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Age of onset of disruptive behavior of residentially treated adolescents

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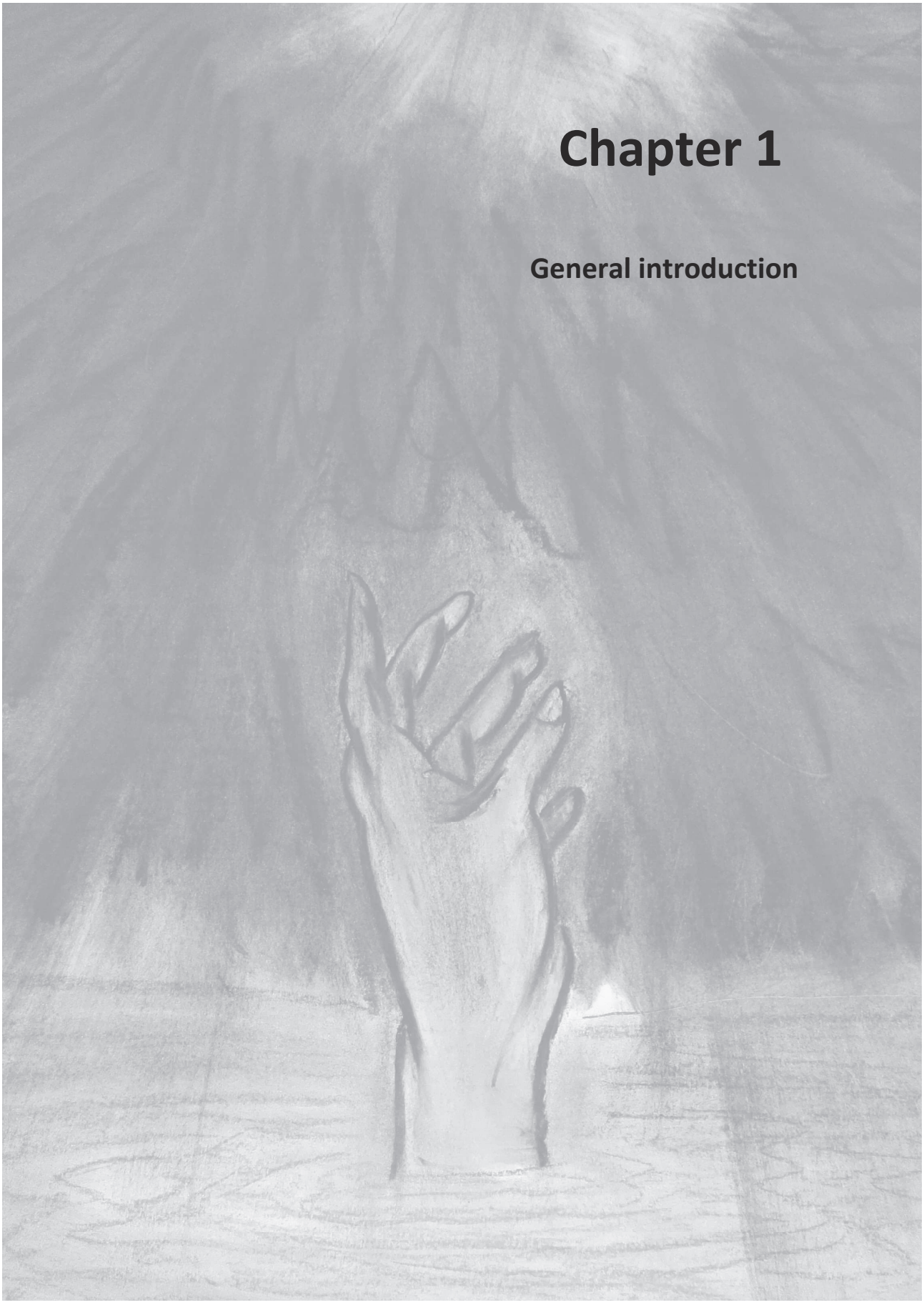
Chapter 1

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

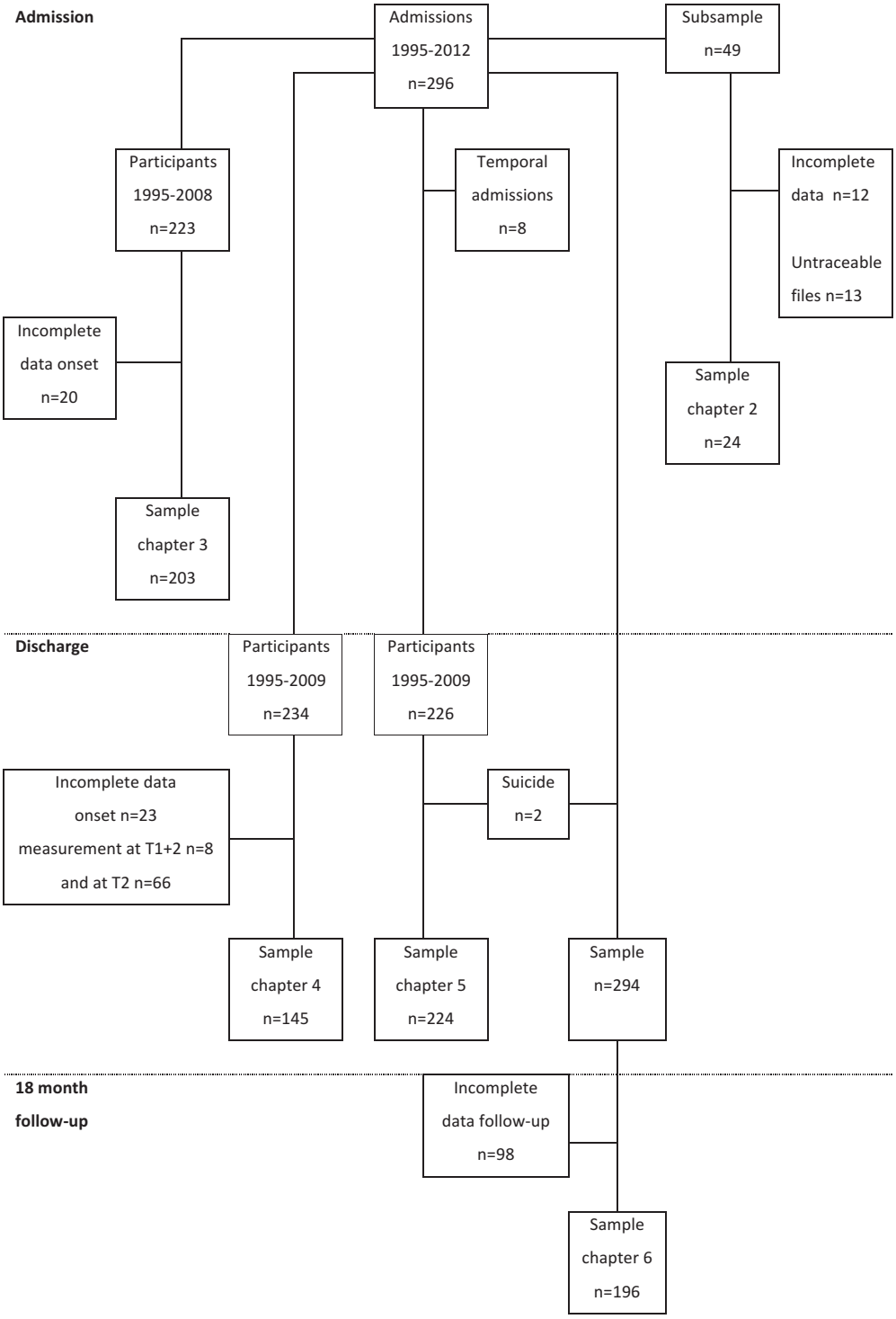
between admission and discharge on the SCL-90-R) of individuals with EO and AO disruptive behavior.

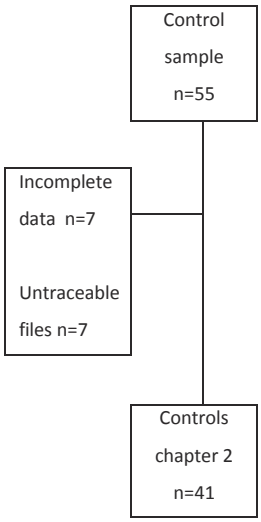
The majority of known pre-treatment characteristics predictive of dropout are related to disruptive behavior (De Haan et al., 2013). Surprisingly enough, little is known about the factors predicting dropout among adolescents treated for severe disruptive behaviour, despite the fact that it is very likely 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.