorspellend is voor dropout. Deze kennis kan helpen om jongeren met een verhoogd risico op dropout te identificeren. Voor deze jongeren zouden behandelaars een intensief motivatietraject kunnen ontwikkelen, wat bijvoorbeeld zou kunnen bestaan uit componenten die een beroep doen op de wens, de bereidheid en het waargenomen vermogen om te veranderen.

Ook kan het zijn dat sommige individuen een andere aanpak nodig hebben, dat zij bijvoorbeeld meer baat hebben bij een intensieve ambulante interventie als Multidimensional Family Therapy (MDFT) of Multi Systemic Therapy (MST), hoewel er tot nu toe onvoldoende bewijs is dat deze benaderingen effectief zijn voor deze specifieke groep. In Nederland wordt de substitutie van residentiële voorzieningen door ambulante zorg al vele jaren gestimuleerd en is een continu proces. Op zichzelf kan dit als een gunstige ontwikkeling worden beschouwd, mits intensieve thuiszorg wordt aangeboden. Een groot voordeel kan zijn dat individuen, wanneer de

persoonlijke situatie het toelaat, in hun eigen omgeving kunnen blijven. Dit kan een positief effect hebben op zowel cliënten als hun families.

Preventie en terugvalpreventie van middelengebruik

Vanwege het sterke verband tussen middelengebruik en disruptief gedrag was het niet verrassend dat veel jongeren die in De Fjord werden opgenomen cannabis gebruikt hadden. Op zich was het gebruik van cannabis geen reden om de behandeling af te breken, integendeel, terugvalpreventie was een belangrijk onderdeel van de behandeling. Uit ons onderzoek bleek dat cannabisgebruik voorafgaand aan de behandeling gerelateerd was aan dropout, dat het van invloed was op de uitkomsten van de behandeling en op het algemeen dagelijkse functioneren bij follow-up. Voor jongeren met psychische stoornissen en disruptief gedrag, evenals voor andere groepen kwetsbare jongeren, dient behandeling en terugvalpreventie van cannabisgebruik dus een belangrijk aandachtspunt te zijn tijdens de behandeling. Het kan helpen om dropout te verminderen en ook om verergering van symptomen te voorkomen. Evidence-based behandelingen die tegelijkertijd middelengebruik, antisociaal en agressief gedrag en delinquentie behandelen, zoals MST en MDFT, zijn aan te bevelen.

Aanbevelingen voor toekomstig onderzoek

Differentiatie in subgroepen zou clinici moeten helpen om meer op maat gesneden, allesomvattende en geïndividualiseerde interventies te ontwikkelen en aan te bieden. Daarom is de vraag hoe we een zeer complexe klinische groep met zowel disruptief gedrag als psychische stoornissen op een zodanige manier kunnen subclassificeren dat de behandeling effectiever kan worden toegepast. In plaats van het onderzoeken van dichotome onderverdelingen, zijn dimensionele benaderingen vermoedelijk nuttiger. Hierbij kan elk individu beschreven worden als een combinatie van multidimensionele kenmerken, zoals interacterende biologische (e.g., genetische, hersen- en fysiologische) en cognitieve (e.g., executieve functies, sociale cognitie) dimensies. Om een dergelijk samenspel van een groot aantal variabelen te kunnen onderzoeken, zijn grote steekproeven nodig. Dit vraagt om gezamenlijke inspanningen van meerdere instituten en onderzoeksgroepen.

Een van de factoren waarnaar gekeken kan worden, is de “low prosocial emotions” (LPE) subtypering ofwel mate van “callous-unemotional” (CU) trekken, die betrekking heeft op een van de dimensies van psychopathie. Deze factor, in combinatie met andere dimensionele factoren zoals impulsiviteit, dient als dimensioneel te worden beschouwd. Impulsiviteit (tezamen met onverantwoordelijkheid) is een andere dimensie van psychopathie en is kenmerkend voor mensen met ADHD. Een aanzienlijk deel van de cliënten die we onderzocht hebben, was gediagnosticeerd met ADHD. Door het verlaten van het dichotome idee dat er wel of geen aandachtstekortstoornis is en te kiezen voor een meer dimensionele benadering, zou de mate van impulsiviteit kunnen worden bepaald en gebruikt voor subclassificatie.

Onderzoek onder daderpopulaties suggereerde al dat het belangrijk is om onderscheid te maken tussen antisociale personen met en zonder hoge niveaus van psychopathie, vooral omdat hun disruptieve gedrag er van buitenaf hetzelfde kan uitzien, terwijl de onderliggende mechanismen die tot dit disruptieve gedrag leiden mogelijk verschillend zijn. Dit geldt zeker ook voor onze doelgroep. Bovendien is het relevant voor clinici, omdat bevindingen ook suggereren dat personen met een hoog niveau van psychopathie niet reageren op bepaalde soorten interventies en omdat mensen met disruptief gedrag sterk kunnen afwijken in de behandelingsinterventies waarop ze het best reageren.

In het huidige proefschrift is een aanzienlijk deel van de cliënten voortijdig gestopt met de behandeling. Uiteraard kan dropout nooit volledig worden voorkomen, maar toch verdient het de aanbeveling om inspanningen te leveren om het te verminderen. Om reductie mogelijk te maken, is meer kennis nodig over mechanismen die dropout veroorzaken. Hoewel we geen verschillen vonden in de onderzochte factoren tussen pushout en terugtrekken (withdrawal), verschillen beide typen dropout waarschijnlijk in onderliggende mechanismen. Deze zouden nader kunnen worden onderzocht. Bovendien zouden ingezette motivationele trajecten kunnen worden geëvalueerd.

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Dankwoord

Het is gelukt! Eindelijk is mijn proefschrift af. Het was nooit tot stand gekomen zonder de bijdragen en het vertrouwen van heel veel mensen. Daar ben ik heel dankbaar voor!

Allereerst wil ik de jongeren van De Fjord bedanken die belangeloos hebben meegewerkt aan het onderzoek. Jullie hebben op verschillende momenten voor, tijdens en na de behandeling vragenlijsten ingevuld en jullie ervaringen gedeeld. Dankzij jullie kan dit proefschrift hopelijk bijdragen aan verbetering van zorg voor jongeren met ernstige gedragsproblemen en psychische problemen.

Prof. dr. R.R.J.M. Vermeiren, beste Robert, ik ben je zeer dankbaar dat je de taak van promotor op je wilde nemen op het moment dat het promotietraject al geruime tijd liep. Ik heb veel van je geleerd. Dank voor je vertrouwen, je kritische en scherpe blik, je bemerkingen en je snelle reacties.

Dr. A.E. Boon, beste Albert, wat ben ik blij met jou als co-promotor. Dank voor je vertrouwen, je geduld, het keer op keer bijschaven van teksten, voor het kunnen delen van frustraties, voor je humor en aparte kijk op dingen. We zijn een goed team!

Zita Haijer, tot enkele jaren terug manager van De Fjord. Dankzij jou ben ik bij De Fjord komen werken, ben ik het promotieavontuur aangegaan en is het uiteindelijk gelukt! Jij hebt je altijd hard gemaakt voor het Fjordonderzoek, omdat je het belang ervan inzag. Hierdoor werd het een uniek en waardevol onderzoek.
Ook het huidig management, alle collega's en oudcollega's van De Fjord wil ik bedanken voor jullie support, vertrouwen en bijdragen aan het onderzoek (in het bijzonder Martine van der Laan, Peter van der Sanden, Joes Hagendoorn, Emmeline Ravestijn, Hinke Hiemstra, Danielle Braspenning, Petra Bakarbessy, Sylvia de Raat, Hetty van den Eijk, Patricia Oosterom), Marike Bruinsma voor het leggen van de basis van het Fjordonderzoek. Annemieke Liems en jongeren (in het bijzonder Denise) wil ik bedanken voor de kunstwerken gemaakt in kader van de beeldende therapie die ik mocht gebruiken voor de vormgeving van dit proefschrift.

Ook bedank ik de beoordelingscommissie prof. dr. Arne Popma, prof. dr. Erik Knorth en Prof. dr. Henk Nijman, dr. Lieke van Domburgh en prof. dr. Vincent Hendriks voor de kritische en secure lezing van mijn proefschrift.

Prof. dr. Fop Verheij en prof. dr. Marianne Donker ben ik dankbaar voor de eerste jaren van het promotietraject en ook coauteur Floor van Oort voor haar wetenschappelijke bijdrage.

Anna, lieve vriendin en oud-collega met wie ik een aantal jaren intensief heb samengewerkt en lief en leed heb gedeeld. Samen met Albert waren we een superteam! Dank voor je support en dat je mijn paranimf wilt zijn.
Collega's en oud-collega's van De Jutters, ook jullie ben ik dankbaar, in het bijzonder Nico Bouman voor de ondersteuning, Maaike de van der Schueren voor proofreading van het eerste artikel en medepromovenda Kirsten Hauber voor morele en praktische steun. Ook van collega's van de Parnassia Academie heb ik veel steun ervaren, Mathijs Deen, dank voor je hulp bij statistische vragen en Daphne van Hoeken voor je advies. Jos Leenes van de Parnassia Bibliotheek en alle bibliotheekmedewerkers (in het bijzonder Amos Daal) wil ik graag bedanken voor de altijd supersnelle en goede service. Stuurgroep Wetenschappelijk Onderzoek van Lucertis (Yolanda, Pier, Mirjam, Kirsten, Veronica, Simone, Joelle, Ineke, en Leontien), bedankt voor de morele support en de fijne samenwerking. Danielle, Annika, Susanne, Evelien en Inge, waar zou ik geweest zijn zonder jullie hulp! Dank voor jullie luisterend oor, het plannen van afspraken en andere praktische ondersteuning.
Lieve intervisiegroepleden (Arne, Jacky, Lieke, Marleen, Michiel, Sannie, Violaine, Vivienne, Yoast) wat hebben we veel meegemaakt met elkaar. Promoveren is leuk, maar vooral ook heftig, frustrerend en soms om wanhopig van te worden. Dank jullie voor de onvoorwaardelijke steun, de gezellige etentjes en de kritische blik. Onderzoeksassistenten Farha en Lih Sug wil ik bedanken, alsook alle stagiaires (Anne, Annemieke, Elise, Emmeline, Hanifa, Hans, Helay, Jeffrey, Judith, José, Marsha, Marina, Marinte, Melissa, Mieke, Rosalie, Shirley, Simone, Susan, Tamara, Tim).

Wetenschapscollega's Curium LUMC, ik heb me als buitenpromovenda welkom gevoeld, ik heb ervaringen kunnen delen en jullie hoogtepunten mee kunnen maken. Lieve paranimfen Anna en Mapje, dank jullie wel voor alles!

Lieve vrienden, familie en schoonfamilie, dank voor jullie belangstelling en onvoorwaardelijke steun. Auke, ik wil jou bedanken voor je advies om psychologie te gaan studeren. Elske, Beike en Berdina, wat heb ik geboft zulke zussen. Mama en Elske, wat jammer dat ik dit niet met jullie kan delen.

Lieve Har, lieve Sietske, Jitse en Benne, jullie zijn mijn basis. Met elkaar hebben we veel hoogtepunten meegemaakt en helaas ook enkele diepe dalen. Ik ben zo bij dat jullie er zijn, dat we samen kunnen genieten, ook juist van de kleine dingen. En ja, Benne en Sietske, het boek van mama is eindelijk af! Dus nu gaan we dansen en feestvieren!

Curriculum Vitae

Sjoukje Berdina Beike de Boer was born in Rijnsaterwoude, The Netherlands, on the 24th of December 1972. After finishing high school, she started her study Psychology at the University of Leiden. In the final year of her study she started her first position as a researcher at Het Palmhuis, the forensic psychiatric treatment facility of De Jutters, Center of Youth Mental Healthcare in The Hague. Het Palmhuis had been granted an experimental status and had to acquire subsistence rights. In this context she conducted program evaluation research, which after five years led to structural funding. She also worked part-time at the department of scientific research at De Jutters. Beside, a few years later in 2001 she started working as a psychologist researcher at De Fjord, center of Orthopsychiatry and Forensic Youth Psychiatry in Capelle aan den IJssel. Here she started her PHD thesis, as an external PHD student at the Erasmus University and over time, she switched to the University of Leiden. She also became member of the Stuurgroep Wetenschappelijk Onderzoek of Lucertis. In 2008 she switched the part that she worked for Het Palmhuis to De Jutters in general to start working as Routine Outcome Measurement (ROM) coordinator, primarily to monitor and improve the quality of the treatments that were offered as well as to obtain data for scientific research to support the institution. After a few years, ROM became a national obligation from the health insurers, as a result of which the focus of ROM changed into accountability through response percentages. With her colleagues, she adapted ROM in such a way that it met the requirements of the health insurers and, in consultation with the departments of De Jutters, the ROM was designed to support treatment and provide relevant data for scientific research. In 2014 the scientific research department of De Jutters was dissolved and she started working part-time as a psychologist at the department of Neuropsychiatry, offering diagnoses and treatment to youth with ADHD and autism spectrum disorders (ASS). In 2016 she was asked to take part in a committee with the aim of converting the ROM system of De Jutters to the ROM system of the Parnassia Group and subsequently she restarted to work as ROM coordinator, albeit for only a small part of her assignment. In 2017 she switched from the department of Neuropsychiatry to the central registration and indication department of De Jutters (CAT).