# Criminal substance abusing adolescents and systemic treatment

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# 1

## GENERAL INTRODUCTION

# BACKGROUND

Adolescents with delinquency and cannabis abuse, which are primarily boys, are predisposed to a variety of comorbid psychiatric psychopathology and form an intricate subgroup which is difficult to treat (Merikangas et al., 2010; Zahn-Waxler, Shirtcliff, & Marceau, 2008). Systemic treatments are considered the type of treatment which renders the most promising results in addressing the complex taxonomy of adolescents' problem behaviours (Carr, 2009; Von Sydow, Retzlaff, Beher, Haun, & Schweitzer, 2013; Waldron & Turner, 2008). Clinicians working with this group of adolescents have to deal, on a daily basis, with serious issues and have to make difficult decisions, impacting the adolescent, his/her family, and society as a whole. For the forensic research field, comprehending and grasping the complexity of these adolescents, which could generate insights and practical advises leading to improvement of care, is a tough and demanding task. This dissertation tries to inform clinical and research practice by providing insight and knowledge concerning: the common elements of systemic treatment, the effectiveness of Multidimensional Family Therapy (MDFT), and the predictive value on treatment outcome of baseline characteristics of the adolescent. This to better understand systemic treatments and to be better able to match a treatment with the individual adolescent's psycho-social make-up.

## Adolescents' delinquency

Delinquency represents an immense social and health concern, making it an issue of policy makers, researchers, and people all over the world. The estimated costs for society in western countries reach up to 6.5% of the gross domestic product (GDP) (Miller, Fisher, & Cohen, 2001). The period in life when the incidence of crimes is highest is between the age of 16 and 20. The incidence of crime then decreases with age in adulthood, creating the age crime curve (Hirschi & Gottfredson, 1983). Intervening prior or during this turbulent period of the adolescence life is considered to be crucial.

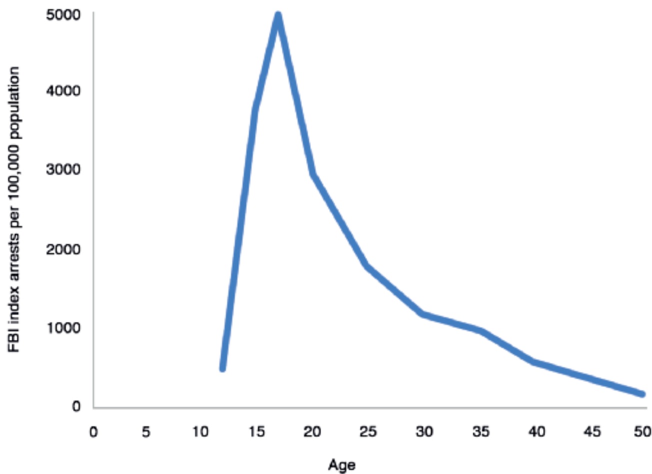


**Figure 1.** The age crime curve Hirschi & Gottfredson.

In the 1990s two delinquent pathways were distinguished by Moffitt (1993). First, *adolescence-limited* delinquency has its onset during adolescence and desists after transition into adulthood. It occurs in approximately 25% of the general population (mostly boys). Adolescent-limited delinquency is considered to be instigated by the gap between biological and social maturity (the maturity gap) influenced by predominantly environmental factors (e.g. peers, socioeconomic status). Second, *life-course-persistent* delinquency is characterised by a young age of onset of problem behaviour, instigated by a complex interaction of individual and environmental factors (Donker, Smeenk, Laan, & Verhulst, 2003; Moffitt & Caspi, 2001; Moffitt, Caspi, Harrington, & Milne, 2002; Popma & Raine, 2006; Raine, 2013). The life-course-persistent adolescent group (5%, of the adolescent delinquents) demonstrate a pattern of progressively increasing offending, which is very likely to persist into adulthood (Moffitt, 1993). This group of adolescents is considered to be the most problematic for society.

Another theoretical model which emerged in the 1990s is the *developmental-trajectories-model* (Loeber & Hay, 1997). Loeber & Hay described three adolescent developmental trajectories: the *authority-*

*conflict-pathway* characterised by problems with authority and truancy; the *covert-pathway* beginning with lying and cascading into property offending; and the *overt-pathway* starting with bullying and fighting and developing into serious externalising, violent offending. The aetiology of criminal behaviour differs in each trajectory and adolescents can take different pathways simultaneously. The earlier they start and the more pathways they take, the faster they proceed and the more severe the criminal behaviour is likely to become (Kelley, Loeber, Keenan, & DeLamatre, 1997).

Linked to these models, the *risk-factor-prevention-paradigm* emerged (Farrington, 2000). The basic idea of this paradigm is simple: identify the key risk factors for delinquency and implement prevention methods designed to counter-act them. This paradigm was developed in the medical health care, where it had been used successfully for many years to tackle illnesses such as cancer and heart disease (Hawkins, Catalano, & Miller, 1992). The risk factor prevention paradigm connects the etiology of delinquency with a prevention and treatment focus.

A risk factor is defined as a variable that predicts a high probability of an unwanted outcome. Often, risk factors are dichotomised (Farrington & Loeber, 2000). A protective factor is a variable that interacts with a risk factor to nullify its effect, or alternatively a variable that predicts a low probability of offending among a group at risk. Many researchers have discussed the need to study protective factors in addition to risk factors. For treatment and intervention programmes, it is important to strengthen protective factors and to reduce risk factors to achieve a decrease in criminal behaviour. In fact, Pollard, Hawkins, and Arthur (1999) argued that focusing on protective factors and on building resilience of children was a more positive approach, and more attractive to communities, than solely reducing risk factors, which emphasised deficits and problems. Linked to this idea the Good Lives Model (GLM) emerged (Ward & Brown, 2004; Ward & Gannon, 2006; Ward, Mann, & Gannon, 2007; Ward & Stewart, 2003). This offender rehabilitation model, developed to counter-attack stigmatisation of the delinquents, has a strength-based approach, addressing the delinquents' particular abilities, interests, and aspirations.

It guides practitioners to explicitly construct prevention and intervention plans to accommodate the delinquents to achieve the future perspectives that are personally meaningful for them. The ethical compass of GLM starts with the notion that while offenders have the obligation to respect other peoples' entitlements to well-being, respect and freedom, they are entitled to the same considerations. Two fundamental intervention aims follow from this ethical starting point, the enhancement of the well-being of the delinquent and the risk reduction of future criminal behaviour. The GLM states that these aims are inextricably connected and the best way to create a safer society is to assist delinquents to adopt more fulfilling and socially integrated lifestyles.

To address the risk and/or protective factors of an adolescent the *Risk-Need-Responsivity (RNR)*-model was developed (Andrews, Bonta, & Hoge, 1990; Andrews, Bonta, & Wormith, 2006, 2011). The model is based on three principles. *The Risk principle:* Match the intensity of treatment to the adolescent's risk to re-offend. *The Need principle:* Assess criminogenic needs and target them in treatment. *The Responsivity principle*: Maximise the adolescent's ability to learn from rehabilitative intervention by tailoring the intervention to the strengths, personality, learning style, motivation, abilities and bio-social characteristics of the adolescent.

Numerous risk factors, criminogenic need factors and protective factors have been identified by research (e.g. intelligence: Farington 2016), The risk factors and criminogenic need factors identified by Andrews and Bonta are called the "big eight" (Andrews et al., 2006).

*The Big Eight:*

1. History of antisocial behaviour characterised by early involvement in a number and variety of antisocial activities and settings. This is considered a strength when absent.
2. Antisocial Personality Pattern, characterised by impulsive, adventurous, pleasure-seeking, and aggressive behaviours, and callous disregard for others. Associated risks consist of weak self-control, anger-management, and problem-solving skills.
3. Antisocial cognition, including attitudes, values, beliefs, and a personal identity favourable to crime.

4. Antisocial associates and relative isolation from prosocial individuals, in which the quality of relationships and the influence that associates have on the individual (e.g., favourable/unfavourable to crime) are important.
5. Problematic circumstances of home (family/ marital)
6. Problematic circumstances at school or work
7. Few if any positive leisure activities
8. Substance abuse

As previously described, the literature contains many attempts to draft a typology of delinquent youth. Lately, most often mentioned (disregarding sexual offenders) is the distinction between violent offenders, non-violent (property) offenders, and versatile offenders who commit both violent and property crimes (Lai, Zeng, & Chu, 2016). For these three classes of adolescent offenders, different profiles of risk factors apply (Colins, Vermeiren, Schuyten, Broekaert, 2009; Lai et al., 2016; Mulder et al., 2012). Adolescents who are considered to be the most impaired are the versatile offenders (Lai et al. 2016).

**Adolescents' substance abuse and delinquency**

Substance abuse, particularly cannabis abuse in adolescence, is one of the leading risk factors reported in arrests and treatment admissions. Moreover, cannabis use is associated with greater involvement with other substances, conduct problems, antisocial behaviour, and delinquency; and disturbs the natural transition into adulthood (Van den Bree & Pickworth, 2005). Similarly, adolescents are particularly vulnerable to develop substance abuse disorders (Chambers, Taylor, & Potenza, 2003). Because the limbic system in the adolescent brain is still developing, they are susceptible for searching for direct satisfaction and new experiences (Gullo & Dawe, 2008). In combination with the still immature orbitofrontal cortex, responsible for the inhibition of impulses, this increases the likelihood of risk seeking behaviour, such as substance abuse and delinquency (Dahl & Spear, 2004; Gullo & Dawe, 2008). Substance use and adolescent delinquency is found to be strongly interrelated (Dowden & Latimer, 2006; Fergusson, Horwood, & Swain-Campbell, 2002; Loeber & Hay, 1997) and substance abuse is considered a risk factor for

recidivism and persistence of delinquency (Copeland & Swift, 2009; Fallu, Briere, & Janosz, 2014; Lodewijks, De Ruiter, & Doreleijers, 2010). The exact mechanism of the interaction of substance use and delinquency is complicated to grasp. Diverse theoretical models to explain this relationship have been introduced. A tripartite framework explaining the causal route of substance abuse leading to delinquency was developed by Paul Goldstein (1985). The three models described by Goldstein are:

*1. The psychopharmacological model*

The psychopharmacological model postulates that the effects of substance abuse cause criminal behaviour. For example, intoxication of a person may lead to violent behaviour and even a violent offence. Psychopharmacological delinquent behaviour may involve drug use by the perpetrator, the victim or both. Drug users are more prone to engage in high risk behaviours which increases the likelihood for becoming a victim or a perpetrator.

*2. The economic compulsive model*

The economic compulsive model or otherwise known as the economic motivation model suggests that drug abusers engage in specific economic driven crimes to support their drug habit. The economic compulsive driven delinquents are motivated by the financial gain. The typical offences are non-violent offences such as burglary and/or shoplifting. Although less likely, there may be violent offences like robberies.

*3. The systemic model*

the systemic model suggests that the world of drug dealing is inherently violent. This violence refers to the traditionally aggressive patterns of interactions within the system of drug distribution and use. Systemic violent crime typically occurs in areas that have limited social control mechanisms and are economically disadvantaged. Examples of systemic violence include territorial disputes, retribution for failure to pay debts, or elimination of informants.

A more reciprocal approach of the causal connection between substance abuse and delinquency was described by Browning and Loeber (Browning & Loeber, 1999). The model that they developed was called "*the antisocial*

*life course model*". The antisocial life course model assumes an antisocial lifestyle in which both substance abuse and delinquency are present and share multiple risk factors which influence each other negatively and result in the maintenance of both detrimental behaviours (Browning & Loeber, 1999). The coexistence of a range of associated problem behaviours like drug use, criminal activity, bad school performance, aggression, etc., is often characterised as "*the general deviance syndrome*" (Donovan & Jessor, 1985; Jessor & Jessor, 1977; McGee & Newcomb, 1992). In general, the more problem behaviours youths exhibit in one area (e.g., drug use), the more likely they are to manifest problem behaviours in other areas (Crowley & Riggs, 1995). The antisocial life course model can explain separate, causal and reciprocal pathways to adolescent delinquent behaviour and/or drug abuse. The understanding how the behaviours and/or risk factors of these pathways interact can have implications for treatment choice, which ideally includes consideration of the therapeutic strategy, planning, and modality (Jainchill, Hawke, & Messina, 2005). As a result, it could lead to effective prevention and treatment programmes for adolescents with substance abuse and delinquency (Hall et al., 2016; Merikangas et al., 2010).

**Systemic treatments**

Several treatments have been developed to effectively reduce delinquency and substance abuse. Various systematic literature reviews and meta-analyses have concluded that family-based treatments and cognitive behavioural therapy are effective in treating adolescents with delinquency, substance abuse, and comorbid psychopathology (Carr, 2009; Von Sydow et al., 2013; Waldron & Turner, 2008).

Systemic treatments emerged in the 1950s, within a variety of settings in the United States and the United Kingdom (Carr, 2012; T. Sexton et al., 2011). The founding principle that united the pioneers of systemic treatments was that human problems are basically interpersonal. Thus, to resolve psychological disorders, an intervention which directly addressed relationships between people was required. This view, driven by research which pointed out the role of family factors in the aetiology of psychiatric disorders and the ineffectiveness of individual treatments, contravened

the prevailing therapeutic attitude that all psychological problems are manifestations of essentially individual disorders.

During the 1970s and 1980s, multiple therapists like Uri Bronfenbrenner, Jay Haley, and Salvador Minuchin boosted the popularity and the implementation rate of family treatment approaches worldwide (Bronfenbrenner, 1979; Haley, 1973; Minuchin, 1974). From the 1990s onwards, family treatments have been further professionalised. Several systemic treatments were developed; Multi Systemic Treatment (MST), Functional Family Therapy (FFT), Multidimensional Family Therapy (MDFT), Multidimensional Treatment Foster Care (MTFC), and Brief Strategic Family Therapy (BSFT), which were implemented in the United States and Europe. The manuals of the systemic treatments described more refined systemic theories, which incorporated strongholds of psychoanalytic, client centred, and cognitive behavioural techniques (e.g., Henggeler, Schoenwald, Borduin, Rowland, & Cunningham, 2009; Liddle, 2015; T. L. Sexton, 2000). One of the systemic treatments that was specifically developed to address both substance abuse and delinquency of the adolescent is Multidimensional Family Therapy (MDFT). Therefore, the main part of this dissertation is focused on investigating MDFT.

*MDFT*

MDFT is a manualised, evidence-based, intensive intervention programme with assessment and treatment modules focusing on four areas: 1) the individual adolescents' issues regarding substance use disorder (SUD), delinquency, and comorbid psychopathology, 2) the parents' child-rearing skills and personal functioning, 3) communication and relationship between adolescent and parent(s), and 4) interactions between family members and key social systems (Liddle, 2002). MDFT is based on the family therapy foundation established by Minuchin (1974) and Haley, (1976) and on the ecological systems theory of Bronfenbrenner (1979). Within each adolescent's environment there are multiple risk and protective factors that influence and reinforce each other (Brook, Whiteman, & Finch, 1992). Therefore, MDFT was developed to intervene in multiple systems, addressing these risks and strengthening protective factors in the adolescents' environments (Liddle, 1999). MDFT is delivered in two

to three sessions each week over a six months or slightly longer period. Sessions may be held in a variety of places including the home, treatment office, community settings (e.g., school, court), or by phone. The format of MDFT can be modified to suit the treatment needs of the adolescent. MDFT assumes that reductions in negative behaviour of adolescents and increases in positive behaviour occur via multiple pathways, in differing contexts, and through various mechanisms. Knowledge of normal development and developmental psychopathology guides the overall therapeutic strategy and the choice of interventions. MDFT targets core interventions to the adolescent, the parent(s) of the adolescent, the family, and the extra-familial realm. The therapy is organised in three stages. It relies on success in one phase before moving on to the next one. Stage 1 involves "*Building a foundation*", stage 2 "*Working the themes and making behaviour changes*", and stage 3 "*Sealing the changes and exiting*". MDFT is extensively implemented and operational in the United States and Europe and targets youth from diverse ethnic and socioeconomic backgrounds in a variety of settings (Liddle, 2002; Rigter et al., 2010).

## DISSERTATION

The general aim of the current dissertation is to identify the common elements of systemic treatments and to examine the effectiveness of Multidimensional Family Treatment (MDFT), for delinquent, substance abusing adolescents with comorbid problem behaviours. Further we aimed to investigate if baseline characteristics of the adolescent differentially influenced treatment effect.

For examining the effectiveness of MDFT and the moderating effect of baseline characteristics of the adolescents a meta-analysis was conducted. Eight randomised controlled trial (RCT) study samples (see table 1) were analysed (Chapter 2). To explore the common elements of systemic treatments we conducted a qualitative study of the evidence-based systemic treatments; Multisystemic Therapy (MST), Functional Family Therapy (FFT), Multidimensional Treatment Foster Care (MTFC), Brief Strategic Family Therapy (BSFT), and MDFT. All the available manuals,

books, and papers, materials describing the content of the treatments were studied to be able to identify the common elements (Chapter 3). To further investigate the effectiveness of MDFT and the moderating effect of baseline characteristics of the adolescents (Chapter 4, 5 and 6), subsets of the INCANT (International Cannabis Need for Treatment) dataset were used to conduct the studies (see table 1). INCANT was a 2 (treatment condition) x 5 (time) repeated measures intent-to-treat randomised effectiveness trial comparing MDFT to individual psychotherapy. Data were gathered at baseline and 3, 6, 9 and 12 months after start of treatment. The countries participating were Belgium, Germany, France, Switzerland and the Netherlands. The total number of adolescent participants in the INCANT study was 450. Study participants were recruited at outpatient secondary level addiction, youth, and forensic care clinics in Brussels, Berlin, Paris, The Hague, and Geneva. Participants were adolescents from 13 through 18 years of age with a recent cannabis use disorder. For the study in chapter 4, the combined datasets of Switzerland and the Netherlands were used (N=169, mean age 16.2, SD 1.2). For the studies in in chapter 5 and 6, the Dutch dataset was used (N=109, mean age 16.8, SD 1.3). Additionally, for the studies in chapter 5 and 6 we retrieved the police arrest records, for the 109 Dutch adolescents, from the National Police Information Services database (IPOL).

## OUTLINE

In **chapter 2** we conducted a three-level meta-analysis to explore the effectiveness of MDFT compared to other treatments cognitive behavioural therapy (CBT), group therapies (GT), and combined treatments (CT). We included all studies based on RCT-datasets in the meta-analysis. We analysed the impact of MDFT on the outcome measures: delinquency, substance use, family problems, externalising problems, and internalising problems. Furthermore, we tested the “severity gradient”, assessing whether adolescents with severe problem behaviour (severe substance use, severe externalising psychopathology) were better accommodated with MDFT.

**Chapter 3** describes a qualitative study, using a sophisticated identification method (based on the Delphi method), developed by Garland (Garland, Hawley, Brookman-Frazee, & Hurlburt, 2008). We analysed five evidence based systemic treatments for adolescents with disruptive behaviour disorders to identify common elements among these treatments. The treatment which were included in the study were: Multisystemic Therapy (MST), Functional Family Therapy (FFT), Multidimensional Treatment Foster Care (MTFC), Brief Strategic Family Therapy (BSFT), and MDFT. The study disseminated various treatment mechanisms, treatment parameters, and treatment techniques. The identification of common treatment elements between the different treatments, was conducted to be beneficial for the further understanding and development of family-based treatments, training of therapists and research.

**Chapter 4** examines 169 Swiss and Dutch cannabis abusing adolescents regarding their criminal behaviour. The Self-Report Delinquency questionnaire (SRD) was used to compare MDFT with Individual Psychotherapy (IP). The SRD was administered at baseline, at 6-month, and at 12-month follow up. In this chapter we analysed total crimes, severity of crimes, and property and violent crimes separately using latent grove curve modeling (LGC).

In **chapter 5** the police arrest data of the 109 Dutch cannabis abusing adolescents was studied, comparing MDFT with CBT. The police arrest data was collected for 6 years, three years prior to the start of treatment until three years after the start of treatment. Crime trajectory analyses were conducted using repeated measure General Linear Models (rmGLM). We investigated total arrests, severity of arrests, arrests for property offences, and arrests for violent offences. Furthermore, we conducted extensive moderator analyses in this study.

In **chapter 6** the follow up period of the arrest data was extended to 7 years to investigate the long-term effects of MDFT and CBT on criminal behaviour for the 109 Dutch substance abusing adolescence. Thus, a crime-trajectory-period of 10 years was studied, to analyse if the substantial decrease of offending achieved during the treatment period, would be retained. Again, crime trajectory analyses were conducted

using repeated measure General Linear Models (rmGLM) to investigated, total arrests, severity of arrests, arrests for property offences, and arrests for violent offences.

Finally, in **chapter 7** a summary and discussion of the results is provided, concluding with practical implications and recommendations for future research and policies.