Cannabis changes: Understanding dynamics of use and dependence

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Cannabis is the most widely used illicit drug. Part of ever-users become frequent users and continue to use over a longer period. 600 frequent users (18-30 years) were enrolled in a 3-year longitudinal study. Trajectories of frequent cannabis use and cannabis dependence appeared very dynamic. Overall use and dependence declined over time. The empirical core of this PhD thesis was an in-depth qualitative analysis of the trajectories of a sub-sample of 47 participants. Taking a life course perspective as a main theoretical framework, the leading questions were: how and why do frequent young adult users increase, decrease or quit their use over time? And why do some develop or recover from dependence and others do not? The dynamics in frequent cannabis use and cannabis dependence were examined, particularly the underlying processes and mechanisms. In general, participants lived a life rather similar to other young adults. Cannabis use appeared predominantly a leisure activity. This thesis uncovered the reciprocal relationships and mechanisms involved in cannabis trajectories. Social relationships (particularly peers and partners) were of great importance in these trajectories, including in processes of desistance from and persistence of use. Even when similar, social relationships, work and study, leisure and related life events had different meanings for individuals. Meaning-giving to life events was essential. Agency was a necessary ingredient for desistance and played a key role in life events becoming turning points in cannabis trajectories. Like many other aspects in life, over time, either gradually or abruptly, cannabis use and dependence can change.
CANNABIS CHANGES

Understanding dynamics of use and dependence

Nienke Liebregts
This thesis was prepared at The Bonger Institute of Criminology, Faculty of Law, University of Amsterdam.

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CANNABIS CHANGES

Understanding dynamics of use and dependence

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INTRODUCTION
**Introduction**

Cannabis is one of the oldest drugs in human history. Over the centuries, people have used it for a variety of purposes, for example, during rituals, as a medicine or as an expression of social protest (Bewley-Taylor, Blickman, & Jelsma, 2014; Grinspoon & Bakalar, 1997). Over time the main reasons for use have changed. Its role during rituals and as a form of protest has largely disappeared, but medical use of cannabis, however, has seen a significant revival, particularly as 'medicinal marijuana' in the United States (Bewley-Taylor et al., 2014). In addition to this historical development in societal meaning of cannabis use, there have been serious changes in national and local drug policies, including regions and periods with criminalization of production, possession and use and regions and periods with decriminalization or even full legalization in combination either very strong or weak enforcement strategies. While some decades ago cannabis users were often labelled as 'deviant', today scholars often define cannabis use as 'recreational' and cannabis users as 'normalised' (Parker, Aldridge, & Measham, 1998; Parker, 2005). Despite this general development, there is still a wide variation in the type of people that use cannabis and their patterns of use. For some people, cannabis use is only a single experiment or only takes place during a short period in their life (adolescence). Others continue their use of cannabis over a longer period, ranging from occasional and selective to frequent or even daily use. This book is about the latter group: frequent and daily users. Over a period of three years, we followed a group of frequent or daily cannabis users in the Netherlands. For some of them little changed in their cannabis use, but for most of them cannabis use was a highly dynamic phenomenon often coinciding with other changes in their life. In calling this book *Cannabis Changes*, we are indebted to Dan Waldorf, Craig Reinarman and Sheigla Murphy (1991). Their study was published more than 20 years ago, was about another drug (cocaine), and took place in a country with a different drug policy (United States). Nevertheless, there are similarities with our research, both in appreciation of qualitative methods as in unravelling the dynamic world of frequent drug users.

**Short history of cannabis regulation and views on cannabis use**

When at the beginning of the 20th century the first international drug conventions were established, opium and cocaine were the drugs in focus. In 1925, cannabis was incorporated in a revised international treaty, and from then on cannabis received more and more attention. Not because evidence had shown that cannabis use or dependence had become an objectively growing problem, but as a result of a moral crusade in the United States
(Becker, 1963). In political campaigns in the 1930s, marijuana was positioned as a problem of the greatest national concern. The drug was claimed to be predominantly used by ‘strangers’, such as ‘Negroes’, Hispanics and jazz musicians, and that its use would cause aggression and insanity (reefer madness), criminality and death (Gerber, 2004; Himmelstein, 1983). While barely used in most Western countries, in the Single Convention on Narcotic Drugs (1961) cannabis was scheduled in the category of the most dangerous substances, with a high potential for abuse and potentially severe dependence. The production, manufacture, export, import, trade of, possession and use, except for amounts necessary for medical or scientific research, became prohibited (Bewley-Taylor et al., 2014; Blom, 1998; Chatterjee, 1981). Despite the Single Convention, a few years later, in the late 1960s, its use quickly rose and spread from the US to European countries, including the Netherlands.

The first Dutch drug law (Opium Act) was established in 1919; production and trade of opium, all its derivatives and cocaine were prohibited. Marijuana and hashish were included in the Opium Act of 1928 – that still is the basis of the current Opium Act –, but only in 1953 the use and possession of marijuana became criminal offences (Blom, 1998). In the 1950s, cannabis use in the Netherlands was still a rare phenomenon, and the Opium Act made no distinction between types of prohibited substances (De Kort, 1995). From the late 1960s onwards, cannabis became increasingly popular. In 1976, a major change in the Opium Act law was introduced: a distinction was made between drugs with “unacceptable risks”, i.e. hard drugs (List I) and “hemp products”, i.e. soft drugs (List II). The maximum penalty for possession of soft drugs was lowered, while that for drug trade and possession of hard drugs became higher. Possession for personal use of cannabis by adults was decriminalized. Over the years, the 1976 Opium Act was further revised, including an extension of the lists and tougher punishments for organized drug trade. Along with the revision of the Opium Act in 1976, a ‘tolerance policy’ was implemented, including condoning the sale of cannabis to users in youth centres under certain conditions. In the years that followed, official guidelines to further regulate the condoned sale of cannabis were implemented (Blom, 1998).

In the course of the 1980s, so-called coffee shops (café-like outlets where selling hashish and marijuana to consumers is tolerated under specific conditions) as we know them today in the Netherlands became more common (De Kort, 1995). The number of coffee shops steeply increased, reaching a peak of about 1,500 in the mid 1990’s (Korf, 2002). In 1996, the regulations for the coffee shops were tightened, and from then on Dutch cannabis policy has become more strict, with additional measures against coffee shop-related nuisance, coffee shop tourism, cannabis-related crime,
domestic cultivation of ‘nederwiet’ (Dutch marijuana) and large-scale trafficking of cannabis (Adviescommissie Drugsbeleid., 2009; Emmett & Boers, 2008; Korf, 2011; Van Ooyen-Houben, Bieleman, & Korf, 2013; Van Ooyen-Houben, Bieleman, & Korf, 2014; Wouters, 2013). From the mid 1990’s onwards the number of coffee shops decreased from 1,500 to 846 in 1999 and 614 in 2013 (Bieleman & Nijkamp, 2013).

The rapid rise of cannabis use from the 1960s went along with a change in the general view on cannabis users: from being criminal or mentally ill through being rebellious and non-conformist to just recreational. This trend continued into the 1980s and 1990s (Korf, 1995).

Similar changes in the view on cannabis use and cannabis users have been taken place in other Western countries, where cannabis use is currently considered as normal and used for just for fun by most youngsters and stripped of delinquent and deviant associations. Cannabis use has become an accepted feature of mainstream adolescents and young adults in Western society and is said to be “normalised” (e.g. Duff & Erickson, 2014). Cannabis users are no longer seen as being part of a separated subculture of society, but as people coming from all levels of society, whose cannabis use is generally considered one of many leisure activities (Aldridge, Measham, & Williams, 2011). Particularly from an international perspective it is argued that in the Netherlands cannabis use is considered ‘normal’ because of the Dutch tolerance policy. However, this seems more an assumption than a fact. Rather, different cannabis policies might have created divergent images of cannabis users worldwide, yet these do not necessarily correspond to prevalence rates (e.g. EMCDDA, 2014; Reinarman, Cohen, & Kaal, 2004).

**Cannabis use nowadays**

Cannabis is the most widely used illicit drug in the world (UNODC, 2014). In the European Union alone an estimated 74 million adults have ever used cannabis and three million individuals are (almost) daily cannabis users (20 days or more in the last month), most of whom are aged 15–34 years (EMCDDA, 2014). While cannabis policies vary across Europe, cannabis is available and used in every country of the EU (Europol, 2013). Despite or because of the decriminalization and the policy of tolerance towards cannabis use in The Netherlands, cannabis use (lifetime and last year prevalence) in the Netherlands is quite similar to that of many other European countries (EMCDDA, 2014) and lower than in the United States (UNODC, 2014). There is a striking difference between the number of people who have used cannabis lifetime, last year, last month and (near-) daily. In the Netherlands, for example, according to the most recent general population survey, 25.7% of the population aged 15-64 years has ever used cannabis, 7.0% has used
cannabis in the last 12 months, and 4.2% has used cannabis in the last month (Van Rooij, Schoenmakers, & van de Mheen, 2011). Of the estimated 466,000 last month cannabis users, 30.2% or about 141,000 are current (almost) daily users (Van Laar et al., 2014). More men than women use cannabis. In the Netherlands, lifetime and last year cannabis use are about twice as high among males than females, whereas last month prevalence is about three times higher among men than women (6.3% vs. 2.0%, Van Laar et al., 2014). To conclude, about 25% of the Dutch population has tried cannabis at least once, many of them have discontinued their use after a shorter or longer period of time and only a very small group (1.3%) is a current frequent user.

People use cannabis for different reasons. Like with all drugs, the effects of cannabis are an interplay of three factors: the drug (e.g. type and dose), the set (the user) and the setting (Zinberg, 1984). While acknowledging the wide variation in how individuals experience the effects of cannabis, some effects are quite common. Examples of frequently reported positive effects of cannabis use include: relaxation, happiness, sensory enhancement, thinking more deeply, laughter, stronger appetite, increased concentration and creativity. On the other hand, decreased memory function, dizziness, decreased concentration, dry mouth and fear are among the negative acute effects that are relatively often reported (CAM, 2008; EMCDDA, 2008; Niesink & van Laar, 2012; van den Brink, 2006). More important, on the longer term a minority of those who started using cannabis develops cannabis dependence. Frequent cannabis users are at a higher risk of developing dependence than infrequent cannabis users, yet ‘only’ 20-50% of the (near-) daily users are cannabis dependent (Coffey et al., 2002; EMCDDA, 2009; Swift, Hall, Didcott, & Reilly, 1998). Daily or nearly daily cannabis use and particularly cannabis dependence are associated with various mental health problems and impaired social functioning (Degenhardt et al., 2013; Fergusson & Boden, 2008; Hall, 2009; Martinotti et al., 2012; van der Pol, Liebregts, de Graaf, Have et al., 2013).

In the past decade, treatment demand for (primarily) cannabis-related problems has strongly increased, both in the Netherlands and internationally (EMCDDA, 2014; Van Laar et al., 2014). It is unclear however what caused this increase: an increase in the prevalence of problematic cannabis use and dependence, improved accessibility of addiction care, or perhaps an increased willingness to seek help. However, still less than a third of all cannabis dependent persons seek professional treatment (Agosti & Levin, 2007; Cunningham, 2000; Van Laar et al., 2014).

Cannabis dependence is mostly defined according to the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV). A DSM-IV diagnosis of cannabis dependence requires that someone meets three or more of the following seven criteria within in a period of 12 months: 1)
tolerance; 2) withdrawal syndrome or using cannabis to relieve or avoid withdrawal symptoms; 3) using larger amounts or for a longer period than intended; 4) persistent desire or unsuccessful efforts to cut down or control cannabis use; 5) spending much time obtaining cannabis, using, or recovering from the effects; 6) giving up important social, occupational, or recreational activities in favour of cannabis; and 7) continued using despite a physical or psychological problem caused or exacerbated by cannabis use (APA, 1994).

Dependence with and without physiological dependence (tolerance and/or withdrawal) is differentiated in the DSM-IV. In a recent general population study in the Netherlands, there were about 776,000 last year cannabis users and 29,300 (3.8% of the users or 0.3% of population 18-64 years) were diagnosed as cannabis dependent (De Graaf, ten Have, & van Dorsselaer, 2010).

It should be noted, however, that cannabis dependence is a highly debated concept. Some consider drug dependence as a chronic relapsing (brain) disease, whereas others state that it is a certain form of behaviour that is embedded in a social context and that it is well possible to recover from it (e.g. Carter & Hall, 2012; Hammer et al., 2013; Pickard, 2012). In addition, there are debates about the categorical nature of the problems and the border between normality and pathology (e.g. Khoury, Langer, & Pagnini, 2014). In this current study on the natural course of cannabis use and cannabis dependence we therefore investigate both dimensional changes in cannabis use patterns and categorical switches between the presence and absence of cannabis dependence.

The course of cannabis use and dependence
Knowledge about the natural course of frequent cannabis use and dependence is scarce. Much research on cannabis use is restricted to the initiation, rather than the continuation, persistence or desistance of frequent use. Consequently, since first use often occurs during adolescence, studies are mostly limited to this age group. In the Netherlands, the average age of first cannabis use is 19.6 years and current regular users are mostly young adults (mean age last-year users is almost 31 years) (Van Laar et al., 2014).

More importantly, processes underlying the course of cannabis use and dependence have been barely identified.

To identify factors involved in transitions in frequent cannabis use and dependence, longitudinal studies are required. A few longitudinal studies have identified risk factors of cannabis dependence, including younger age of onset of cannabis use, use of substances other than cannabis, poverty, and quantity of use (Swift, Hall, & Copeland, 2000; von Sydow, Lieb, Pfister, Höfler, & Wittchen, 2002). Also cannabis use cessation, or recovery from dependence, has been explored. Factors that were identified in cross-
sectional studies include life changing events, self-control, increasing responsibilities and developing activities unrelated to cannabis use (Chauchard, Levin, Copersino, Heishman, & Gorelick, 2013; Ellingstad, Sobell, Sobell, Eickleberry, & Golden, 2006; Kwong, Howard, & Arcuri, 2010). However, most previous studies focused on irregular use, on quitters only, or investigated risk factors without taking the perception of the users into account (Rooke, Norberg, & Copeland, 2011; Terry, Wright, Terry, Wright, & Cochrane, 2007). However, a users’ perspective is deemed to unravel cause and effect and improve our understanding of the processes involved in changes in cannabis trajectories. Moreover, cross-sectional studies are unable to claim causality, and the few available prospective studies failed to include enough frequent or dependent users to specifically distinguish frequent from dependent users. Prospective studies have demonstrated associations of protective and risk factors with cannabis use and dependence and it is known that many individuals decrease and stop using. Nevertheless, they have yield different results regarding underlying mechanisms and directions. To conclude, until now it remains unknown why frequent young adult users increase, decrease or quit their cannabis use, why some develop dependence and others do not, and why some recover from dependence and others do not. In this book, we try to provide at least some answers to these questions.

Aim and theoretical perspectives
Evidently, there is a lack of knowledge on the natural course and mechanisms underlying changes in cannabis use and transitions in cannabis dependence. More research is needed to better understand these dynamics and mechanisms. Therefore, the aim of this study is to better understand the natural course of frequent cannabis use and cannabis dependence, particularly the processes and mechanisms associated with changes in the patterns of use and dependence, and to contribute to the theory of change in these kinds of phenomena. Moreover, insights in the extent to which frequent users experience cannabis-related problems in their daily lives, and how they handle and possibly overcome them, can contribute to the international debate on the normalisation of cannabis use.

In order to obtain a better insight into the dynamics of cannabis use and cannabis dependence, young adult frequent users might be the most interesting group. Frequent users are at increased risk for cannabis-related problems, including cannabis dependence, but not every frequent cannabis user is (or becomes) cannabis dependent. Young adults are chosen because the initiation phase of cannabis use has generally passed and this is the period in life that cannabis use either continues or declines and/or stops. Moreover, this phase of life is characterized by many significant life changing
events in various domains, such as leaving the parental home, finishing school, our study, finding a job, falling in love, settling down with a partner or marry, etcetera. This makes young adults a specifically interesting group to study, and led us to formulate the following research question: *What are the processes and mechanisms underlying transitions in the natural course of frequent cannabis use and cannabis dependence, and how can these be understood?*

In order to describe and understand the processes leading to changes in cannabis use and cannabis dependence, various theoretical notions from social science will be used, criminology in particular.

*Life course theory*

In criminology, the life course perspective focuses on the development over time of careers in delinquency and crime, and explores which factors play a (causal) role in processes of initiation, persistence and desistance. This approach identifies the importance of timing during an individuals’ lifetime. Transitions such as changes in relationships, education and work are considered potential turning points in explaining desistance from deviance (Elder, 1998; Laub & Sampson, 1993). Turning points are preceded by life events. While they could (objectively) be categorized as positive or negative events, their (subjective) meaning depends on how the person evaluates them since similar events can have different meanings for different people (Laub & Sampson, 1993). Life events leading to a lasting change over time in an individual’s life course are considered turning points, and can thus only be identified retrospectively (Teruya & Hser, 2010; Wheaton & Gotlib, 1997). In life course theory, changes in deviance over the life course are explained within the context of age and maturation: most deviant behaviours peak in adolescence and young adulthood and then decline (Laub & Sampson, 2003; 1993). Although life course theory has been developed to describe and explain criminal careers, we argue that it can also offer a solid framework to the study of the natural course of cannabis use and cannabis dependence, since it is expected that largely similar processes are involved (cf. Laub & Sampson, 2001).

*Social environment*

During childhood, parents are generally most influential; adolescence marks a decline in parental influence as peers, and also partners in emerging adulthood, become the most important reference group in the private domain for behaviour, including drug use (Arnett, 2005; Erikson, 1980). Drug use, both initiation and continuation, is often a social activity that occurs together with other users (Fountain & Korf, 2007). Some classical studies have shown that cannabis use is learned through association and in interaction
with other users (Becker, 1963), and the social settings in which that occurs include rituals that prevent uncontrolled use and dependence (Zinberg, 1984). An old saying goes “birds of a feather flock together”; deviant young people would be more likely to associate with deviant peers (Glueck & Glueck, 1950).

As will be shown in Chapter 3, the role of parents in adolescent drug use has been extensively studied, and also the role of peers and partners has received much attention. However, while young adulthood is a phase often associated with cannabis use progression and dependence, most studies are limited to adolescence. Generally, mechanisms regarding the role of social relationships in drug use are grouped into selection and socialization. According to the selection model, people select peers and/or partners who are similar in behaviour to themselves, for example frequent cannabis use. In contrast, socialization refers to the process of peers influencing each other’s behaviour in interaction: people adopt the beliefs and behaviour of friends over time. In criminology, Sutherland’s (1947) differential association theory is probably the most well known classical theory of socialization. There is support for both models and they seem to occur alternately or simultaneously (Rhule-Louie & McMahon, 2007). Some studies found different effects for males and females, but results regarding gender differences are inconsistent. Moreover, the behaviour of the romantic partner is often overlooked, or assumed to be pro-social, while the particular influence on someone’s drug use depends on the partner’s drug use (Rhule-Louie & McMahon, 2007). Taken together, empirical evidence has shown that social relationships are important in cannabis careers. However, the role of social relationships in the natural course of cannabis use in young adults and in particular the underlying mechanisms, needs more attention.

Normalisation of cannabis
In the late 1960’s and early 1970’s, when cannabis use was introduced on a large scale, it was associated with subcultural preferences, as part of political opposition and cultural non-conformism (Pedersen, 2009). According to normalisation perspective, cannabis use today has become an accepted form of behaviour among mainstream adolescents and young adults who live rather conventional lives, and recreational use is no longer a subcultural phenomenon (Duff & Erickson, 2014). Cannabis use, including frequent use, is predominantly understood as a leisure time activity, with most cannabis users carefully choosing when and where to use: often in private settings, with peers and/or partners (Hathaway, 2003; Reinarman & Cohen, 2007). In brief, the process of normalised cannabis use is characterized by an increased demand and supply, as well as increased levels of social and cultural acceptability for recreational use (Parker, 2005). In addition, users would no
longer belong to a delinquent or deviant sub culture, but have rather conventional lifestyles (Duff et al., 2012; Hathaway, 1997; Pearson, 2001). Despite empirical support from several Western countries, the normalisation thesis also received a lot of criticism. According to the critics, the concept of normalisation relies on a too simplistic distinction between recreational and problematic use, and adult users would still experience stigma (Hathaway, Comeau, & Erickson, 2011; Shildrick, 2002). Moreover, how does normalisation relate to frequent cannabis use, or cannabis dependence? Recently, the normalisation thesis has been revisited, based on a follow-up of the original sample of Parker and colleagues (Aldridge et al., 2011; 1998). This study affirmed their previous normalisation thesis: as participants aged, they continued using drugs, but assimilated their use to their responsibilities such as jobs and children. However, these participants were not often frequent cannabis users, and alcohol was the most commonly used drug. Thus, while the normalisation thesis offers an interesting starting point to explore frequent and dependent cannabis use in relation to leisure and delinquency, some areas remain rather concealed.

Desistance, agency and identity
The natural course of cannabis use and dependence show similarities with the course of criminal behaviour: both behaviours generally peak in adolescence and young adulthood and then gradually decline (Johnston, O'Malley, & Bachman, 2001; Van Laar et al., 2014). Despite this similarity in process, until now little exchange of knowledge between these two areas of research has occurred.

It is increasingly recognized that desistance from crime is a process comprising an interplay between structural factors (social institutions, e.g. marriage, employment) and individual factors (subjective meaning, identity and personal agency), as well as biological ageing and psychological maturation (Farrall, Sharpe, Hunter, & Calverley, 2011; Maruna, 2001; McNeill, 2009). Life events such as an ended relationship, a new job or a holiday, can act as a trigger for the decision to change, yet they will only be influential if a person considers them as meaningful and desirable (Lloyd & Serin, 2012). Strategies and a realistic, feasible plan for identity change have been linked to successful desistance (Maruna, 2001; Paternoster & Bushway, 2009). While predictive factors of cannabis use cessation have been identified in previous studies, most studies focused on irregular use or quitters only. Moreover, most studies on predictors failed to take into account the personal perceptions of the social events that were studied (Rooke et al., 2011; Terry et al., 2007). In contrast, studies on desistance from crime have gained important insights from the inclusion of personal perceptions of social events, yet these perspectives have been rarely applied to drug use. We therefore
believe that a great opportunity is missed here. In the current study, persisters (those who from baseline onwards reported a persistent desire but unsuccessful attempts to quit) and desisters (those who quit using cannabis during follow-up) of frequent cannabis use will be compared and portrayed, cross-sectional and longitudinal. The focus is mainly on concepts that have been shown to be important in desistance studies, such as the role of the perception of life events, agency, identity change, and strategies.

Research questions
In light of these theoretical perspectives and gaps in previous research, the central question is translated into the following research questions.

1) What is the natural course in cannabis use and cannabis dependence in young adult frequent cannabis users?
2) How do cannabis use characteristics and cannabis dependence play a role in social networks of frequent cannabis users?
3) What is the role of social relationships in frequent cannabis use and cannabis dependence trajectories and what is the (relative) contribution of selection and socialization?
4) What is the role of study and work in frequent cannabis use and cannabis dependence trajectories?
5) What is the role of leisure and delinquency in frequent cannabis use and cannabis dependence trajectories and what does that tell us about the normalisation of cannabis use in young adults?
6) What are processes underlying desistance from frequent cannabis use, more specifically the role of perceived life events, identity change, agency, and strategies?

The focus of the questions 2-6 is on how young adult frequent cannabis users experience these various aspects in affecting their use and the development of cannabis (non) dependence, and vice versa. The research questions will be investigated by exploring different life domains in-depth and they will be translated into more specific aims in each chapter.

Methods and approach
The CanDep study
In order to investigate the natural course of frequent cannabis use and cannabis dependence, we conducted a longitudinal study combining quantitative and qualitative methods (van der Pol, 2014; van der Pol et al., 2011). Briefly, together with my co-researcher Peggy van der Pol and three research assistants, 600 frequent cannabis users (≥3 days per week for 12 months, aged 18-30 years) were recruited and interviewed. In the
Netherlands, coffee shops make it relatively easy to gain access and to recognize frequent cannabis users. The vast majority of users who buy their own cannabis do so in coffee shops, particularly in urban areas (Wouters & Korf, 2009). Those who acquire their cannabis in other ways or only make a short visit to coffee shops are harder to access. Therefore, snowballs were initiated in coffee shops, assuming that subsequent referral chains would emerge that would also include non- and less frequent coffee shop visitors. They were all interviewed and based on their answers to the Composite International Diagnostic Interview (CIDI 3.0: Kessler & Ustun, 2004) they were classified as either non-dependent frequent cannabis users (cohort I; N=348) or dependent frequent cannabis users (cohort II; N=252). Participants were re-interviewed after 1.5 (first follow-up) and 3 years (second follow-up). After the first follow-up interview, 48 participants were randomly selected based on their transition status in cannabis dependence to participate in a qualitative sub study, which for most part forms the basis for this book. They were interviewed in-depth twice shortly after the standardized follow-up interviews, with an intermediate period of 1.5 years with the aim to gain comprehensive insights on the processes involved in this 3-year natural course of cannabis use. A qualitative methodology was chosen to explore the processes and mechanisms underlying dynamics in frequent cannabis use and dependence, for several reasons.

**Qualitative methodology**

A major advantage of quantitative general population surveys is that they can generate statistically representative data, not only on prevalence rates and numbers of users, but for example also on the discontinuation rates of cannabis use and the remission rates of cannabis dependence. Such studies are important to estimate prevalence rates, protective and risk factors and bring evidence that most people who try cannabis do not progress to frequent use and dependence. However, these general population studies commonly include only small numbers of frequent or dependent users. A solution for this problem is the use of targeted samples. However, general population surveys generally have another problem. They can identify so-called ‘objective’ risk and protective factors for the onset, continuation and cessation of cannabis dependence, but they are not able to uncover the mechanisms beyond the numbers, because they fail to take into account personal meaning and are thus not suitable to uncover subjective causal processes (Terry et al., 2007).

In contrast, qualitative research provides in-depth insights and clarifications that can better capture the dynamic and complex processes and mechanisms involved in the life course than quantitative research. A users (subjective) perspective is deemed to improve our understanding of the processes and
the context involved with changes in life course and cannabis use and
dependence. Moreover, although information is often reported about
cannabis users, users rarely get the chance to speak for themselves. In this
study, various aspects of cannabis dependence are explored from a
qualitative perspective, such as the centrality of cannabis in users’ lives and
whether and why frequent users react differently in their use of cannabis to
similar life events. Their ‘subjective’ meaning, their construction of reality,
their attribution to their life course and events, form the foundation for this
book. Their narratives are theoretically and analytically interpreted and
abstracted to find patterns and mechanisms.

In-depth interviews
Most interviews took place at the participant’s home, the rest at the Bonger
Institute or in a café. Interviews lasted around two to three hours. The in-
depth interviews were quite different from the standardized interviews.
Although a topic list was used to guide the interviews, there was much more
room for an open conversation, and the absence of the laptop created a more
informal setting, denuded from an official interview atmosphere. This could
also have an effect on the participant’s comfort and openness to talk about
him/herself, as some seemed to feel more at ease and to have a greater
readiness to talk during the in-depth interviews than during the standardized
interviews. All interviews started with an informal non-interview related chat
before the ‘official’ interview started.

Interviewees were generally warm, friendly and very willing to cooperate.
There was a great diversity in individuals, lifestyles and housing. Some houses
were very clean and organized, nicely decorated and attention was clearly
paid to it, others were messy or unclean, because the inhabitant was barely at
home or simply did not really care about it. Sometimes, individuals’ lifestyle
and cannabis use seemed reflected in their homes. For example, participants
who carefully planned their one joint at the end of the day, after work and
when daily tasks were finished, often had an organized and clean house,
while homes of participants who lived a quite unstructured life, including
cannabis use during the day, were often rather chaotic. In a rare case a pile of
clothes, magazines and towels had to be removed before being able to sit
down, while at the other extreme an interviewee had bought freshly baked
cookies especially for the interview. Interestingly, sometimes changes in
cannabis use over time seemed to parallel changes in interviewees’ homes.
Nonetheless, these observations were not used as a validation or indicator in
the analyses.
Outline
In the following chapters, the central theme of this book is converted into more specific themes.

Chapter 2 starts with the social environment of frequent cannabis users at baseline. More specifically, the focus is on the fieldwork of the study and the strategy that was used to include participants (respondent-driven sampling, RDS). It was explored whether participants recruited via their social network differ from participants recruited in coffee shops. Moreover, the chapter dug deeper into the chains of participants that arose by RDS, i.e. their social networks, and their binding factors, including the extent to which cannabis use characteristics played a part.

In Chapter 3, social relationships are again the focus. While Chapter 2 focused on all 599 participants of the CanDep Study, Chapters 3-6 concentrate on the 48 interviewees who participated in the longitudinal qualitative sub study. Here, we will turn our perspective to the role of parents, peers and partners in cannabis use and cannabis dependence trajectories. While they have received much attention in adolescent studies, most are limited to the initiation phase, and studies yield different results. Therefore, these issues are investigated in this chapter.

In Chapter 4, the focus is shifted away from the social environment onto the life domain of study, work and other daily pursuits. Previous studies suggest the presence of a reciprocal relationship between (changes in) occupational activities and (changes in) drug use and dependence. However, little is known about the mechanisms responsible for these changes. In this chapter, the meaning and role of education and work in cannabis use are explored, and the relationship between (perceived) life events and changes in these domains and changes in cannabis use and dependence trajectories will be analysed.

Leisure is the main topic in Chapter 5. If cannabis use is indeed normalised and has become one of many leisure activities of young people, does this also apply to frequent cannabis use? And is cannabis use, or frequent cannabis use, socially accepted in the wider society? The Netherlands, with its liberal cannabis policy and easily available cannabis through coffee shops, provides an interesting opportunity to explore the extent to which cannabis is stripped of cultural and deviant connotations, and whether the normalisation also applies to frequent cannabis use. Departing from the normalisation thesis, this chapter is focused on how frequent cannabis users spend their leisure and whether they live conventional lives, away from delinquent or otherwise deviant subcultures. Moreover, different cannabis dependence trajectories are distinguished and we explore whether leisure activities and the centrality of cannabis use in leisure can explain transitions in cannabis dependence.
In Chapter 6 the perspective from these mainly contextual or social influences is shifted to the more individual influences. More specifically, attention is paid to the role of personal factors in the desistance from frequent cannabis use. In this chapter, persisters and desisters in frequent cannabis use are compared and portrayed, cross-sectional and longitudinal mainly focusing on aspects/concepts that have been shown to be important in criminal desistance studies, such as the role of perceived life events, identity change, agency, and strategies. Finally, in Chapter 7 the findings of all chapters congregate in the discussion and conclusion.
2
CANNABIS DEPENDENCE
AND PEER SELECTION
IN SOCIAL NETWORKS OF FREQUENT USERS

Abstract
In a Dutch longitudinal study on the dynamics of cannabis dependence, at baseline 600 frequent cannabis users (≥ 3 days cannabis use per week in past 12 months) aged 18-30 years were interviewed. Nearly half of all participants (42%) met DSM-IV criteria for cannabis dependence in the 12 months prior to the interview. Participants were recruited by respondent-driven sampling; referrals were understood as proxy for social networks to explore peer associations and social exclusion. Analyses revealed that networks of frequent cannabis users were mostly heterogeneous. Cannabis dependence did not emerge as a main selector. However, within segments of networks some clustering of cannabis dependence (indicating differential inclusion), sex and ethnicity was found. Methodological questions are discussed regarding the applicability of respondent-driven sampling in noninjecting, nonmarginalized drug users. The study’s limitations are noted.

Key words: Cannabis dependence; Respondent-driven sampling; Social networks; Frequent cannabis use; Social exclusion.
Introduction

Drug use is often a social activity that occurs in an environment with other users (Fountain & Korf, 2007). In his classic study *How to become a marihuana user*, Becker (1963) argues that continued drug use is typically the result of social learning. In addition, Zinberg (1984) states that the effects of drugs experienced by users are influenced by three intertwined factors (drug, set, and setting), the latter including informal social control. The relevance of this social control lies in minimizing the harm of drug use, thus resulting in controlled intoxicant use. Violating the appropriate informal rules and norms regarding drug use within a group of users leads to social sanctions, and violators might eventually be excluded from the group. Alternatively, rituals and elements of social settings prevent uncontrolled drug use like dependence (Dunlap, Johnson, Sifaneck, & Benoit, 2005; Goode, 1999; Zinberg, 1984) and this explains why many cannabis users carefully choose when, where and with whom to use the drug (Reinarman & Cohen, 2007). Consequently, processes of social inclusion and exclusion may play an important role in drug using careers (cf. Vervaeke, van Deursen, & Korf, 2008).

In a wider context, Glueck & Glueck (1950) argue that, in line with the saying “birds of a feather flock together”, once deviant, juveniles are more likely to associate with deviant peers. In his classic theory of differential association, Sutherland (1947) stated that deviant behaviour is learned through association and interaction with other delinquents, especially in small, informal peer groups. Akers (1998), who further explored and refined Sutherland’s theory, found that the probability of frequent substance use increased when individuals in their social networks were more often exposed to favourable than to unfavourable definitions of use, including cannabis use. A crucial question in the current study is the extent to which frequent cannabis use and cannabis dependence is an important unifying factor in peer networks. Is cannabis the “feather” that makes users flock together? In line with Zinberg’s theory, it could be argued that cannabis dependence indicates less controlled use, and thus a violation of the social norms of drug use, which then leads to social exclusion from social networks of frequent but not dependent users. The question then is, whether cannabis dependent users become socially isolated (exclusion), or tend to congregate in social networks of dependent users (differential inclusion). Alternatively, it could be argued that frequent cannabis use by itself is already a violation of the social norms of controlled use, and therefore dependence will not lead to social exclusion from frequent but non-dependent users. The question then arises of which other factors might bond social networks of frequent cannabis users. The main purpose of the current study is to explore the role of social exclusion
and inclusion, by analysing social networks within the total sample of 600 frequent cannabis users, who were recruited through respondent-driven sampling, by exploring the role of cannabis use—cannabis dependence in particular—and sociodemographic variables in peer associations in high-risk and dependent cannabis users. The relevance of these issues lies mainly in methodological strategies and insights for sampling in future research.

Internationally, high rates (11-13%) of cannabis dependence have been found in cohort studies among young adults (Boden, Fergusson, & Horwood, 2006; Noack, Höfler, Gründler, Schulz, & Paul, 2009) but longitudinal research on risk and protective factors for cannabis dependence—especially as regards the transition from regular use to dependence—is sparse. A major problem in previous studies targeting cannabis dependence is that general population surveys observe only small numbers of subjects with a diagnosis of cannabis dependence. For example, in the most recent German general population survey on substance use, only 113 of 7979 (1.1%) respondents aged 18-59 were lifetime cannabis dependent (positive on > 3 items of Severity of Dependence Scale (Kraus, Augustin, & Orth, 2005). Also, the number of cases in longitudinal studies is commonly too small to study transitions in cannabis dependence. Probably the best exception is a large ten-year follow-up study by Perkonigg et al. (e.g. 2008), but even in this study of 102 (3.1%) lifetime cannabis dependent participants, only 32 (1.4%) reported 12-month dependence. To avoid the problem of inadequate sample size, we initiated a 3-year longitudinal study with an enriched sample of (a) high-risk, heavy cannabis users and (b) dependent cannabis users. At baseline, respondent-driven sampling (RDS) was applied in recruiting 600 frequent cannabis users (> 3 days cannabis use per week in past 12 months) aged 18-30 years.

RDS is a specific snowball sampling technique. Snowball sampling is a nonprobability methodology based on the principle that respondents from the target population introduce researchers to other respondents or nominate new respondents who also belong to the target population. If participants play a more active role in recruiting new respondents (referrals), with recruiters often being financially compensated for successful referrals, then RDS is the more common term (Heckathorn, 1997; Salganik & Heckathorn, 2004). A key prerequisite for effective snowball sampling and for RDS is that respondents are part of social networks of people who belong to the target population. Snowball sampling is a true multipurpose technique. Snowball sampling is not only effective in obtaining data on populations of unknown parameters, it also allows inferences to be made about social networks and relations in which sensitive, illegal, or deviant issues are involved (Kaplan, Korf, & Sterk, 1987).
RDS and other types of snowball sampling make use of existing social networks. An interviewee assists in the recruitment of other respondents from the target population who belong to his or her social network. The first respondent in what is intended to become a chain of referrals is defined as a zero stage respondent or a seed. In this study we define seeds that do not generate referrals as loners (in the literature they are often referred to as “infertile seeds”), and being a loner is interpreted as an indicator of social exclusion (from/by other cannabis users). Few referrals and/or shorter referral chains are also used as indicators of social exclusion. Alternatively, successful seeds, and more referrals and/or longer chains, are seen as indicators of social inclusion or differential inclusion. In the analysis, we will first focus on cannabis dependence, and second on other cannabis use variables and sociodemographic characteristics. If dependence is a common feature in social networks of cannabis users, it can be expected that dependent users are more likely than non-dependent users to recruit other dependent users. Conversely, non-dependent users are more likely than dependent users to recruit other non-dependent users. In summary, the following questions will be explored:

1. Do loners differ from seeds with referrals and network members regarding cannabis dependence, cannabis use, and sociodemographic characteristics?
2. Do smaller chains differ from larger chains regarding cannabis dependence, cannabis use, and sociodemographic characteristics?
3. Do characteristics of seeds with referrals predict the prevalence of last-year cannabis dependence in referrals and social networks?
4. What are the defining factors in social networks of frequent cannabis users, in addition to or apart from cannabis dependence?

RDS and other types of snowball sampling not only provide information about each single respondent, but also about their social networks. A special advantage is that analyses are not limited to information of respondents about their peers (Heckathorn & Jeffri, 2001; Weerman, Bijleveld, & Averdijk, 2005). Respondents provide information about themselves, and network links are established behaviourally (Heckathorn & Jeffri, 2001). Thus, referral chains, when understood as (proxy for) social networks, can show how peer behaviours are associated, and thus inform about bonding factors.

**Methods**

*General study design*

Data were derived from CanDep, a longitudinal study on frequent cannabis users. The main objectives of the study are to investigate factors involved in
the transition from risky non-dependent cannabis use to cannabis dependence and vice versa, and to study the three-year natural course of DSM-IV cannabis dependence (see van der Pol et al., 2011, for a description of the methods of the study). Using baseline DSM-IV scores for last-year cannabis dependence we planned to recruit 275 risky but non-dependent cannabis users and 275 cannabis dependent users. From baseline, respondents will be followed for three years, with two follow-up face-to-face interviews and intermediate contacts by email, phone, or mail every 4-5 months between interviews. Transitions of cannabis dependence will be studied both quantitatively for the full sample and qualitatively in approximately 40 respondents. The study was approved by a Medical Ethics Committee (METIGG). All respondents provided written informed consent at the start of their participation in the study, acknowledging that their participation was voluntary. In this article we will focus only on the baseline data.

From September 2008 till April 2009, 600 frequent cannabis users in five Dutch cities were interviewed at baseline. Eligibility criteria included smoking cannabis at least 3 times a week during the past year and being 18-30 years of age. The minimum age was set at 18 years, because this is the age at which a person becomes legally an adult in the Netherlands and is also the minimum age that is allowed to visit coffee shops. The maximum age of 30 years was chosen because young adulthood is the period most strongly characterized by relatively high levels of cannabis use, discontinuation of cannabis use, and changing dynamics in life (e.g. relationships, study and employment). Data were collected with a computer-assisted personal interview, including most sections of the Composite International Diagnostic Interview (CIDI) version 3.0. The average duration of the interviews was 2.5 hours. After completion, respondents received financial compensation of 25 euro.

In the Netherlands, so-called coffee shops, where selling hashish and marijuana to consumers is tolerated under specific conditions (e.g. minimum age 18 years), make it relatively easy to access and recognize frequent cannabis users. The vast majority of users who buy their own cannabis do so in coffee shops, particularly in urban areas (Wouters & Korf, 2009). Those who acquire their cannabis in other ways or only make a short visit to coffee shops are harder to access. Therefore, snowballs were initiated in coffee shops, assuming that subsequent referral chains would emerge, which also include non- and less frequent coffee shop visitors. To recruit respondents we adopted a stepwise model developed by Watters and Biernacki (1989) and slightly revised by Korf (1995). This model can be
divided into four stages: (1) ethnographic mapping and preparation (2) finding and interviewing the first respondents (3) initiating snowballs and referrals and (4) quality control.

**Ethnographic mapping and preparation**
Except for one city (Alkmaar), where all local coffee shops were used for recruitment, an ethnographic mapping was conducted to select coffee shops suitable for recruiting respondents in Amsterdam, Utrecht, Nijmegen, and Arnhem. Selection criteria for coffee shop recruitment sites included those mainly visited by Dutch-speaking cannabis users (in particular because we did not want to recruit foreign tourists into the study), diversity of visitors (i.e. ethnicity, sex, age), and geographical spread over the city. From March to August 2008, dozens of coffee shops were repeatedly visited, on different days, and at different times during the day. From every visit, field notes were made regarding the number and diversity of visitors observed, and of informal conversations with staff and visitors. Informal conversations with staff also aimed to gain permission to recruit customers into the study. Throughout this intensive ethnographic mapping, we selected 28 coffee shops for recruiting respondents: 12 in middle-sized cities (2 in Arnhem and 5 in Nijmegen, both in the East of the Netherlands; and 5 in Alkmaar in the North-West), with both urban and rural visitors; and 16 in large cities (5 in Utrecht and 11 in Amsterdam). Only one selected coffee shop refused to participate.

**Interviewing first respondents**
Zero-stage respondents are not necessarily representative of the target population (Wang et al., 2005). In the selected coffee shops we approached customers within the age range of our target population. All candidates were screened before the final interview using a short selection schedule containing items both relevant and irrelevant to participation. Most non-responders were too busy, while most excluded candidates were over 30 years of age, or had used cannabis less frequently than three days per week in past 12 months. Once included, an appointment was made for the interview. All interviews took place at a quiet location: mostly at respondent’s home or at the research institute and sometimes in a quiet cafe, public library, or coffee shop. At zero stage, two researchers and three field assistants, all trained in conducting fieldwork and CIDI interviews, interviewed 200 respondents.

**Initiating snowballs and referrals**
Once interviewed successfully, respondents were asked to assist in the recruitment of other frequent cannabis users, thus generating referrals (“Do you personally know other frequent cannabis users who might want to
participate in our study?”). Respondents were asked to call potential respondents they knew personally, preferably immediately after the interview, or let them contact the interviewer, thus playing an active part in the recruitment process. Respondents received vouchers with the contact details of the interviewer to give to new respondents and financial compensation of 7.50 euro for each successful referral, up to a maximum of three (cf. Heckathorn, 2002). We monitored who recruited whom and so could link referring respondents with their referrals.

**Quality control**
To ensure the inclusion of qualified candidates, potential respondents, both zero-stage and referrals, were screened. When candidates did not meet inclusion criteria, they were simply informed that they were not eligible for the study, without further specification. We did so in order to protect our screening data from becoming known to future candidates. During data collection, the quality of the data and sample characteristics were periodically controlled. Since non-dependent frequent cannabis users were more prevalent than expected, it was decided to extend the sample beyond the originally planned size of 550. Regarding diversity, we aimed at 15-25% females and 15-25% ethnic minorities (no normative data available), and we periodically checked and made adaptations if needed. For example, we adapted the recruitment strategy by targeting more females at zero stage. Finally, 16 of the originally 616 respondents were excluded from the study because of the dubious quality of the interview data (e.g. unreliable inconsistent answers) or repeated participation.

**Analysis**
The statistical package SPSS 15.0 was used to perform analyses. Regarding cannabis-use characteristics, the following variables were entered into the analyses: setting of use (in home settings, coffee shops, and other, including nonselective/everywhere); frequency of cannabis use (near-daily vs. less than near-daily); use cannabis (also) on weekdays vs. on weekends only; number of joints smoked per day of use; use (also) in the daytime (yes/no); use when alone (yes/no); preference for marijuana, for hashish, or no preference; and mean age of onset of frequent cannabis use (defined as at least once a month). All cannabis-use characteristics referred to the last month.

Sociodemographic variables included in the analysis were: sex; age (years); ethnicity (measured by country of birth of parents and respondents, and dichotomized into Western vs. non-Western (cf. Benschop, Harrison, Korf, & Erickson, 2006); employment status (student, employed, and unemployed);
and education (none/basic vocational, secondary lower, secondary higher, and higher professional education).

First, Chi2 for categorical data and Mann-Whitney U tests (because variables had a nonnormal distribution) for continuous data were used to compare seeds vs. loners, and network members vs. loners on the DSM-IV diagnosis of 12-months cannabis dependence, cannabis use characteristics, and sociodemographic variables (Table 2.1). Second, Pearson r was used to assess correlations between network size, cannabis use, and sociodemographic variables (not in Table). Third, to investigate whether characteristics of seeds are associated with the prevalence of last-year cannabis dependence in referrals and social networks, we performed Chi2 (not in Table). Next, Chi2 was applied to explore whether cannabis users in larger networks differed from each other, in addition to or apart from cannabis dependence (Table 2.2). To further investigate what unites members of a network and distinguishes them from members in other networks, discriminant analyses (Klecka, 1980) were conducted. Since the literature did not provide a strong rationale for preferring one set of potential discriminating variables over the other, we performed enter discriminant analysis to identify the most constructive and least redundant set of cannabis-use characteristics associated with network membership. In addition, sociodemographic variables were included in the analysis (Table 2.3). Discriminant analysis was performed in two steps: (a) F test (Wilks’ lambda) if the discriminant model as a whole was significant, and (b) if F test proved significant, then individual independent variables were assessed to investigate which variables differed significantly in mean by group. Wilks’ lambda (λ) value ranges from 0 to 1.0, whereby small values indicate strong group differences and value 1 signifies no differences (SPSS, 1999). For each analysis, Wilks’ lambda and the canonical correlation coefficient (R*) were considered to investigate the variance of group membership explained by the discriminant function. R* measures the association between the groups formed by the dependent and the given discriminant function (SPSS, 1999), and investigates how much each function is useful in determining group differences. When R* is 0, there is no relation between the groups and the function. Chi2 was used to test whether the discriminant function discriminates the groups better than expected by chance. All variables were standardized into Z-scores before entering the discriminant analysis, to equal the weight of variables with different scale measures. Finally, by a qualitative visual inspection, we explored clustering of cannabis dependence within larger social networks (Figure 2.1).
Unless mentioned explicitly, only statistically significant differences or associations are reported. Differences were considered significant for a two-tailed p-value < 0.01. The significance level was set lower than the more common p < 0.05 because of multiple comparisons and the large sample size.

**Findings**

**Sample**

Sample characteristics are presented in Table 2.1. The vast majority (79.3%) of respondents were male. The mean age was 22.0 years (SD 3.1). Three quarters (71.8%) were of Western origin. Most respondents were employed or students and 14.8% were unemployed. One third had achieved or was attending a higher professional education.

The mean age of onset of frequent use (> 1/month) was 15.5 years. Approaching half of all participants (42.0%) met DSM-IV criteria for cannabis dependence in the 12 months prior to the interview. Two thirds used cannabis near-daily. Over one third used cannabis (also) during the daytime, and the majority (also) on weekdays. Less than one quarter commonly used cannabis when alone. Two thirds used cannabis mostly or exclusively in home settings, 17.5% in coffee shops and the remainder in other or various (including anywhere) settings. Most respondents had a preference for marijuana (62.2%), 29.7% for hashish and 8.2% had no clear preference for either. As is common practice in Europe (EMCDDA, 2008), almost all respondents (99.5%) mixed their cannabis with tobacco in a joint. The mean number of joints smoked per day of use was 3.4 (range 1-20).

From the 200 zero-stage respondents, 70 successfully referred to other respondents (seeds) and 130 did not (loners). The remaining 400 respondents were recruited by either referring seeds (at first stage) or other referring respondents (at subsequent stages). Cannabis-use-related networks of respondents (= both seeds and referrals) varied in length of chains and in number of waves. Of the 70 networks, 18.1% consisted of two or three respondents, or one or two waves. The largest network comprised 13 waves, and 61 respondents. The mean network size (excluding loners) was 18.9 respondents.

Regarding the first research question, whether loners differ from seeds with referrals and from network members regarding cannabis dependence, cannabis use, and sociodemographic characteristics, loners were less likely to be students or employed than seeds. Loners and seeds did not differ in last-year cannabis dependence or in other cannabis use characteristics (Table 2.1).
### TABLE 2.1
Demographic and cannabis use characteristics of sample \((n = 600)\)

<table>
<thead>
<tr>
<th>Demographics</th>
<th>Total ((n=600))</th>
<th>Loners ((n=130))</th>
<th>Seeds ((n=70))</th>
<th>Loners vs. Seeds ((p))</th>
<th>Network members ((n=470)^1)</th>
<th>Loners vs. Network members ((p))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>20.7%</td>
<td>22.3%</td>
<td>17.1%</td>
<td>.391</td>
<td>20.2%</td>
<td>.602</td>
</tr>
<tr>
<td>Mean age, in years (SD)</td>
<td>22.0 (3.1)</td>
<td>23.1 (3.4)</td>
<td>22.3 (3.6)</td>
<td>.057</td>
<td>21.7 (2.9)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Non-Western ethnicity</td>
<td>28.2%</td>
<td>33.1%</td>
<td>28.6%</td>
<td>.515</td>
<td>26.8%</td>
<td>.176</td>
</tr>
<tr>
<td>Employment status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student</td>
<td>43.7%</td>
<td>28.5%</td>
<td>54.2%</td>
<td>&lt;.001</td>
<td>47.9%</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Employed</td>
<td>41.5%</td>
<td>50.0%</td>
<td>40.0%</td>
<td>.176</td>
<td>39.1%</td>
<td>.029</td>
</tr>
<tr>
<td>Unemployed</td>
<td>14.8%</td>
<td>21.5%</td>
<td>5.8%</td>
<td>.001</td>
<td>13.0%</td>
<td>.031</td>
</tr>
<tr>
<td>Education (achieved or attending)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None/basic vocational</td>
<td>9.2%</td>
<td>9.2%</td>
<td>7.1%</td>
<td>.616</td>
<td>9.1%</td>
<td>.977</td>
</tr>
<tr>
<td>Secondary lower</td>
<td>20.5%</td>
<td>26.9%</td>
<td>20.0%</td>
<td>.266</td>
<td>18.7%</td>
<td>.058</td>
</tr>
<tr>
<td>Secondary higher</td>
<td>37.5%</td>
<td>37.7%</td>
<td>37.1%</td>
<td>.939</td>
<td>37.4%</td>
<td>.959</td>
</tr>
<tr>
<td>Higher professional</td>
<td>32.8%</td>
<td>26.2%</td>
<td>35.7%</td>
<td>.171</td>
<td>34.7%</td>
<td>.057</td>
</tr>
<tr>
<td>Cannabis use</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Last year cannabis dependent</td>
<td>42.0%</td>
<td>35.4%</td>
<td>40.0%</td>
<td>.521</td>
<td>43.8%</td>
<td>.080</td>
</tr>
<tr>
<td>Mean age of onset frequent use (SD)</td>
<td>15.5 (2.2)</td>
<td>15.6 (2.3)</td>
<td>15.5 (2.3)</td>
<td>.666</td>
<td>15.4 (2.1)</td>
<td>.443</td>
</tr>
<tr>
<td>Near-daily cannabis use</td>
<td>68.4%</td>
<td>79.2%</td>
<td>72.5%</td>
<td>.233</td>
<td>65.3%</td>
<td>.001</td>
</tr>
<tr>
<td>Smoking cannabis on weekdays (also)</td>
<td>84.5%</td>
<td>89.2%</td>
<td>90.0%</td>
<td>.866</td>
<td>83.2%</td>
<td>.063</td>
</tr>
<tr>
<td>Smoking cannabis at daytime (also)</td>
<td>37.8%</td>
<td>43.1%</td>
<td>41.4%</td>
<td>.823</td>
<td>36.4%</td>
<td>.173</td>
</tr>
<tr>
<td>Mostly using cannabis alone</td>
<td>21.5%</td>
<td>35.4%</td>
<td>21.4%</td>
<td>.033</td>
<td>17.7%</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Setting of cannabis use</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-selective (everywhere) &amp; other</td>
<td>18.2%</td>
<td>13.8%</td>
<td>18.6%</td>
<td>.742</td>
<td>19.4%</td>
<td>.141</td>
</tr>
<tr>
<td>Home settings</td>
<td>64.3%</td>
<td>49.2%</td>
<td>54.3%</td>
<td>.498</td>
<td>68.5%</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Coffee shops</td>
<td>17.5%</td>
<td>36.9%</td>
<td>27.1%</td>
<td>.155</td>
<td>12.1%</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Preference for</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marihuana</td>
<td>62.2%</td>
<td>68.5%</td>
<td>58.6%</td>
<td>.172</td>
<td>60.4%</td>
<td>.087</td>
</tr>
<tr>
<td>Hashish</td>
<td>29.7%</td>
<td>27.7%</td>
<td>34.3%</td>
<td>.334</td>
<td>30.2%</td>
<td>.578</td>
</tr>
<tr>
<td>No preference</td>
<td>8.2%</td>
<td>3.8%</td>
<td>7.1%</td>
<td>.353</td>
<td>9.4%</td>
<td>.011</td>
</tr>
<tr>
<td>Mean joints per day (SD)</td>
<td>3.4 (2.2)</td>
<td>3.4 (2.4)</td>
<td>3.6 (2.4)</td>
<td>.549</td>
<td>3.4 (2.2)</td>
<td>.991</td>
</tr>
</tbody>
</table>

^1 Including both seeds & referrals

^* p ≤ .01 in bold
Compared to network members (seeds and referrals), loners were more likely to use cannabis near-daily, to use cannabis alone, and in coffee shops, but less likely to use cannabis in home settings. Loners were older, and likely to be students than network members (Table 2.1).

To assess the second research question, whether smaller chains differ from larger chains regarding cannabis dependence, cannabis use and sociodemographic characteristics, correlations were examined between demographic and cannabis use variables and network size (number of seeds and referrals, ranging from 2 to 61). Only using cannabis in coffee shops was significantly correlated ($r = –.134$, $p = .002$) with network size: use in coffee shops was more often found in smaller networks. Other demographic or cannabis use variables showed no significant correlation with network size (not in Table).

Concerning the third research question (do characteristics of seeds with referrals predict the prevalence of last-year cannabis dependence in referrals and social networks?) cannabis dependence among seeds was compared with wave 1 referrals and with total resulting network (all waves). Of the 70 seeds, 28 were classified as last year cannabis dependent (40.0%). Dependent and non-dependent seeds recruited in the first wave on average had similar numbers of respondents (1.6 vs. 1.8, $p = .349$). They also had similar percentages of dependent referrals, both at wave 1 (45.0% vs. 44.0%, $p = .792$) and in the total network (53.2% vs. 39.0%, $p = .092$) (not in Table).

To explore selection mechanisms and/or binding factors in cannabis-use-related social networks of frequent cannabis users (fourth research question: what are the defining factors in social networks of frequent cannabis users, in addition to or apart from cannabis dependence?), we analysed differences between the four largest networks in our sample. A cut-off point of 20 respondents in a network was chosen for pragmatic reasons but also to minimize bias and reduce the influence of outliers. The size of these four networks varied from 20 to 61 respondents, with a total size (including the seeds) of 144 (i.e. 24.7% of all participants in the study) (Table 2.2). Again, location of cannabis use (coffee shops) was the only significant difference between these four networks. To further investigate what unites members of a network and distinguishes them from those in other networks, discriminant analyses were conducted. As we found very few differences between the largest networks, we compared each of the four largest networks one-by-one with all other network members in the total sample ($n = total network members (470) minus number of respondents in a particular larger network; for network 1, $n = 470-61 = 409$; for network 2, $n = 470-34 = 436$, etc.). Table 2.3 shows discriminant analysis predicting network
membership for the four largest networks (the F-values for separate variables are not in the table, but significant values are reported in the text below).

**TABLE 2.2**

*Last year cannabis dependence and cannabis use characteristics in the four largest networks*

<table>
<thead>
<tr>
<th>Last year cannabis dependence</th>
<th>Network 1 (n=61)</th>
<th>Network 2 (n=34)</th>
<th>Network 3 (n=29)</th>
<th>Network 4 (n=20)</th>
<th>p*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using cannabis...</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>near-daily</td>
<td>57.4%</td>
<td>55.9%</td>
<td>51.7%</td>
<td>50.0%</td>
<td>.924</td>
</tr>
<tr>
<td>at daytime (also)</td>
<td>34.4%</td>
<td>23.5%</td>
<td>37.9%</td>
<td>20.0%</td>
<td>.389</td>
</tr>
<tr>
<td>at home settings</td>
<td>78.7%</td>
<td>67.6%</td>
<td>51.7%</td>
<td>80.0%</td>
<td>.048</td>
</tr>
<tr>
<td>at coffee shops</td>
<td>0%</td>
<td>17.6%</td>
<td>20.7%</td>
<td>10.0%</td>
<td>.005</td>
</tr>
<tr>
<td>everywhere &amp; other</td>
<td>21.3%</td>
<td>14.7%</td>
<td>27.6%</td>
<td>10.0%</td>
<td>.228</td>
</tr>
<tr>
<td>on weekdays (also)</td>
<td>85.2%</td>
<td>73.5%</td>
<td>65.5%</td>
<td>60.0%</td>
<td>.064</td>
</tr>
<tr>
<td>alone</td>
<td>26.2%</td>
<td>2.9%</td>
<td>6.9%</td>
<td>20.0%</td>
<td>.011</td>
</tr>
<tr>
<td>Preference for marihuana</td>
<td>50.8%</td>
<td>52.9%</td>
<td>41.4%</td>
<td>45.0%</td>
<td>.780</td>
</tr>
<tr>
<td>Preference for hashish</td>
<td>32.8%</td>
<td>38.2%</td>
<td>51.7%</td>
<td>35.0%</td>
<td>.378</td>
</tr>
<tr>
<td>No preference for marihuana or hashish</td>
<td>16.4%</td>
<td>8.8%</td>
<td>6.9%</td>
<td>20.0%</td>
<td>.403</td>
</tr>
<tr>
<td>Mean age onset frequent use (SD)</td>
<td>14.9 (2.6)</td>
<td>15.6 (1.7)</td>
<td>15.0 (2.7)</td>
<td>15.0 (1.8)</td>
<td>.029</td>
</tr>
<tr>
<td>Mean joints per day (SD)</td>
<td>3.2 (2.2)</td>
<td>3.1 (2.0)</td>
<td>3.9 (1.8)</td>
<td>3.3 (1.6)</td>
<td>.057</td>
</tr>
</tbody>
</table>

Only the members of network 1 were significantly different from other network members in terms of their location of cannabis use; they were less likely to use cannabis at coffee shops (F = 14.71, p < .0001), but more likely to use cannabis in various other settings (F = 9.78, p = .002) than other network members. Table 2.3 also shows that cannabis use characteristics account for only a very small percentage of the variance (3-8%) between each of the largest four networks and all other network members. Therefore, additional analyses were required to determine other variables that better classify network membership.

Consistent with the exploratory nature of this article, we tested whether sociodemographic characteristics could account for better discrimination between each network and the other network members. Therefore a second discriminant analysis was performed. This time, three networks differed significantly and the discriminant functions were significant (Table 2.3).
Chapter 2

TABLE 2.3
Discriminant analysis predicting network membership of the four largest networks

<table>
<thead>
<tr>
<th>Network 1 (n=61) versus other network members (n=409)</th>
<th>Wilks’ lambda</th>
<th>X²</th>
<th>P</th>
<th>Canonic correla deton</th>
<th>Variance accounted for by network membership</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cannabis use</td>
<td>.92</td>
<td>46.27</td>
<td>&lt;.001</td>
<td>.27</td>
<td>8%</td>
</tr>
<tr>
<td>Demographics</td>
<td>.96</td>
<td>24.07</td>
<td>.002</td>
<td>.20</td>
<td>4%</td>
</tr>
<tr>
<td>Cannabis use &amp; demographics</td>
<td>.89</td>
<td>67.71</td>
<td>&lt;.001</td>
<td>.33</td>
<td>11%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Network 2 (n=34) versus other network members (n=436)</th>
<th>Wilks’ lambda</th>
<th>X²</th>
<th>P</th>
<th>Canonic correla deton</th>
<th>Variance accounted for by network membership</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cannabis use</td>
<td>.97</td>
<td>15.53</td>
<td>.214</td>
<td>.16</td>
<td>3%</td>
</tr>
<tr>
<td>Demographics</td>
<td>.96</td>
<td>23.11</td>
<td>.003</td>
<td>.19</td>
<td>4%</td>
</tr>
<tr>
<td>Cannabis use &amp; demographics</td>
<td>.94</td>
<td>35.48</td>
<td>.025</td>
<td>.24</td>
<td>6%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Network 3 (n=29) versus other network members (n=441)</th>
<th>Wilks’ lambda</th>
<th>X²</th>
<th>P</th>
<th>Canonic correla deton</th>
<th>Variance accounted for by network membership</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cannabis use</td>
<td>.96</td>
<td>24.75</td>
<td>.016</td>
<td>.20</td>
<td>4%</td>
</tr>
<tr>
<td>Demographics</td>
<td>.86</td>
<td>86.49</td>
<td>&lt;.001</td>
<td>.37</td>
<td>14%</td>
</tr>
<tr>
<td>Cannabis use &amp; demographics</td>
<td>.83</td>
<td>109.52</td>
<td>&lt;.001</td>
<td>.41</td>
<td>17%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Network 4 (n=20) versus other network members (n=450)</th>
<th>Wilks’ lambda</th>
<th>X²</th>
<th>P</th>
<th>Canonic correla deton</th>
<th>Variance accounted for by network membership</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cannabis use</td>
<td>.97</td>
<td>19.30</td>
<td>.082</td>
<td>.18</td>
<td>3%</td>
</tr>
<tr>
<td>Demographics</td>
<td>.97</td>
<td>19.91</td>
<td>.011</td>
<td>.18</td>
<td>3%</td>
</tr>
<tr>
<td>Cannabis use &amp; demographics</td>
<td>.94</td>
<td>38.58</td>
<td>.011</td>
<td>.25</td>
<td>6%</td>
</tr>
</tbody>
</table>

* p ≤.01 in bold

Network 1 and 3 members were more likely to be female (F = 9.95, p = .002 and F = 14.46, p < .0001), whereas network 2 members were more likely to be male (F = 6.96, p = .009). Also, members of network 2 (F = 8.78, p = .003) and network 4 (F = 9.83, p = .002) were more likely to have a higher education and network 3 members were more likely to have no/a basic vocational education (F = 17.97, p < .0001). Network 3 members were more likely to be non-Western (F = 55.24, p < .0001).

Finally, subsequent discriminant analysis was conducted with both cannabis use variables and sociodemographics, again comparing each larger network one-by-one with all other network members. The discriminant function was significant only for network 1 and 3. No new significant variables emerged. The structure matrices identified sociodemographic variables as the most discriminating except for network 1. The most discriminating variable for each
network was: location of use (coffee shops) in network 1, (higher) education in network 2 and network 4, and ethnicity (non-Western) in network 3.

For all networks, network membership was best predicted by sociodemographics and cannabis-use characteristics together. Only for network 3, canonical correlation (.41, p < .001) indicated a quite strong discriminating function.

**Clustering within networks: Qualitative visual inspection**

Our previous analyses indicate that cannabis dependence and cannabis-use characteristics do not seem to play an important role in social inclusion into or social exclusion from social networks of frequent cannabis users. For example, discriminant analysis revealed that only network 1 members were different from other network members by cannabis-use characteristics (i.e. location of cannabis use). This leaves us with the question whether cannabis dependent users cluster within social networks, or whether they are more or less randomly distributed. We explored this question by visual inspection of the largest networks, and focused on the distribution of cannabis dependence and sex. In addition, we looked at age, employment status, level of education, and ethnicity in these networks. Figure 2.1—made with Netdraw software for social network analysis (Borgatti, 2002)—shows the distribution of current (last 12 months) DSM-IV cannabis dependence and sex of all respondents represented in the four largest networks.

Network 1 (n = 61) started with a male non-dependent seed, and 35 respondents were classified as last-year cannabis dependent. At first sight, cannabis-dependent users are rather randomly spread over this network. At closer look, 19 of the 35 cannabis-dependent users are located at the end of a (sub) chain, and did not successfully refer to new respondents. However, 13 of the 26 non-dependent users in the network are also located at the end of a (sub) chain. Consequently, this does not allow for a strong conclusion regarding social exclusion or differential inclusion. Nonetheless, Figure 2.1 suggests some degree of clustering of dependent users within the total network, as is most clearly illustrated by the network 1 segment at the top, left-hand side, with 8 out of 10 respondents being dependent, while the remaining 2 non-dependent respondents are part of short subchains. However, when looking at sex of respondents, it could easily be argued that in this example, being female is the “feather” that makes these dependent users flock together, since all but one dependent respondent in this segment are female, while only one non-dependent user is female.
Network 2 (n = 34) started with a male non-dependent seed and was composed of all but one male respondents. From 16 cannabis dependent network members, 9 were located at the end of (sub) chains. The other dependents in the network are concentrated in a subnetwork around one non-dependent male, but their referrals continue to non-dependent respondents.

FIGURE 2.1
Distribution of last year cannabis dependence and sex in four largest networks (including both seeds & referrals)

In network 3 (n = 29), starting with a dependent male seed, we observed a rather random scattering of cannabis dependence within the network. Only 2 of 11 cannabis dependent users in this network are situated at chain ends. Although there is some clustering of cannabis dependent respondents in one subchain (top, left), sex appears to be the stronger selection mechanism, with 10 waves of female referrals from the female seed onwards, and males only at the end of (sub) chains plus one subchain of 9 males.

Network 4 (n = 20) is the only one with most cannabis dependent users located at chain ends (5/6). Except for the female (non-dependent) seed, this network has only male respondents.

From this visual inspection, no consistent pattern evolves regarding the role of cannabis dependence in social exclusion or differential inclusion within the social networks of frequent cannabis users. Possible patterns seem to be associated with sex of respondents. Further inspection reveals that age does
not offer alternative explanations, since this variable is rather randomly distributed in the four larger networks (data not shown). Two other sociodemographic characteristics (ethnicity and employment status) reveal some patterns. In network 1, non-Western participants largely cluster in subchains but no association is observed with cannabis dependence. There were also some subchains of mostly students, and most of them were cannabis dependent. Network 2 represents a mix of Western and non-Western respondents and we found no association between ethnicity and dependence. Also, this network has a mixture of respondents who are students, employed, and unemployed. The only pattern we found was that all students in this network were dependent. Network 3 is almost exclusively non-Western, with about half of respondents being employed. No employed respondents in this network were cannabis dependent, while 4/5 students and 5/6 unemployed were. Only 2/20 members of network 4 are non-Western, and most respondents were students. We found no association between cannabis dependence and employment status.

In conclusion, the role of cannabis dependence as a defining group member factor appears twofold: on the one hand, we observed dependent users often being located at the end of (sub) chains, while on the other hand sub networks of dependent users congregated within the largest networks, but were not isolated from non-dependent users. In addition, in network 1 and 3, respondents showed some clustering around sex and employment status. We found variation in ethnicity between networks, but visual inspection revealed no consistent association between ethnicity and cannabis dependence within networks.

Discussion
The purpose of this study was to explore selection and uniting processes among frequent cannabis users in social networks. We interviewed a large sample of 600 frequent cannabis users, and 42.0% of this was diagnosed as DSM-IV 12-month cannabis dependent.

In line with Zinberg’s theory, we hypothesized that loners would be more likely than seeds and network members to be last-year cannabis dependent, when interpreting no referrals/ not referred as indicators of social exclusion. From a similar perspective, we hypothesized that respondents in smaller networks would more likely be cannabis dependent than those in larger networks. These hypotheses were neither confirmed nor solidly refuted by the data. The finding that network members and seeds were more often dependent than loners indicates that the notion of social exclusion by uncontrolled use does not apply to a population of frequent cannabis users.
only. Our findings tend to support our alternative hypothesis: frequent cannabis use by itself is a violation of social norms regarding controlled use, and therefore dependence does not catalyse social exclusion from frequent but non-dependent users. Although visual inspection of larger networks showed no comprehensive random distribution of cannabis dependence, we did find some degree of clustering of cannabis dependent users within networks. This suggests some level of differential inclusion of cannabis dependent users: they are not fully socially excluded from/by other cannabis users, but tend to flock together as subgroups within social networks of frequent but non-dependent users. Within the context of the social networks of cannabis users in the Netherlands, our findings provide further evidence that RDS sample characteristics are independent of the characteristics of the seeds and that RDS recruitment may relate to several other factors.

Our assumption that seeds that are not productive or generative (in our study defined as loners) are socially excluded is debatable. A participant may not recruit others into the study for different reasons independent of their position in the network (e.g. the individual they refer to may not wish to participate). In addition, network size (in our study measured as number of successful referrals) might not be an appropriate indicator of social inclusion. We did not find an association between length of network chains and social exclusion. According to Uusküla et al. (2010) the size of participants’ social network is not significantly associated with the number of persons recruited into an RDS study. Reisner et al. (2010) found that network size alone was not significantly associated with generative seeds, suggesting that other factors (e.g. network density) must be taken into account as well.

The extent to which respondents successfully refer to other respondents might also vary between target populations. For example, Uusküla et al. (2010) found that RDS was far less effective among female sex workers (FSWs) than among injecting drug users (IDUs). In their IDU study, five seeds were enrolled (100% productive, measured as recruiting at least one person into the study) and in the FSW study, 26 of 43 seeds (60%) successfully recruited other participants. According to the researchers, the lower effectiveness of RDS among female sex workers was due to interference by gatekeepers (i.e. madams at the brothels, pimps) who hindered referrals from participating. However, we have no reasons to believe that this specific problem applies to our study, since we had free access to coffee shop visitors and thus did not depend on such gatekeepers. In our study, 70 of 200 seeds (35%) were productive (defined as recruiting at least one other person). This is line with Reisner et al. (2010), who had 34% generative seeds (defined as
recruiting at least two other persons) in their sample of men who have sex with men.

The context of cannabis availability and acquisition and its legal status in the Netherlands is likely to have an important effect on some of our findings. Mainstream community acquisition of cannabis will potentially affect the social marginalization (or lack thereof) compared to other countries where users need to obtain cannabis through dealers and illicit channels—especially for dependent users that will need to establish and maintain connections with these potentially marginalized dealer networks. Consequently, it may well be that our assumptions regarding loners as productive seeds would hold in other contexts.

In conclusion, cannabis dependence versus non-dependence does not appear to be the “feather,” the major binding factor in cannabis-use-related social networks of frequent cannabis users. The same holds for other cannabis use characteristics: with whom, where, and when cannabis is used play a role, but not a decisive one. In addition, sex, ethnicity and employment status played some role in structuring larger social networks, but did not make a strong difference in explaining the discrimination of particular networks from others. This is not to say that processes of social inclusion and exclusion are absent in networks of frequent cannabis users. Future research might reveal other variables than those included in this study: for example, other lifestyle characteristics, the use of drugs other than cannabis, personality, or motives for using cannabis. For the current article, only data from baseline were available, and only allowed for cross-sectional comparisons regarding social networks. The longitudinal character of our study will allow analysis of changes over time.

Obviously this study has some limitations. First, we explored peer associations by considering chains of respondents as social networks. However, these networks were restricted to cannabis users. Moreover, only frequent cannabis users were included in the study and consequently in the networks, while in fact respondents may have had much more varied social networks, including less frequent cannabis users and nonusers. Similarly, our definition of loners does not mean as such that they are not embedded in social networks of cannabis users or others.

Second, in our methodology we applied various aspects of RDS, for instance a dual-incentive system for participating and for recruiting other participants (Salganik & Heckathorn, 2004), as well as flexibility regarding location and time of the interview (Uusküla et al., 2010). However, it might well be argued that we did not use RDS in its pure form, since we did not collect data
concerning the network size of individual respondents, which is essential for standard RDS analysis regarding homophily and statistical validity for population estimates (Salganik & Heckathorn, 2004). However, the collection of such data would have required asking respondents how many frequent cannabis users they knew and how many of them were dependent. Although frequency of use of others might be reliably estimated by the respondent, dependence (and therefore non-dependence as well) is unlikely to be reliably assessed by participants. Network size could therefore not be determined.

Heckathorn, Broadhead, Anthony, and Weakliem (1999) imply that seeds rarely fail and only a limited number of seeds are required to generate samples of many hundreds of drug users, with high levels of heterogeneity. However, in our study a substantial number of zero-stage respondents were required to recruit a sample of 600 frequent cannabis users. This raises the question whether frequently reported experiences with RDS in studies among frequent hard drug users—often IDUs—and defined as marginalized problem users (cf. Abramovitz et al., 2009; Burt, Hagan, Sabin, & Thiede, 2010; Wattana et al., 2007) are more generally applicable to various populations of drug users and to other groups. Nevertheless, and most interestingly, within the population of frequent cannabis users, we did find a rather heterogeneous total sample as well as heterogeneity within social networks, both in terms of cannabis use characteristics and sociodemographics.

An important consequence of our study for prevention and treatment is that cannabis dependence is not a key factor in social networks of frequent cannabis users in the Netherlands. In the practice of targeted prevention the concept of dependence might not be very relevant.
3
THE ROLE OF PARENTS, PEERS AND PARTNERS IN CANNABIS USE AND DEPENDENCE TRAJECTORIES AMONG YOUNG ADULT FREQUENT USER

Abstract
In a three-year qualitative longitudinal study the role of social relationships in cannabis use and dependence in young adults (all frequent users at baseline) was explored. Overall, cannabis use and dependence declined. Changes in use were, for a considerable part, attributable to processes and life events in social relationships with peers and partners, while parents had little influence. Negatively experienced events often triggered increased use and positively experienced events decreased use. Participants often adapted their use to others, depending on associate’s use. Underlying mechanisms appear related to both socialization and selection. Gender-specific processes occurred, particularly with regard to partners; females selected using partners and males non-using partners, and subsequently cannabis use increased (females) or decreased (males) by socialization. Transitions in cannabis dependence could be explained by using peers, cohabitation and, for females, a new partnership. Persistent and newly non-dependent participants were less susceptible to social influences than dependent interviewees.

Key words: Frequent cannabis use; Cannabis dependence; Cannabis careers; Social relationships; Qualitative; Young adults
Introduction

Social environment plays an important role in the initiation into and continuation of drug use (Becker, 1963; Zinberg, 1984), but also in desistance from drug use (Biernacki, 1986; Laub & Sampson, 1993). From a life-course-theory perspective, trajectories into and out of drug use are largely bound by social relationships (Granfield & Cloud, 2001; Hser, Longshore, & Anglin, 2007). Parents are generally most influential during childhood; adolescence marks a decline in parental influence as peers, and in emerging adulthood, also partners, become the most important reference group in the private domain for (deviant) behaviour (Arnett, 2005; Erikson, 1980). A rich body of literature has focused on the association between parents and/or peers and initiation of adolescent drug use. The number of studies focusing on the link between adolescent romantic relationships and drug use has increased in recent years. Yet the influence of these relationships in young adulthood—a phase often associated with cannabis use progression and dependence—are relatively unknown (Wittchen et al., 2008), with most of the available literature focused on marriage (Larson & Sweeten, 2012). While much research has been conducted on the role of social environment in substance use among adolescents, only a few studies have considered young adult substance use. Moreover, studies on the association between social relationships and substance use in young adulthood are largely restricted to the role of partners. In this study we will focus on the course of cannabis use in young, initially frequent cannabis users in relation to parents, peers, and romantic partners (i.e. dates, lovers, spouses; further referred to as partners).

Parents have received much attention in adolescent-substance-use research. Identified risk factors for adolescent cannabis use and onset of cannabis dependence include stressful life events such as early parental death, low quality parent-child relationships, and parental cannabis use (Hopfer, Stallings, Hewitt, & Crowley, 2003; Johnson, Shontz, & Locke, 1984; McCutcheon et al., 2013; von Sydow et al., 2002). Most studies on parental influence in substance use are limited to adolescence, as well as to first use. Some studies show that certain parental aspects at early age (such as drug use, low monitoring, and relationship quality) indirectly predict associations with deviant peers in late adolescence, thereby contributing to drug use in young adulthood, including continued cannabis use (Brook, Zhang, Koppel, & Brook, 2008; Dishion, Nelson, & Bullock, 2004; Van Ryzin, Fosco, & Dishion, 2012). However, the question remains to what extent current parental aspects influence young adults’ drug use, specifically when they have become frequent users.
Many studies acknowledge that peers play a strong role in drug initiation and continuation (Bahr, Hoffmann, & Yang, 2005; Brook, Brook, Arencibia-Mireles, Richter, & Whiteman, 2001; Coffey, Lynskey, Wolfe, & Patton, 2000; Kandel, 1985), through mechanisms that can be grouped into three areas: peer pressure, peer selection (or assortative mating), and peer socialization (or contagion, association, and reciprocal exchange). Studies have shown that adolescents select peers with drug use similar to their own and increase their use when they socialize with drug-using peers (Coffey et al., 2000; Kandel, 1985; Kuntsche & Jordan, 2006). Drug use over the course of adolescence has been associated with drug-using peers (Duan, Chou, Andreeva, & Pentz, 2009; Ragan & Beaver, 2010), with both peer socialization and peer selection arising (Dishion & Owen, 2002). Research investigating the role of peers in young adult substance use is limited, but findings appear to be similar to adolescent peer associations (Andrews, Tildesley, Hops, & Li, 2002; Van Ryzin et al., 2012).

Similar processes have been found for associations between partners and drug use. Some scholars argue that individuals select partners with similar attitudes and behaviour (Knight, 2011; Yamaguchi & Kandel, 1993), others that they socialize towards partners’ drug use behaviour (Homish & Leonard, 2005; Knight, 2011), or both (Rhule-Louie & McMahon, 2007). Common interests in drug use and shared experiences appear essential for finding and maintaining steady relationships (Dishion & Owen, 2002; Vervaeke & Korf, 2006). Although support has been found for all three mechanisms, Rhule-Louie & McMahon (2007) concluded in an extensive review on antisocial behavior (including drug use) that many studies unjustly assume a prosocial role for partners while, in fact, the particular influence on the individual’s deviant behaviour depends on the partner’s deviant behaviour. Interestingly, a recent systematic review on partner similarity and antisocial behaviour pointed to methodological differences: while retrospective data almost all supported selection over socialization, prospective data provided evidence of socialization (Knight, 2011).

Specifically regarding cannabis, a longitudinal study concluded that frequent users in particular were more likely to have a cannabis-using partner than a non-using partner and were less likely to be married or cohabit (Brook, Lee, Brown, Finch, & Brook, 2011). However, little is known about young adult cannabis use and partner relationship types other than marital. Fleming et al. (2010) demonstrated that young adults with a married, cohabiting, or dating relationship status exhibited lower levels of substance use than singles. They conclude that “protective mechanisms are generally present in all types of romantic relationships in early adulthood, although stronger for more
‘serious’ relationships” (p. 164). Concerning cohabitation, previous studies showed mixed results. Some found negative associations between drug use and (entering) marriage, but not between cannabis use and cohabitation (Bachman et al., 2002; Duncan, Wilkerson, & England, 2006), while other studies concluded that cohabitation compared to noncohabitation is associated with decreased drug use (Lonardo, Manning, Giordano, & Longmore, 2010), or increased drug use, including cannabis (Guagliardo, Peretti-Watel, Combes, Obadia, & Verger, 2009).

Turning points in drug use are associated with romantic partnerships (cf. Cloud & Granfield, 2004; Measham, Williams, & Aldridge, 2011; Vervaeke & Korf, 2006). While studies on this theme include young adults, the emphasis is often on marriage. The transition to marriage appears to have the greatest impact and is associated with less drug use or desistance (Chen, Kandel, & Davies, 1997; Maune, Ousey, & Beaver, 2005; Ragan & Beaver, 2010; Rhule-Louie & McMahon, 2007). Recovery from cannabis dependence has been linked to being married (Agosti & Levin, 2007). Regarding nonmarital partners, life events associated with changes in cannabis use refer to new and ended relationships. In some studies new relationships were associated with a (temporary) decline in cannabis use (Decorte & Slock, 2005; Hathaway, 2004), but in another study no decrease in cannabis use was found when entering new partner relationships or more committed relationships (Fleming et al., 2010). Larson & Sweeten (2012) found an increase in marijuana use among young adults after ending a dating relationship, but not if they subsequently entered a new relationship. Furthermore, they suggest that future research should distinguish between “the leaver” and “the left” to better understand the underlying mechanisms.

It has also been suggested that partner behaviour influences females more than males, because females would usually be more interpersonally oriented. Rhule-Louie & McMahon (2007) concluded that desistance is weakened for both genders by partners’ deviant behaviour, but for females the latter might produce socialization. According to Measham et al. (2011) females increased their drug use in new relationships with drug users, but stopped or decreased their use when the relationship ended, mainly due to access to drugs via their male partners. For most males new relationships had no impact on their use. However, Leonard & Homish (2005) found that when married, female marijuana users were more likely to exert influence on their male partner than vice versa: men had the tendency to start using marijuana if their spouse used, and men were also more likely to stop using if their wives were not users. Finally, no gender differences were found in the increase in young
adult marijuana use after romantic breakups (Fleming et al., 2010; Larson & Sweeten, 2012).

In conclusion, much research on the influence of parents on drug use is restricted to initiation, rather than continuation or desistance. Many studies show associations between substance use and social relationships with peers and partners, but yield different results regarding underlying mechanisms (selection and/or socialization) and directions (more or less use, or desistance). Changes in drug use are associated with entering and ending a partnership, and turning points in use seem to mainly involve life events in partnerships, with studies conducted in the United States often focusing on entering marriage. In addition, as cultural contexts can differ across countries, the role of marriage in the development of drug use might be less pronounced in (Northern and Western) Europe, where (unmarried) cohabitation is more common. For example, Finnish research on recidivism showed that the transition to cohabitation was associated with greater reduction in criminal activity than getting married (Savolainen, 2009). Few studies have examined drug use of partners, and findings regarding gender specific influences of partner relationships on substance use are inconsistent.

Much research on the role of social environment and drug use, more specifically cannabis use, has been restricted to adolescence. However, cannabis users are often adults. In the Netherlands, for example, mean age at first use is 19.6 years and mean age of last-year users 30.5 years (Van Laar et al., 2012). In addition, the measure of cannabis use is often undifferentiated, e.g. lifetime or last-year use, but not frequent and high-risk use or dependence. Finally, research on what mechanisms underpin turning points in cannabis use is scarce (Rhule-Louie & McMahon, 2007; Teruya & Hser, 2010).

The main purpose of this study is to contribute to a better understanding of the social factors influencing the course of frequent cannabis use and—since not all frequent users are dependent—cannabis dependence in young adults. The objectives are (a) to explore in depth the role of parents, peers and partners in frequent cannabis use; (b) to investigate the association between events in social relationships and changes in cannabis use, and the underlying mechanisms (selection, socialization); and (c) to analyse the role of social environment in cannabis dependence trajectories.

Methods
The current (qualitative) study is part of a broader longitudinal study (CanDep) on cannabis use and transitions in cannabis dependence in young
adult frequent cannabis users in the Netherlands (see for details van der Pol et al., 2011). While cannabis policies vary across Europe, cannabis is available and used in every country of the EU (Europol, 2013). The Netherlands is the only Western country where the sale of cannabis for personal use is legally tolerated for adults in so-called coffee shops (Wouters, Benschop, & Korf, 2010). Approximately 75% of current users buy their cannabis at these venues (Wouters & Korf, 2009). Still, prevalence of cannabis use is at about the European average (Europol, 2013; Van Laar et al., 2012). At baseline (T0, September 2008–April 2009) 600 frequent Dutch cannabis users (> 3 days cannabis use per week in the past 12 months) aged 18-30 years were recruited in coffee shops and via respondent-driven sampling, to also include frequent cannabis users from the community who do not (often) visit coffee shops (see for details Liebregts et al., 2011). They were interviewed using a structured (“quantitative”) questionnaire and monitored for 3 years, with two largely similar follow-up interviews 18 months and 36 months after baseline (T1, March–November 2010 and T2 September 2011–March 2012). At T0, DSM-IV diagnoses of 12-month cannabis dependence were assessed with the Composite International Diagnostic Interview (CIDI 3.0); T1 and T2 included an assessment of their cannabis dependence status since the previous interview. Between T0, T1, and T2, participants were contacted every 4-5 months via e-mail and/or telephone (intermediate updates) with a short questionnaire, providing timely information about possible changes in cannabis use and various life domains between the interviews. In all interviews and in the updates, frequency and quantity of cannabis use were assessed (days of use in the past month and number of joints per cannabis day). At T1, four trajectories in cannabis dependence were distinguished: persistent non-dependent (n = 213); persistent dependent (n = 104); transition from dependent to non-dependent (n = 118); and transition from non-dependent to dependent (n = 65). At T2 the number of trajectories extended to eight.

In a qualitative sub study, the dynamics underlying changes in cannabis use and transitions in cannabis dependence were investigated. We conducted in-depth interviews, in which users expressed themselves through their narratives to improve our understanding of the processes and the context involved in these changes (cf. Carlsson, 2012; Maruna, 2001; Sampson & Laub, 2005). From each of the four trajectories at T1, 12 participants were randomly selected. As prevalence of cannabis use is generally higher among males than females (Europol, 2013), in the qualitative study we stratified for gender (8 male, 4 female) to guarantee a theoretical, but feasible, gender balance, totalling 48 interviewees. At T2, these interviewees represented seven trajectories (Table 3.1).
TABLE 3.1
Transitions in cannabis dependence status T0-T1-T2 (n=47)

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<thead>
<tr>
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<th>T0</th>
<th>T1</th>
<th>T2</th>
<th>n</th>
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<tbody>
<tr>
<td>NNN</td>
<td>Non-dependent</td>
<td>Non-dependent</td>
<td>Non-dependent</td>
<td>12</td>
</tr>
<tr>
<td>NDN</td>
<td>Non-dependent</td>
<td>Cannabis dependent</td>
<td>Non-dependent</td>
<td>7</td>
</tr>
<tr>
<td>NDD</td>
<td>Non-dependent</td>
<td>Cannabis dependent</td>
<td>Cannabis dependent</td>
<td>4</td>
</tr>
<tr>
<td>DNN</td>
<td>Cannabis dependent</td>
<td>Non-dependent</td>
<td>Non-dependent</td>
<td>10</td>
</tr>
<tr>
<td>DND</td>
<td>Cannabis dependent</td>
<td>Non-dependent</td>
<td>Cannabis dependent</td>
<td>2</td>
</tr>
<tr>
<td>DDN</td>
<td>Cannabis dependent</td>
<td>Cannabis dependent</td>
<td>Non-dependent</td>
<td>5</td>
</tr>
<tr>
<td>DDD</td>
<td>Cannabis dependent</td>
<td>Cannabis dependent</td>
<td>Cannabis dependent</td>
<td>7</td>
</tr>
</tbody>
</table>

For the in-depth interviews a topic list was used that included questions about participants’ cannabis use career (i.e. changes in patterns of cannabis use, motives for changes in cannabis use, and the occurrence of life events in various domains). Interviewees were asked to recall changes in different life domains and in their cannabis use patterns between T0 and T1 and between T1 and T2, respectively, using detailed personal timelines (cf. Bedi & Redman, 2006; Vervaeke & Korf, 2006). One timeline referred to their cannabis use (including frequency and number of joints per day; Figure 3.1), the other timeline to life domains (including social life, i.e. parents, peers and partners; Figure 3.2).

Both timelines were prepared before the in-depth interview and included data derived from the quantitative interviews and intermediate updates, which included questions about their cannabis use and social relationships (i.e. parents, peers, partners). During the interviews these timelines were used as guidelines and elaborated in detail. Every interview started with an open question (“Thinking about your life between T0-T1/ T1-T2, what has happened and what experiences have been important to you?”), and ended with a similar, but slightly different question (“Looking back at the period between T0-T1/ T1-T2, what experiences or processes do you consider to have had a (positive or negative) impact on your life and cannabis use?”). Both in-depth interviews (I1 and I2) focused on the period between the standardized interviews (T0-T1 and T1-T2 respectively), but in the first in-depth interview (I1), participants’ previous cannabis career and life history were also discussed.
FIGURE 3.1
Example of personal cannabis use timeline during T0-T1

FIGURE 3.2
Example of (events in) life domains timeline during T0-T1
All participants provided written informed consent at the start of the study, acknowledging that their participation was voluntary. They were assured that the interviews were confidential and data was kept safe, separated from any personal information, and that anonymity was guaranteed. Interviews took place at a quiet location, mostly at participants’ homes, and sometimes at the research institute. The interviews lasted between 1.5 and 3.5 hours. After completion, participants received a financial compensation of € 25. The study was approved by a Medical Ethics Committee.

**Analysis**

All qualitative interviews were digitally recorded (with participant’s consent), transcribed verbatim and imported into QSR Nvivo. Transcripts were analysed combining deductive and inductive strategies. Codes and categories were partly developed beforehand, based on the literature (a priori coding, Miles & Huberman, 1994). In addition, new codes and categories evolved from the data, and new patterns emerged. Interview transcripts were read and reread to identify and link evolving codes, categories, and themes (pattern coding, Miles & Huberman, 1994). To guarantee anonymity, interviewees were identified with fictitious names.

**Results**

**Participants**
Age of participants at baseline ranged 18-30 years (mean = 21.3 years, sd = 2.7). As intended, one third was female. At baseline, length of cannabis use careers ranged between 1-15 years (mean = 7.1 years, sd = 2.7), for some with intervals of no use. At baseline (T0), 29 participants were (near-) daily users (5-7 days per week) and the other 18 participants used 3-4 days per week. Over time there was an overall decline in cannabis use frequency. At T2, 20 participants were (near-) daily users, 19 used 3-4 days per week, 5 used one day per week or less and 3 had not used cannabis for one year or more, and said they had quit permanently. Also quantity of cannabis used decreased, from on average 2.9 joints (sd = 1.7) per using day at T0 to 2.4 (sd = 3.0) at T2 (excluding 3 non-past-year users). Between T0-T2, cannabis use of 24 interviewees remained stable, 19 showed a general decrease, and 4 participants reported more cannabis use at T2 than at T0. At T0, 24 participants were cannabis dependent, versus 13 at T2 (Table 3.1).

**Parents and cannabis use**
About half of the participants were raised in broken families, most of them had divorced parents, two had lost their father, and five never knew him. The majority (78%) said they had a good relationship and frequent contact with at
least one parent, usually with both. Participants with poor family ties had less contact, often monthly instead of weekly. A few had ended parental contact, but most participants felt supported by their parents.

Most participants reported their parents had tried cannabis when they were younger. Some (21%) had parents who were current users (> once per month). Two interviewees lived with a cannabis-using parent. About a quarter said their parents were not aware of their use, or to what extent, or assumed that he/she had quit using. For interviewees living with their parents this commonly had little influence on their cannabis use, as they did not use at home. Generally, participants said they did not care much about their parents’ opinion. They did not use cannabis when visiting their non-using parents, but smoked a joint afterwards, and also when visiting them for a weekend. Any influence of non-using parents seems indirect and often temporarily deterring. Interviewees with cannabis-using parents generally reported that parents had no influence on their cannabis use. Now and then they smoked a joint together with their parent(s).

**Peers and cannabis use**
Most interviewees had quite a large circle of friends (8 on average, sd = 5.5), including some very close friends, with whom they often shared joy and sorrow. Although participants emphasized that quality does not equal quantity, half of them spent time with peers several times per week, sometimes daily, while the others saw their peers weekly or fortnightly. Most interviewees believed friendships to be important and some expressed that they valued friendship more than their partners or family ties. Some participants occasionally switched friends, but most had a steady peer group for many years.

At baseline, all participants had peers who regularly (≥weekly) used cannabis; for two thirds at least half of their friends used cannabis regularly, often most of them. In the course of the study, the overall number of cannabis-using peers decreased, in two ways. Some interviewees had peers who cut down on use, while others started to associate with non-using rather than using peers. Consequently, some interviewees used alone more often, while others reduced their use. Generally, the more cannabis-using peers someone had, the more cannabis was used together.

Smoking cannabis together used to be bound by certain rituals (e.g. order of smoking, collectively rolling the joint, playing games) when participants were younger, but these rituals gradually declined with age. Many participants stressed that these rituals were common for novice users, when using
cannabis was still exciting and often also money was insufficient for everyone to use “enough.” The only ritual that had survived was passing the joint. In conversations with nonusers, cannabis was barely a topic, but with co-users they discussed both positive aspects (quality of marijuana or hash, recalling occasions when they were high or stoned) and negative aspects (adverse effects, using too much). In addition, most interviewees referred to informal social control, and explained how they called each other to account when they thought peers were using too much.

When a friend wants to be alone all the time, stays inside and does nothing but smoke joints, then it’s time for an intervention. We drop by or have some drinks and talk to him. (Jesse, I1, DNN)

Most participants (87%) believed their cannabis use was influenced by their peers. Some reported a two-sided effect: not only can peers influence each other to use more, also they can stimulate each other to use less. For most participants however, peer influences implied more use when being with other users. Particularly interviewees with many using peers stated that they frequently used more cannabis than they would use when not in company of their peers, as Max explained.

We always use when we’re together. A default question when we meet is: Do you have stuff, should I go to the [coffee] shop? I keep it in mind. Sometimes it has an adverse effect: when you actually just want to hang out with friends, not using. Yet if it’s available and they’re smoking, it’s really hard to say no. Sometimes I use alone at home but then I smoke far less. (Max, I1, DDN)

**Partners and cannabis use**

Three types of romantic partnerships were distinguished: steady relationships, temporary relationships, and no (serious) relationships. No participant was ever married. Roughly one in five (19%) had the same partner during the whole study period (T0-T2) (steady relationships). Just as many had had no (serious) relationships, although most of them had had one or more flirtations. A slight majority (62%) was part of T0-T2 in one or more temporary relationships, varying from new relationships, through short relationships that lasted a couple of months, to long-term relationships that ended during the study period. Some had several partners and quickly found a new partner after the previous one. Most interviewees were in heterosexual relationships (including all males); four females with temporary relationships (also) had same-sex relationships.

Concerning cannabis use, many participants with relationships said it made little difference to them if their partner was using cannabis or not. However,
males without (serious) relationships often reported that they would prefer a non-using partner: for some because it might decrease their own use, while others pictured a using girlfriend as passive and sluggish.

I’m quite sensitive to girlfriend influences. If she would smoke a joint, I would take part. So perhaps I want a girlfriend who doesn’t drink or smoke cannabis a lot. Yet, I want to be able to do that... maybe a little hypocritical ha-ha. It would be regrettable if my girlfriend would use cannabis daily. It would be very tiring, a stoned girlfriend, probably lying on the couch all the time. (Julius, I1, DNN)

Conversely, female interviewees said that they preferred a using partner, mostly because they value compatibility or because they foresee problems should their partner not use.

My future partner, well, he shouldn’t be opposed to it. Or forbid me to use, because I do what I want! I would like it if he would use at least occasionally. If someone doesn’t use and you do, he is sober while you’re stoned and that ain’t fun for nobody. I once had a relationship that ended because he firmly opposed my tobacco and cannabis use. (Kim, I1, DDD)

Flirtations were said to have little impact on cannabis use, as they were too brief or were of too little quality (meaning). Yet partner use was important in relationships: half of the participants with steady relationships had a frequent-cannabis-using partner, versus one in three interviewees with temporary relationships. For both types of relationships, the same pattern emerged: Almost all women had a using partner (93% with relationship), while most men had a non-using partner (91%). Most participants in a steady relationship with a non-using partner reported no influence of their partner on their use, nor was cannabis a recurring topic of conversation. Participants typically discussed their partner’s opinion once, though some received an occasional remark about using too much. Interviewees in a steady relationship with a using partner discussed cannabis more often (e.g. who would buy cannabis, who rolls the joint, how much is used, and sometimes adverse effects, difficulties getting out of bed). A few said their partner used as much as they did, but most interviewees—especially females—stated their partners used more. As a result of being in the company of their using partner, the majority reported to regularly use more.

It sometimes happens that I don’t want to smoke and he does and then we don’t use. But...well, no, if he wants to smoke he rolls a joint anyhow. If I really don’t want to use, I won’t, but mostly I participate anyway. Not because it’s no fun
when I’m sober and he’s stoned or something. I don’t know, just because it’s there. (Isabel, I1, DNN)

Socialization and selection
In sum, for all participants cannabis use was present in their social relationships, albeit in different gradations. Some had cannabis-using parents and sometimes used together, others withheld their use from their parents. Apart from some exceptions, participants reported that parents were of little influence on their cannabis use. On the contrary, peers and partners, especially when they also used cannabis, were influential. All participants had cannabis-using peers, and almost all female interviewees had a using partner.

Mechanisms for partner influences on cannabis use appeared to be to both socialization and selection, but were gender specific: whereas males predominantly selected non-using partners and as a result often reduced their use, females selected using partners and thereby often increased their use. Regarding peers, socialization effects are clearly existent in present friendships, often resulting in more use when in company of other users. As most friendships started in adolescence, conclusions on the extent of selection effects on cannabis use are difficult to draw, but since participants also bond with nonusers (sometimes creating less use through socialization), peer selection did not seem to apply. Peer influences did not differ strongly for gender, but females more often reported to be only influenced by their partner (more use), while males referred to influences of both partner (less use) and peers (more use).

Events in relationships and cannabis use
Many interviewees reported life events in relationships that had taken place during the course of our study (152 events in total, averaging at 3.2 per interviewee). Slightly more events were evaluated as negative rather than positive (Table 3.2).
Events concerning parents occurred the least (n = 22 events; 14% of all events in relationships). Negative parent events mostly concerned physical or mental health of parents (including death), and to a lesser extent social problems (e.g. conflicts with parents). Positive parent events (e.g. disease cured) occurred less often than negative (27% vs. 73%). While some interviewees said that the negative event did not bother them very much, others found it more difficult to handle.
TABLE 3.2
Cannabis dependence trajectories, life events in social relationships and cannabis use

<table>
<thead>
<tr>
<th>Trajectory (n participants) - Life event experienced (n)</th>
<th>Cannabis Use</th>
<th>NNN (12)</th>
<th>NDN (7)</th>
<th>NDD (4)</th>
<th>DNN (10)</th>
<th>DND (2)</th>
<th>DDN (5)</th>
<th>DDD (7)</th>
<th>Total (47)</th>
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<tr>
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<td>1</td>
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<td>1</td>
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<td>5</td>
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<td>Positively (6)</td>
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<tr>
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<td>38</td>
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<td>4.5</td>
<td>3.8</td>
<td>2.4</td>
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Average number events per participant

<table>
<thead>
<tr>
<th></th>
<th>Negatively (78)</th>
<th>Positively (74)</th>
<th>Total (152)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>1.2</td>
<td>1.7</td>
<td>1.7</td>
</tr>
<tr>
<td>Positively</td>
<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td>Positively</td>
<td>1.8</td>
<td>1.3</td>
<td>1.3</td>
</tr>
<tr>
<td>Positively</td>
<td>1.7</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>Positively</td>
<td>3.0</td>
<td>1.6</td>
<td>1.6</td>
</tr>
<tr>
<td>Positively</td>
<td>2.2</td>
<td>1.3</td>
<td>1.3</td>
</tr>
<tr>
<td>Positively</td>
<td>1.1</td>
<td>1.6</td>
<td>1.6</td>
</tr>
<tr>
<td>Positively</td>
<td>1.7</td>
<td>1.3</td>
<td>1.3</td>
</tr>
</tbody>
</table>
Peer events were more common (n = 49, 32% of all events in relationships). The majority considered peer events such as broken or diluted friendships to be negative experiences. Some interviewees, however, regarded dissolved friendship as a positive event. Other positive events included new friendships, the renewal of old friendships, or deepened friendships. Unlike events regarding parents and partners, peer events generally exhibited less abrupt changes. Some participants ended friendships and made new friends, but these events did not happen overnight, nor did anyone obtain a whole new peer group. This could explain why many interviewees felt that peer events did not have much of a positive, nor negative impact on their lives. Most acknowledged that in life, friends simply come and go.

Partner events were experienced most frequently (n = 81, 53% of all relationships events) and often occurred suddenly. Most experienced romantic dissolution as a negative partner event, but also referred to the relocation of a partner, or a partner’s incarceration. All participants emphasized breakups were not caused by their cannabis use. Partner events regarded as positive experiences mainly concerned new relationships; other events included moving in together, a temporary breakup and, for one interviewee, ending a relationship. Partner events usually had a significant impact on participants’ daily life, simply because, for many interviewees, their partner was the person with whom they spent most of their leisure time. Some partner relationships ended more abruptly or painfully than others and yet, either as “the leaver” or “the left,” interviewees experienced a broken relationship as very negative—and for most it took time to get over it.

Interviewees talked about changes in their cannabis use related to events in terms of more use (i.e. more frequently, more joints per occasion, or larger amounts of cannabis), or less use (i.e. less frequently, less joints per occasion, or smaller amounts), or said their cannabis use had not changed (stable use; including a few participants alternating between more and less use). Partner events were most likely to impact cannabis use (56%), followed by peer events (39%) and parent events (32%). Though over half of the participants experienced more than one relational event, only a few events invariably had a similar effect on the cannabis use of these participants (mostly stable use). It was more common for different events to have different influences on cannabis use.

**Parent events and cannabis use**

Events related to parents were experienced by 12 participants. These events mostly did not change participants’ cannabis use (68%), and rarely resulted in less use (Table 3.2).
Positive events occurred less often than negative events, and generally had no impact on participants’ cannabis use. Some interviewees responded to negative experiences by increasing use, either as a means of distraction or to temporarily forget their troubles, as in the case of Isabel.

When I heard that my father had a brain haemorrhage, I just smoked more. When you’re grieving, you want to have a joint, and forget. Well, you want to forget at that moment. After that, you are confronted with reality, and then you can’t avoid thinking. It’s not that I smoke another joint, oh no! Then I would’ve been a wreck by now. (Isabel, I2, DNN).

**Peer events and cannabis use**

Peer events were experienced by 29 interviewees, with slightly more positive than negative events (Table 3.2). Peer events were often paired with stable use (61%), and in similar numbers with more or less use. Influence of peer events on cannabis use appeared to be related to whether peers were using cannabis or not, rather than to whether peer events were regarded as positive or negative experiences. More use tended to go hand-in-hand with new friendships (positive) with cannabis-using peers, and less use with new friendships with nonusers (positive) and/or less or no longer in contact (mostly negative) with using peers.

Because less of my classmates use cannabis, I smoke less. Now we go for drinks or a meal after school instead of going to the coffee shop. So that had an impact for sure. And also another friend—he uses quite a lot—I don’t see him as much lately, since I am too busy. That also resulted in less cannabis use. (Ryan, I2, DDN)

**Partner events and cannabis use**

The field of partners was most dynamic: during our study, 38 participants reported 81 partner events altogether. Positive and negative events occurred quite evenly. Although partner events generally did not change cannabis use (stable use, 44%), they affected cannabis use more often than parent and peer events (Table 3.2). While some interviewees with a broken relationship did not feel like using cannabis as much when feeling down, negative partner events typically resulted in more use. Some participants (temporarily) used more to cope with grief, others increased use when no longer influenced by a (non-using) partner.

Yeah that hit me quite hard, wasn’t a pleasant period. To forget I started to smoke a lot. I had enough time to think it through and enough money to smoke plenty. And that’s what I did. Even when my friends started criticizing my behaviour I continued using for a while, but ultimately time heals all wounds. (Dylan, I1, NDN)
Both the leaver and the left increased their use after breakups. Most interviewees who changed their use during the relationship resumed their old use patterns after breaking up. Positive partner events were commonly coupled with stable use or less use. Stable use was generally observed in participants who indicated that their partners adopted an impartial attitude towards their cannabis use (whether using in their partner’s presence or not), and was not influenced by their partners’ cannabis use. Interviewees who entered a relationship or moved in with a non-using partner used less. The reasons for using less are similar to those given by participants when in the company of non-using parents and peers; some stated that being stoned around a sober person was unpleasant, others wanted to use less in order to please their partner.

Conversely, participants who entered a new relationship or moved in with a using partner proved more likely to report more use. They found it difficult to refrain from using cannabis whenever their partner smoked a joint; Eva, for example, found a new partner (T0-T1), and subsequently moved in with him (T1-T2).

He’ll easily smoke 3 grams in one sitting. And I try to keep up with that, though I normally smoke at a very slow pace. I’m glued to the couch and completely useless when I smoke a lot. But I still do it and then, well… I become totally sluggish. He keeps passing and so I keep smoking, keeping up with him. (Eva, I1, NDD)

Strikingly, all participants who had experienced positive partner events and were using more, were either females who had entered a new relationship or moved in with a cannabis-using partner. Conversely, almost all participants who had experienced positive partner events were males who had entered a new relationship or moved in with a non-using partner. Both male and female participants attributed changes in use to their new partner, which suggests socialization. Male participants were quite evenly distributed between the leaver and the left, and in some cases the relationship ended consensually; apart from one interviewee, female participants were all the leaver.

Similar patterns of selection and socialization were found in interviewees who were cohabiting with their partner (30%). Female participants all lived with a partner who used more than them, and believed that their cannabis use had increased as a result. Interestingly, male participants who had lived with a partner for a longer period (i.e. a couple of years) said that their partner ultimately had no influence on their cannabis use.
**Relationships, events, and cannabis dependence trajectories**

With regard to cannabis dependence, seven trajectories evolved during follow up, with persistent non-dependence (NNN) and a shift towards non-dependence (DNN) as the most common trajectories (Table 3.1). While the number of participants in most trajectories is limited, some patterns appear to emerge when considering social relationships (Table 3.3).

**TABLE 3.3**

<table>
<thead>
<tr>
<th>Characteristics relations and cannabis dependence trajectories</th>
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<tbody>
<tr>
<td>Trajectory (n)</td>
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<tr>
<td>----------------</td>
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<tr>
<td>Parent(s) current user (T0-T2)</td>
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<tr>
<td>Broken family</td>
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<tr>
<td>≥ half of peers used T0-T1</td>
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<tr>
<td>Decrease in number of using peers T0-T2</td>
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<tr>
<td>Partner (steady or temporary) T0-T1</td>
</tr>
<tr>
<td>Using partner (also) T0-T1</td>
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<tr>
<td>Partner (steady or temporary) T1-T2</td>
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<tr>
<td>Using partner (also) T1-T2</td>
</tr>
<tr>
<td>Female</td>
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</tbody>
</table>

Family background did not show clear associations with trajectories. Participants from broken homes were present in all seven trajectories, and participants whose parents were current cannabis users were present in five trajectories—including persistent non-dependent (NNN) and persistent dependent (DDD).

Participants who initially had many cannabis-using peers (half of their peer group or more) are evenly divided into those who were non-dependent at baseline (74%) and those who were dependent users (71%). However, a decrease in the number of cannabis-using peers during the study was more common among participants who were non-dependent at end of the study (41%) than among those who remained or became dependent (23%). Using partners (32%, both at T0-T1 and T1-T2) were less common in the persistent trajectories (NNN: 25% T0-T1 and 17% T1-T2, respectively; DDD: 14% T0-T1 and 29% T1-T2). In the persistent-dependent trajectory, however, participants were also more likely to be single (43%, both at T0-T1 and T1-T2;
Chapter 3

vs. NNN 25% and 33%). Strikingly, there were relatively more female participants in the persistent-dependent or shift-to-dependent trajectories (46%), than in the persistent-non-dependent or shift-to-non-dependent trajectories (29%) (Table 3.3).

Concerning events, other patterns emerged (Table 3.2). The lowest average number of events per participant was reported in persistent trajectories (DDD and NNN). Stable use was coupled with positive as well as negative events in all trajectories. More use was more common in negative events and less use in positive events (particularly in NNN).

Parent events were reported in all trajectories, except for the persistent-dependent trajectory (DDD). Parent events (both positive and negative) went along with stable or more use, except for one NNN participant who permanently stopped using cannabis.

Peer events were reported in all trajectories (Table 3.2). As stated before, peer events generally did not change participants’ cannabis use. More use occurred in five of the seven trajectories, but not in the persistent non-dependent trajectory (NNN). In all but one case, less use occurred in the latter (NNN) and in one of the shift-to-non-dependence (DDN) trajectories. Persistent non-dependent participants only initiated new friend-ships with nonusers, and reported stable or less use. Participants in the DDN trajectory also declared that they used less because of these new non-using peers (between T1-T2).

The three types of partner relationships were represented in all trajectories, and partner events occurred in all trajectories (Table 3.2). However, partner events regarded as positive experiences most clearly outnumbered negative ones in the persistent non-dependent trajectory (NNN; 69% partner events vs. 51% in all trajectories). Moreover, less use coupled with positive partner events was also more common in this trajectory (55% positive partner events vs. 39% all trajectories). Finally, regardless of their partner’s cannabis use, participants who started to cohabit between T0-T2 were more likely to shift to or to remain non-dependent (73%; including 3/16 females) than to become dependent (27%; including 1/16 females).

Some participants seemed better able to deflect social influences on their cannabis use than others. These participants stated they had little difficulties refraining from use, even if their peers or partners were using. They reported feeling in control over their use, and during the course of our study they often decreased their use.
Last year I already used little cannabis, but in the past three months I haven’t used at all. I see my friends just as often, and they use when we’re together. Sometimes they forget that I don’t use, and pass me the joint, but that’s no problem. I don’t think I’ll start using again. (Mike, I2, DNN)

Other interviewees felt less in control, and reported having difficulties refraining from cannabis use in the company of other users. They would occasionally attempt to quit in vain, and blamed their inability to stop using on their peers or partners.

I don’t want to be totally dependent on cannabis. But I am now. My cannabis pattern has changed in the last year, I use less regularly and with every attempt to stop I’ll see how long that lasts. I always allow myself to give in at parties, the special occasions, when we meet a group of friends, when friends who always use drop by. My friends influence me. If someone would come over every day, saying, come on let’s smoke a joint, I’m afraid that would affect me. (Jonas, I2, DDD)

Still others indicated that, as time progressed, they had learned to better manage their use, while this was not the case at an earlier stage of our study. The narratives showed that interviewees with more control over their cannabis use were mostly found in the persistent non-dependent and shift-to-non-dependent trajectories, while participants with less or little control in persistent or shift-to-dependent trajectories. For example, two female interviewees in NDD trajectory who had entered a new relationship (between T0-T1) with a using partner stated that their partner greatly influenced them and that they were struggling to stay in control of their own cannabis use.

**Discussion**

In this qualitative study we explored the role of social relationships in cannabis use among young-adult initially frequent cannabis users. During the three-year follow-up period, although patterns of use and dependence trajectories varied, there was an overall declining tendency in cannabis dependence and in use, including some interviewees who stopped using cannabis altogether.

Taken together, and in line with life course theory, participants’ narratives indicated little influence of parents on young adults’ general cannabis-use patterns; yet influence of peers, which during the follow up for some users had shifted to primarily partner influence, was considerable. Commonly, interviewees with more cannabis-using peers were more likely to use cannabis together. As a result they often used more than they would normally do alone, especially in the case of participants without partners.
While short-term relationships had no effect on cannabis use, the influence of longer relationships mainly depended on the partner’s use (cf. Rhule-Louie & McMahon, 2007).

Our findings are largely in accordance with previous research on selection and socialization of peers (cf. Andrews et al., 2002; Van Ryzin et al., 2012) and of partners (Rhule-Louie & McMahon, 2007). On the one hand, narratives of many participants indicated socialization effects in current friendships and partnerships: They reported to frequently use more cannabis in the company of using peers and/or partners, and to use less in the company of non-using peers and/or partners (cf. Andrews et al., 2002). The latter applied to parents as well, yet to a much lesser extent, as interviewees generally spent considerably less time with them than with peers and partners. On the other hand, our findings suggest selection mechanisms. People can select their peers and partners, but not their parents—they only have a say in how much time they spend together.

Many interviewees reported life events in relationships that had taken place during the course of our study. In line with life course theory, peer events were more common than parent events, and partner events were more common than peer events. Even though the meaning of an event was rather similar for all participants, the impact of events on their cannabis use could differ. About half of all events in participants’ social relationships had not changed their cannabis use. As far as events did have an impact, negative experiences were more likely coupled to more use and positive experiences events to less use.

Compared to parent and peer events, partner events affected cannabis use more often. While the impact of new relationships mainly depended on partners’ use, dissolution of partner relationships commonly resulted in (temporary) increased use. This confirms theoretical suggestions of other studies, yet while other studies could only speculate about the mechanisms causing an increase (Fleming et al., 2010; Larson & Sweeten, 2012), our study demonstrates the causal role of decreased informal social control as well as straining experiences due to romantic loss.

Inspections of the association between social relationships and cannabis-dependence trajectories revealed that fewer events were reported in persistent trajectories compared to dynamic trajectories, indicating the importance of events in social relationships in changes in cannabis dependence. Both a decrease in the number of cannabis-using peers and the act of moving in with a partner were linked to (a shift toward) non-dependence. This is consistent with past research showing that protective mechanisms of romantic relationships are stronger in more serious
Social relationships and cannabis trajectories

relationships (Fleming et al., 2010) and that cohabitation is related to decreased use (Lonardo et al., 2010). Also, suggestibility emerged as an explanatory factor. Interviewees who overall seemed to be more in control of their use, and to be less susceptible to the influences of (events in) social relationships than others, were often persistent or became non-dependent.

Interestingly, clear gender differences concerning partnerships emerged: females tended to remain or become dependent more often than males. This transition toward dependence among females could be explained by a new relationship with a using partner. While past research (Brook, Zhang, & Brook, 2011) showed that frequent users were more likely to have a cannabis-using partner than a non-using partner, we found this only to be the case for females. Almost all males had non-using partners and, as a result, often reported decreased use; almost all females had using partners and often said that, as a result, their use had increased. These findings are in accordance with previous research indicating that the behaviour of partners would be more salient to females than males’ problem behaviour (Rhule-Louie & McMahon, 2007). Regarding underlying mechanisms, in contrast to previous research (Knight, 2011), our prospective study indicates that partner selection plays a more important role than socialization. Partner selection is influential for both genders, but in different ways. While it has been argued that female involvement in drug use is often facilitated by their partner (Rhule-Louie & McMahon, 2007), our females were already users, and in fact, sought out using partners. Previous research conducted in the United States showed that close to half of the male cannabis users had wives who also used, and determined that married men are more likely to stop or decrease use if their partners are not users (Leonard & Homish, 2005). Although none of our participants were married, it seems fair to assume that longer steady relationships and cohabitation are more similar to marriage than new and/or temporary relationships. While the American researchers suggest that socialization is the dominant mechanism, we only found a decrease in cannabis use for males entering a new relationship, not for males in longer, steady/cohabiting relationships. In accordance with Measham et al. (2011) we found that females in new relationships with users increased their use, and reduced or stopped their use when the relationship ended. However given the context of the relatively easy access to and purchase of cannabis in the Netherlands via coffee shops, compared to other countries (Reinarman et al., 2004; Wouters & Korf, 2009), we seriously doubt this should primarily be ascribed to drug access through male partners, as the United Kingdom researchers suggested. Especially since in partner-relationship dissolution, females were almost always the leaver while male participants were equally often the leaver or the left. More convincingly, and contrary to the United
Kingdom findings, our results do support the fact that entering a new relationship has an impact on male (users’) cannabis use, as demonstrated by others (e.g. Hathaway, 2004); i.e. a (temporary) decline in use, but only in relationships with a non-using partner.

How can these notable variations in partner influence, which largely depend on gender, then be theoretically defined? If women are indeed more interpersonally focused than males (Rhule-Louie & McMahon, 2007), it could be argued that unlike males, females—especially “deviant” females—actively pursue common interests and acceptance in a relationship (considering the context, it may be significant to note that four out of sixteen females were in a same-sex relationship). Alternatively, from a stereotypical heterosexual gender perspective, it could be that males prefer a partner who sets limits and assumes a caring role. In their narratives, many males expressed negative opinions about frequent female cannabis users, picturing them as “sluggish” and “lazy,” while female interviewees did not use such terms when talking about male users. Since motivations and processes concerning why and how individuals change their cannabis use differ by gender, these issues are worth investigating more deeply in future research.

Cannabis use and social relationships in our study were quite dynamic, but to some extent this was due to the study design. From the life course perspective, a decline in cannabis use during young adulthood was to be expected with age and “maturing out.” We deliberately included dynamic dependence trajectories between T0-T1 for in-depth interviews and young adults are likely to be dynamic or even volatile in different aspects, including social relationships. In light of this, causal factors of declining cannabis use and even more of dependence are hard to claim. Our finding, for example, that cohabitation was more frequently associated with a decline than an incline of dependence, leaves room for different interpretations. It can be argued that cohabitation contributes to or causes a shift to non-dependence, as it is generally a major life event which comes with mounting responsibilities, more social ties, and informal social control (Laub & Sampson, 2003), and thereby creates forms of desistance. However, it might as well be that desistance effects preceded the decision to cohabit. Also, in this study we focused on social relationships. Although our study is one of the few to take various social relationships into account, rather than simply focusing on either peers or partners (cf. Rhule-Louie & McMahon, 2007), we decided to “artificially” take the social domain out of its wider context. Life events in other areas, for example study and work, might play an important role.
We are well aware that our study had limitations, but our approach also had important advantages. Unlike most cannabis use researchers, we studied young adults rather than adolescents, and applied a prospective rather than a retrospective design (cf. Knight, 2011). We mainly looked into the subjective meanings of social relationships. Although subjective, participants’ evaluation of events often corresponded with how one would categorize them objectively (from an outsider’s perspective). Additionally, the use of context-based timelines, including data participants (quantitatively) reported intermediately, positively contributed to the recollection of their lives and cannabis use. More important, our approach provided interesting insights into the perceptions, experiences, and attributed meanings of participants. Our study does not solely focus on marriage, but rather includes other relation- ship types, whereas most of the research on partners to date is either cross-sectional, or is based on clinical samples (Rhule-Louie & McMahon, 2007). Furthermore, our study revealed new insights into gender differences and underlying mechanisms between partner influence and cannabis use.

In light of all this, our study has demonstrated that life events in social relationships are rather common in young adults’ lives and can have a strong impact on their cannabis use, although this varies depending on gender. Participants were largely influenced by the ones they spent most of their time with (cf. Rhule-Louie & McMahon, 2007), and often assimilated their cannabis use to others, depending on cannabis use of the associate. Yet interviewees who were less susceptible to social influences typically remained or became non-dependent, which indicates the importance of self-control mechanisms. Nonetheless, changes in cannabis use were for a considerable part attributable to processes—either selection or socialization—and events in social relationships.

With regard to treatment and prevention, important recommendations may be to acknowledge the role of social context in cannabis use, to advise users who want to change (whether they are being treated or simply want to quit on their own) to refrain from associating with co-users. Additionally, users, particularly female users, should be made aware of the possible deteriorating effect of relationships with co-users, and should be encouraged to exhibit more self-control and less suggestibility.
4
THE ROLE OF STUDY AND WORK IN CANNABIS USE AND DEPENDENCE TRAJECTORIES AMONG YOUNG ADULT FREQUENT CANNABIS USER

Abstract
Life course theory considers events in study and work as potential turning points in deviance, including illicit drug use. This qualitative study explores the role of occupational life in cannabis use and dependence in young adults. Two and three years after the initial structured interview, 47 at baseline frequent cannabis users were interviewed in-depth about the dynamics underlying changes in their cannabis use and dependence. Overall, cannabis use and dependence declined, including interviewees who quit using cannabis completely, in particular with students, both during their study and after they got employed. Life course theory appeared to be a useful framework to explore how and why occupational life is related to cannabis use and dependence over time. Our study showed that life events in this realm are rather common in young adults and can have a strong impact on cannabis use. While sometimes changes in use are temporary, turning points can evolve from changes in educational and employment situations; an effect that seems to be related to the consequences of these changes in terms of amount of leisure time and agency (i.e. feelings of being in control).

Keywords: Frequent cannabis use; Cannabis dependence; Young adults; Qualitative research; Life course approach; Longitudinal study; Education; Employment
Introduction
Cannabis is among the most widely used illicit drugs worldwide, with between 125 and 203 million last year users worldwide (UNODC, 2011). In the US approximately 5 million persons use cannabis on a (almost) daily basis (Substance Abuse and Mental Health Services Administration, 2012), and in the European Union an estimated three million individuals are (almost) daily cannabis users, most of whom are aged 15-34 years (EMCDDA, 2013). Frequent (daily or nearly daily) cannabis use and particularly cannabis dependence are associated with various mental health problems and impaired functioning (Degenhardt et al., 2013; Fergusson & Boden, 2008; Hall, 2009; Martinotti et al., 2012; van der Pol et al., 2013).

Associations between cannabis use, education, and employment have been extensively studied. Longitudinal research has shown that adolescent cannabis use is related to poor educational performance and early school dropout (Lynskey & Hall, 2000); degree attainment and university attendance (Horwood et al., 2010); and reduced occupational expectations, attainment and stability (Arria et al., 2013). A review on young adult substance use concluded that many risk and protective factors for adolescents remain for young adults, but, given the changing social contexts, factors such as college attendance and job attainment are specific for young adults (Stone, Becker, Huber, & Catalano, 2012). Regarding later life outcomes, adolescent cannabis use is related to lower income and higher unemployment in young adulthood (Fergusson & Boden, 2008). Adult past year cannabis users are more likely to quit their job to take another job, to be unemployed between jobs and to have lower levels of employment than non-past year users, including never users (Hoffmann, Dufur, & Huang, 2007). French et al. (2001) found that weekly or more frequent cannabis use was negatively related to employment, but less frequent use was not. In a longitudinal Norwegian study, cannabis users (use at least once in the past 12 months) reported lower levels of work commitment than less frequent users, regardless of individual characteristics (Hyggen, 2012). More generally, Arria et al. (2013) showed that persistent drug users (at least once in every year studied) were more likely to be unemployed than non-users, and that part-time workers were more likely than full-timers to be drug dependent. Finally, Reed et al. (2006) found that high job strains and low job control increased the risk on drug dependence. Together these findings suggest the presence of a reciprocal relationship between (changes in) occupational activities and (changes in) drug use and dependence, with changes in occupational activities leading to changes in drug use/dependence and changes in drug use leading to changes in occupational activities. However, little is known about the mechanisms responsible for these changes. One classical possible mechanism that could underlie this relationship is the ‘amotivational syndrome’, as it has been
proposed that heavy cannabis use would cause (temporary) cognitive impairment including diminished motivation and memory, lack of interest and concentration problems. However, these symptoms may as well be an outcome of other factors, such as depression, and no clear evidence until now supports this association (Fernández-Artamendi, Fernández-Hermida, Secades-Villa, & García-Portilla, 2011; Hall, Solowij, & Lemon, 1994; Lynskey & Hall, 2000).

Life course theory considers transitions such as changes in education and work as potential turning points in explaining desistance from deviance (Laub & Sampson, 1993). Turning points are preceded by life events, which can be abrupt or gradual. Abrupt life events make sudden, sharp distinctions between past and future. Most events, however, are more gradual, and are part of a process. Life events could (objectively) be categorized as positive or negative, but their (subjective) meaning as positive or negative depends on how they are evaluated by the person experiencing them (Laub & Sampson, 1993). Consequently, similar events can have different meanings for different individuals. When life events lead to a lasting change over time or a redirection of an individual’s course of life, including changes in deviance, they are considered turning points (Teruya & Hser, 2010). Thus, turning points can only be identified in retrospect (Hutchison, 2005; Wheaton & Gotlib, 1997). In life course theory, changes in deviance over the life course are explained within the context of age and maturation: most deviant behaviours peak in adolescence and young adulthood and then decline (Laub & Sampson, 1993, 2003). Employment has the potential to decrease deviance, because strong ties with work and informal social control could get an individual’s life (back) on track; not the job per se, but the commitment and stability associated with work can reduce deviance (Laub & Sampson, 1993). Also, employment limits one’s time, thereby practically reducing opportunities for deviant activities (Laub & Sampson, 2003).

Other researchers have emphasized the role of personal factors, such as ‘agency’ in life events and desistance (cf. Maruna, 2001). In short, human agency refers to free will and (feelings of) control over one’s life, and contributes to how life events are experienced and might change into a turning point (Maruna, 2001; Teruya & Hser, 2010). When using the concept of agency in this study, we follow Teruya & Hser (2010), who defined it as “the amount of personal choice and control over decision making individuals feel they have”, and that “shapes their perceptions and the outcomes of life events and transitions and may contribute to the differential effects that the same life event may have on different people.” (Teruya & Hser, 2010: 4).
Although life course theory often concerns criminal careers and desistance from crime, we assume that it also applies to cannabis use careers, since largely similar processes are involved (cf. Laub & Sampson, 2001). Life events thus can become turning points when redirecting an individual’s path in substance use or dependence. In life course theory, employment, especially stable employment, is considered as one of the factors most commonly associated with desistance. The potential of employment to become a turning point is influenced by job characteristics and human agency (Reed et al., 2006; Maruna, 2001; Teruya & Hser, 2010).

Several of the earlier studies on drug use, education and employment refer to any use in the last 12 months, which could range from only once to daily use. Consequently, it remains unclear to what extent frequent drug use, including cannabis use, is related to study and work. Probably more important is the need to better understand how and why frequent young adult cannabis users change their use, how these changes are related to transitions in and out of cannabis dependence, and how these changes and transitions are related to changes in study and occupational activities. Employment trajectories can have turning points with an impact on cannabis use and dependence, but cannabis use can also influence employment (Huang, Evans, Hara, Weiss, & Hser, 2011). To better understand the natural course of frequent cannabis use of young adults and the relation with education and work, our objectives in the current study are (1) to explore in-depth the meaning and role of education and work in using cannabis in general; (2) to analyse the relationship between events in these domains and changes in cannabis use; and (3) to analyse the role of occupational events in changes in cannabis dependence trajectories. We decided to use a qualitative approach, because the dynamics and the processes underlying the relationship of educational and work with cannabis use and dependence trajectories cannot be adequately addressed with quantitative methods and because personal narratives and in-depth interviews are deemed to improve our understanding of the processes and the context involved with these changes. This study is among the first to qualitatively capture the natural course and transitions in frequent cannabis use and dependence in young adults.

Methods
Study design
The current (qualitative) study is part of a broader longitudinal study (CanDep) on cannabis use and transitions in cannabis dependence in young adult frequent cannabis users (see for details Liebregts et al., 2011; van der Pol et al., 2011). Figure 4.1 displays an overview of the different (quantitative and qualitative) interviews in the study. In brief, at baseline (T0, September 2008 - April 2009) 600 frequent Dutch cannabis users (> 3 days cannabis use
per week in the past 12 months) aged 18-30 years were recruited in coffee shops and through respondent-driven sampling and interviewed (see for details Liebregts et al., 2011). Participants were monitored for three years, with two follow up interviews and six intermediate updates by e-mail or phone. At T0, DSM-IV diagnoses of 12-month cannabis dependence were assessed with the Composite International Diagnostic Interview (CIDI 3.0). After 18 months (T1, March - November 2010) and 36 months (T2, September 2011- March 2012) participants were interviewed again, including an assessment of their cannabis dependence status since the previous interview. At T1, four trajectories in cannabis dependence were distinguished: persistent non-dependent, persistent dependent, transition from dependent to non-dependent, and transition from non-dependent to dependent. At T2 the number of trajectories extended to eight.

**FIGURE 4.1**
**Timeline of CanDep data collection**

In an additional qualitative substudy, the dynamics underlying the changes in cannabis use and the transitions in cannabis dependence were investigated with special emphasis on study and occupational changes. We conducted life story interviews, in which users can express themselves through their narratives and thereby can improve our understanding of the processes and the context involved in these changes (cf. Carlsson, 2012; Maruna, 2001; Sampson & Laub, 2005).

From each of the four trajectories at T1, 12 participants were randomly selected, stratified for gender (8 male, 4 female), totalling 48 interviewees. At T2, these interviewees represented seven trajectories (Table 4.1). The first qualitative interview (I1) took place between December 2010 and April 2011, the second (I2) in March and April 2012. One participant could not be traced back at I2 and was excluded from the analysis, thus resulting in a final sample of 47 participants. While 47 participants is a small sample size for quantitative research methods, for qualitative methods this is not the case and a ‘small’
sample size is considered more powerful in order to achieve depth (cf. Bourgois, 1999).

TABLE 4.1
Transitions in cannabis dependence status T0-T1-T2 and trajectory characteristics

<table>
<thead>
<tr>
<th>Cannabis dependence trajectory</th>
<th>n</th>
<th>T0</th>
<th>T1</th>
<th>T2</th>
<th>Age T0 (mean)</th>
<th>Age first use (mean)</th>
<th>Cannabis career T0 (mean yrs)</th>
<th>(Near-)daily use T0</th>
<th>(Near-)daily use T2</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>NNN</td>
<td>12</td>
<td>Non-dependent</td>
<td>Non-dependent</td>
<td>Non-dependent</td>
<td>21.8</td>
<td>14.4</td>
<td>7.4</td>
<td>6</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>NDN</td>
<td>7</td>
<td>Non-dependent</td>
<td>Dependent</td>
<td>Non-dependent</td>
<td>20.4</td>
<td>14.3</td>
<td>6.1</td>
<td>4</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>NDD</td>
<td>4</td>
<td>Non-dependent</td>
<td>Dependent</td>
<td>Dependent</td>
<td>20.5</td>
<td>14.2</td>
<td>6.2</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>DNN</td>
<td>10</td>
<td>Dependent</td>
<td>Non-dependent</td>
<td>Non-dependent</td>
<td>21.2</td>
<td>13.4</td>
<td>7.8</td>
<td>7</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>DND</td>
<td>2</td>
<td>Dependent</td>
<td>Non-dependent</td>
<td>Dependent</td>
<td>22.5</td>
<td>14.0</td>
<td>8.5</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>DDN</td>
<td>5</td>
<td>Dependent</td>
<td>Dependent</td>
<td>Non-dependent</td>
<td>19.8</td>
<td>13.4</td>
<td>6.4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>DDD</td>
<td>7</td>
<td>Dependent</td>
<td>Dependent</td>
<td>Dependent</td>
<td>22.4</td>
<td>15.0</td>
<td>7.4</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>47</td>
<td></td>
<td></td>
<td></td>
<td><strong>21.3</strong></td>
<td><strong>14.1</strong></td>
<td><strong>7.1</strong></td>
<td><strong>29</strong></td>
<td><strong>20</strong></td>
<td><strong>16</strong></td>
</tr>
</tbody>
</table>

In-depth interviews
We conducted in-depth interviews, using a topic list that included questions about participants’ cannabis use career, i.e. changes in patterns of cannabis use, motives for change in cannabis use, and the occurrence of life events in various life domains. Interviewees were asked to recall changes in different life domains and in their cannabis use patterns between T0 and T1 and between T1 and T2, respectively, using detailed personal timelines (Bedi & Redman, 2006). One timeline referred to their cannabis use (including frequency and number of joints per occasion), the other timeline to life domains (including occupational life, i.e. education and employment). Both timelines were prepared before the interview and included data derived from the quantitative interviews and intermediate updates, which included questions about their cannabis use and occupational status (i.e. study and work). During the interviews these timelines were used as guidelines and
elaborated in detail. Every interview started with an open question [“Thinking about your life between ... (T0 or T1) and ... (T1 or T2), what has happened and what experiences have been important to you?”], and ended with a similar, but slightly different question [“Looking back at the period between ... (T0 or T1) and ... (T1 or T2), what experiences or processes do you consider to have had a (positive or negative) impact on your life and cannabis use?”]. While in the first in-depth interview (I1) participants’ entire cannabis career and life history until baseline (T0) were discussed, the focus in both in-depth interviews (I1 and I2) was on the period between the standardized interviews (T0-T1 and T1-T2 respectively). The study was approved by a Medical Ethics Committee. All participants provided written informed consent at the start of the study, acknowledging that their participation was voluntary. They all were assured that the interviews were confident and data was kept safe, separated from any personal information and that anonymity was guaranteed. Interviews took place at a quiet location; mostly at participants’ home and sometimes at the research institute. The interviews lasted between 1.5 and 3.5 hours. After completion, participants received a financial compensation of €25.

**Analysis**

All qualitative interviews were digitally recorded (with participant’s consent), transcribed verbatim and imported into QSR Nvivo. Transcripts were analysed combining deductive and inductive strategies. Codes and categories were partly developed beforehand, based on the literature (a priori coding, Miles & Huberman, 1994). In addition, new codes and categories evolved from the data, and new patterns emerged. Interview transcripts were read and reread to identify and link evolving codes, categories, and themes (pattern coding, Miles & Huberman, 1994). To guarantee anonymity, interviewees were identified with fictitious names and sometimes quotations were slightly adapted.

**Results**

**Participants**

Age of participants at baseline ranged from 18 to 30 years (Table 4.1). One third was female (by selection). Age at first use varied from 11 to 18 years (mean=14 years).

At baseline, the length of cannabis use careers ranged from 1 to 15 years (mean=7 years), for some with intervals of no use. At baseline (T0), 29 participants were (near-) daily users (5-7 days per week) and the remaining 18 participants used on 3-4 days per week. During the study there was an overall decline in cannabis use frequency. At T2, 20 participants were (near-) daily
users, 19 participants used at least three times a week but not (near-) daily, 3 participants had not used cannabis for one year or more and said they had quit permanently, and in the 5 remaining participants cannabis use varied from one day per week to less than monthly, including 3 participants who basically considered themselves as quitters, and had been using cannabis only a few times in the past year. Also quantity of cannabis used decreased, from on average 2.9 joints per using day at T0 to 2.4 at T2 (excluding 3 non-past year users). At T0, 24 participants were last-year cannabis dependent and 23 participants were non-dependent. At T2 this had changed to 13 dependent and 34 non-dependent participants. At baseline dependent and non-dependent interviewees were rather similar concerning mean age at initiation, mean age at baseline, gender and (near-) daily use. At T2 cannabis dependent interviewees were more frequently (near-) daily users than non-dependent participants, but also in NDN many participants were using (near-) daily. Besides, relatively more females than males were dependent at T2.

**Education, employment and commitment**

Regarding occupational status, three categories were distinguished: students, employed and neither student nor employed. At baseline, almost two-thirds of the participants (31/47) were fulltime students. At the time of the last in-depth interview some had stopped studying without a qualification, some had graduated, but most (24) were still studying. Type of study varied from a vocational training to academic studies. Most students had a job on the side; some regularly three days a week, others every now and then when they felt in need of money. The most popular job among these students was working in cafes or restaurants. At baseline, about a quarter of the interviewees (11/47) were in paid fulltime employment (32 or more hours weekly). At T2 more than one third was employed (18/47), all but one fulltime. By then, some interviewees still worked at the same company, and sometimes had been promoted, while others had switched work several times during these three years. The growing number of employed participants is partly explained by participants graduating and then starting their job career, and partly by participants quitting their study unfinished and getting employed. The employment sectors were diverse, for example some worked in bars, others in academic professions. In the course of the study, one participant became unemployed at T2. At T0, the remaining five interviewees were neither student nor employed: three defined themselves as a fulltime parent, one was on social benefits, and one was in a reintegration program (with probation). Of these participants, the one on probation had become a student at T2 and the occupational status of the other four remained unchanged. To summarize, in the course of the study the number of students dropped from 31 to 24, the number of employed (almost exclusively fulltime) increased
from 11 to 18, and the number of participants without study or work remained stable at 5.
Although the importance that student and employed interviewees attached to their study or work varied, only a few of them felt that it was not very important and that life was more about social activities and ‘having fun’.

My study is somewhere on the background in my life. Of course it’s important for me to keep thinking about the future, and it plays a large role in that I have to go there a couple of times every week, and have to study for it, but if I fail a test, I fail a test, that doesn’t really bother me. (…) I’m not much of a scholar, for me the fun things in life are more important. (Julius, I1, DNN)

However, most students attached goals to their study, for instance attaining their undergraduate diploma in due time, or getting high grades. Some had intermediate study delays, but sooner or later commitment often grew and study became a priority.

Now, my school is very important, I don’t want to do retakes, because I can’t choose another study again. My student grant ends at some time and anyhow I have to pay the next three years myself. I want to do it well and timely, not being 30 when I graduate. Imagine I’m 30 and by then I have to start my career, find a husband and possibly have kids. And that has to happen before a certain age. That’s also why I want to pass my exams in one time. (Kim, I1, DDD)

In their narratives, interviewees often expressed commitment to study and work, and to strive for a steady job career. Evidently, the more important participants considered their study or job, the more effort they put into it and the more committed they felt.

When I’m at work, I’m ambitious. In my last job I got promoted to supervisor within one year, and that is something I want to achieve. I have higher aspirations, and I cannot simply work somewhere for 8 hours and watch the clock. I envy people who are able to do that: have a job, do their work and that’s it. I am not like that; my work always follows me home. Yeah, I’m pretty ambitious. (Kevin, I2, NNN)

Cannabis use in relation to study and work
Most interviewees believed that heavy cannabis use would negatively impact their daily occupational functioning and most of them had experienced adverse effects themselves, such as difficulties getting out of bed the next day, functioning more slowly and sloppy, trouble memorizing, and postponing tasks. However, almost one in five participants (8/47) reported better
functioning in some tasks when being high or stoned, mainly because they believed it improved their concentration. With cannabis, they felt like being “in a bubble” and less distracted by other people, actions or thoughts. Interestingly, all these interviewees stated to have ADHD and/or ADD (all except one clinically diagnosed), and some said that cannabis was like “natural Ritalin” or a kind of “self-medication”.

Recently I finished that training, and started my own company. It goes really well. I’m much more concentrated in my work after using cannabis. And when I’m programming when I’m stoned, I’m like in the codes straight away, type everything effortlessly. Sober I start thinking about how it’s working, the syntaxes, commandos, but stoned all of that happens fully automatic. I get into a kind of vibe to program completely uninterrupted. It makes a big difference.” (Ben, I1, DNN)

Almost all student and employed interviewees took it for granted not to use cannabis before or at school or work or when studying mainly to avoid adverse effects and/or out of responsibility.

Interviewer: Why don’t you smoke cannabis at work?
Interviewee: Well, it’s kind of... On the one hand I think that they wouldn’t be cool with that. I think they want to hire the sober Jacob. On the other hand: sometimes, when you have smoked a couple of joints you lose a little attention to details. And that is something that’s really important in my job, the details. So, not using cannabis at work out of feelings of responsibility, but perhaps also to distinguish work from leisure. Like: you’re not here to chill but to work. (Jacob, I2, NNN)

Other reasons for not using cannabis at work or at school were fear that colleagues would notice it and fear of possible consequences, such as being taken less seriously or being fired. Most interviewees said colleagues or fellow students did not know about their cannabis use. They believed that cannabis use was a private matter, and preferred to keep it to themselves. The dominant patterns in the narratives was to be rather firm in stating that it was inappropriate to be intoxicated while at work, at school or when studying. Using cannabis belonged to the leisure domain, and they reported that they only used cannabis after finishing study or work. As a result, most employed participants barely used cannabis at daytime, and more on weekends than on weekdays. With students, there was more variation, as their daily life was less structured around fixed hours throughout the week. They sometimes used cannabis at daytime, and more often during holidays. Among the participants without study and work, the three that were full time
parents sometimes used cannabis at daytime when the children were at school, but more often at night when the children were asleep; they used less or not at all during school holidays. Despite interviewees generally holding strong views on not using cannabis before and during study or work, some did admit it had happened occasionally. While employed participants seemed to be most strict in not using when at work, students sometimes believed that study differs from work, as there is less social control at college (e.g. when not showing up or not paying attention in classes).

I am very strict: when I have to work or go to school I don’t smoke. Well, school ... occasionally, when my class begins late, at 2 PM, a friend drops by and then we’ll have a cup of coffee and smoke a joint, but not heavy. The first class is also very boring, I go stare out the window or distract others. (Tess, I1, NDN)

It’s perhaps more practical not to be too stoned during lectures, but hey, occasionally it doesn’t do any harm. Sometimes, when the lecture begins at 5 PM, well, I sometimes smoke a joint at 3 PM and I think: I shouldn’t have to. I’m trying to take the study really serious, but sometimes it doesn’t work out and I think: oh well, I’ll do it tomorrow. No one is bothered by it; it doesn’t affect anyone. (Eduard, I2, DDD)

Relation between study and work events and changes in cannabis use
Not surprisingly given their stage of life, most interviewees reported life events related to study or work that had taken place in the course of our study. In total, participants reported 97 events, averaging 2.1 events per interviewee (Table 4.2). Four participants reported no events. Most changes and events concerned starting a new study or job, graduating, finishing a study, quitting work or a study prematurely, and stress related to study or work. Slightly more events were evaluated as positive than as negative. Getting high grades, graduation, and starting a new job always had positive meanings to the interviewees, and starting a new study very often as well. Being fired from a job, getting low grades, and stress were always experienced as negative. Only a few events, although reported as important to interviewees, were perceived as neutral (neither positive nor negative, or both positive and negative), all being study-related (e.g. study delay or starting graduate courses). Quitting a study was experienced the most ambiguously, mainly depending on whether or not this happened voluntary. In line with Rönkä et al. (2003), we found that interviewees associated positively experienced events more often with personal choice than negatively experienced events. Nevertheless, interviewees reported almost as many negatively experienced events with little or no personal choice as
negatively experienced events where personal choice was present. Over one third of the interviewees reported more than one event, mostly both a negatively and a positively experienced event, such as being fired from work (negative) and getting a new job (positive).

TABLE 4.2
Events related to study or work

<table>
<thead>
<tr>
<th>Trajectory (n) -&gt; Life event experienced (n)</th>
<th>Cannabis Use</th>
<th>NNN (12)</th>
<th>NDN (7)</th>
<th>NDD (4)</th>
<th>DNN (10)</th>
<th>DND (2)</th>
<th>DDN (5)</th>
<th>DDD (7)</th>
<th>Total (47)</th>
</tr>
</thead>
<tbody>
<tr>
<td>T0-T2 (total)</td>
<td>More</td>
<td>2</td>
<td>-</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>Stable</td>
<td>6</td>
<td>5</td>
<td>-</td>
<td>5</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>18</td>
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<td></td>
<td>Less</td>
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<td>1</td>
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<td>-</td>
<td>3</td>
<td>-</td>
<td>8</td>
</tr>
<tr>
<td>Negatively (42)</td>
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Average number events per participant

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Interviewees talked about changes in their cannabis use in terms of more use (i.e. more frequently, more joints per occasion, or larger amounts of cannabis), or less use (i.e. less frequently, less joints per occasion, or smaller amounts), or said their cannabis use had not changed (stable use). Negatively experienced events were most frequently associated with stable use (43%), somewhat less frequently with more use (38%) and least frequently with less use (19%). In contrast, positively experienced events were most frequently associated with stable use (72%) and much less frequently with less use (18%) or more use (10%). In more than half of the events, interviewees said that they had not impacted their cannabis use. This mainly concerned events that interviewees perceived as positive, but also as planned and not really changing their daily life, or as neutral. As Wheaton and Gotlib (1997) stated, ‘contrast’ is important for events to become turning points. In our study,
many participants who became graduate students after having attained their bachelor’s degree, although they were surely happy with their certificate, did not change their life drastically. Likewise, employed participants who had switched from a job to a similar one, often considered their new job, although they were pleased with it, as little influential on their daily life. Therefore, these changes in study or work did not really influence their cannabis use.

Generally, increases or decreases in cannabis use were transient, and according to the interviewees these changes in cannabis use largely depended on changes in the amount of leisure time that went along with events or temporary changes. For instance, becoming unemployed or having a quiet study period led to more leisure time and thereby more cannabis use, whereas a new job or a busy study period led to less leisure time, and consequently to less cannabis use.

[about the timeline] The more demanding my study, the lesser I smoke. When I’m free, there is a peak in my use. Let’s see. In June and July I’ve used less, because I worked at a bank for 2 months, nine-to-five job, little leisure time. Then in August, an increase in use, like “long live freedom! Now I can smoke again”. After that, a normal level for a while. December slowly a decrease, because then the exams come closer. January a drop, heavy times and tough exams, 4-5 exams in one week, so then it’s 0-1 joint per day. And then February suddenly again ‘freedom!’, so daily use, 2 joints anyhow. (Zoë, I1, NNN)

When I have a lot of leisure time, I smoke more and sooner. When I’m busier and more serious, then I smoke less. And that is certainly a correlation, when there is an ascending line with responsibilities and working hard, there is simultaneously a descending line with cannabis use. (Robert, I2, DDN)

In addition, agency came to the forefront as an important factor, most clearly in the narratives of students. Several students reported considerable delay in their study, which they all experienced as negative and some were facing a demanding last year of studies. Some expressed a low level of agency regarding their study, did not feel in control, gave up, and subsequently started to use more cannabis.

I felt really bad that period. I did go out with friends, but I didn’t do much for my study and I only worked now and then. I didn’t give it my all. I smoked a lot and I started to use that, as an excuse. I had no priorities, things just happened. Life happened to me, and I sort of endorsed it... (Julian, I2, DDD)
In contrast, other students chose and managed to restructure their daily life and to study hard, and, although they did not necessarily blame their study delay on cannabis, they actively reduced their cannabis use. They all stated that they were highly motivated to change their cannabis use and were convinced that they could succeed. In the course of our study, three participants reported to have quit using cannabis, giving their occupational life as the main reason, as they thought cannabis was not conducive to their functioning. They said that quitting did not occur overnight, but was a gradual process: they went from daily use to only in weekends, and step-by-step cut back. At the last interview they had not used cannabis for over a year and neither had the intention to start again.

My medical study was suffering from my cannabis use. Whenever I have an exam I have to study very hard, a full week every day, spending the whole day in the library, otherwise I won’t make it. When I was using cannabis, being there at 8:30 AM was a problem anyhow, because I couldn’t wake up early. Also, after 3 PM I didn’t feel like studying anymore, no concentration, I wasn’t able to memorize things. Factual knowledge doesn’t go together with cannabis use. I always stopped using a week before the exams, but you need three days to get active and to get adjusted, and in fact you’re too late. Also, smoking cannabis at night does not go well with lectures early in the morning. I often overslept and didn’t go. All in all my study delay was one year. Last year, I decided: I don’t want to use cannabis, I want to catch up on my study. And I did! Now I do great, I pass the exams, so I shouldn’t smoke anymore. The difference between when I was smoking cannabis and now is huge. (...) I feel in control of my life now more than ever. (Sofie, I1, DDN)

Of the six participants who lost their job during our study, no one reported this was related to their cannabis use. While one could argue that cannabis may have affected their functioning and thus indirectly caused job loss, this did not seem the case as mostly their dismissal was due to cutbacks related to the crisis.

Relation between stress and changes in cannabis use
A recurring topic in many narratives was stress related to study or work, though not per se in conjunction with events. For students such stress mainly involved study delays and exam periods, especially their final project or master thesis. For employed interviewees it was largely connected with deadlines, having to work too many hours and reorganizations or job loss. Participants without study or work perceived stress mainly related to financial problems and sometimes parenting. Stress came with ups and downs, and could have a strong impact on participants’ mood and everyday life.
functioning, including cannabis use. Some interviewees explained how cannabis use could be functional in dealing with stress, because it helped them to distract their mind, making it easier to relax and taking a moment for oneself. For some, smoking a joint at the end of the day was also a reward for their hard work. Consequently, it was not uncommon for interviewees to explain increases in their cannabis use by stressful and busy times.

When I’m stressed, or more stressed, then I’m gonna smoke more. Just to forget a bit. It won’t solve anything, but for the moment it does, you can simply let things go. (Samantha, I2, NNN)

When I’m stressed, the urge to smoke increases. I don’t know if that’s positive or negative, probably not positive, but hey, it gives me some peace. By then I think: ok, now I have a break, it’s ok now. If I don’t have that break I’m a bit stuck with that frustration. Additionally, it relaxes me. Except that the next day at work I’m a little less alert and probably it’s not beneficial, but at least it relieves the evening itself. (Jonas, I2, DDD)

Conversely, other participants explained a decrease in their cannabis use by stressful times. Some thought that with stress cannabis use was not helpful, since it might intensify emotions and lead to more stress or worries. For some others, like Kevin, using less cannabis in times of stress was not so much because of possible unpleasant effects, but primarily a matter of time and personal choice.

Interviewee: At that time I used less. See, when you’ve had a really busy day and you come home at 8 PM and you want to go to the gym and cook a meal and also have to smoke a joint and get up at 7h the next morning, no, that won’t work.
Interviewer: To what extent is it about priorities?
Interviewee: Yeah, it depends on your priorities, but for me it’s not cannabis, I prioritize my job. No, when I’m stressed I’m not going to smoke more, but less instead. (Kevin, I2, NNN)

In five participants, chronic stress ended in a situation of “burnout”. They all experienced this as very negative and it took them at least a couple of months to recover. Two of these interviewees thought their cannabis use was worsening their mental health and stopped using (one permanently and one temporarily with the intention to quit permanently). One of these interviewees remained stable in her cannabis use and two others used more cannabis during their burnout and said that this was because they had more leisure time.
Relation between study and work events and cannabis dependence trajectories

Regarding cannabis dependence, seven different trajectories evolved, with persistent non-dependent (NNN; n=12) and transitions from dependent at baseline to non-dependent at T1 and T2 (DNN; n=10) being the most common trajectories (Table 4.1). On average 2.1 events were reported, but this was only 1.3 in the group of persistent dependent participants (DDD; n=7; Table 4.2).

Although numbers of participants in most trajectories are small (n=2-12), some patterns seem to become manifest. In response to occupational events, interviewees who were non-dependent at T2 (NNN, NDN, DNN, DDN) mostly had not changed their use (49/75 events) or rather equally often used less (14/75) or more cannabis (12/75). Interviewees who were dependent at T2 (DDD, DND and NDD), though they also quite often said that their cannabis use had not changed because of events (9/22 events), were somewhat more likely to use more (10/22) than less (3/22).

TABLE 4.3

| Occupational status and cannabis dependence trajectories T0-T1-T2 (n=47) |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                | T0          | T1          | T2          | NNN (12)   | NDN (7)   | NDD (4)   | DNN (10)  | DND (2)   | DDD (5)   | DDD (7)   | Total (47)   |
| Study          | Study       | Study       | Study       | 4          | 3          | 2          | 7        | -         | -         | -         | 2            | 23            |
| Study          | Study       | Work        | Work        | 1          | 1          | -          | -        | -         | -         | -         | 2            | 5             |
| Study          | Work        | Work        | Work        | 3          | -          | -          | 2        | -         | -         | -         | 5            | 10            |
| Work           | Study       | Work        | Work        | -          | -          | 1          | -        | -         | -         | -         | 1            | 10            |
| Work           | Work        | Work        | Work        | 2          | 2          | 2          | -        | 1         | 1         | 2         | 10           |               |
| Neither        | Study       | Study       | Study       | 1          | -          | -          | -        | -         | -         | -         | 1            | 1             |
| Neither        | Neither     | Neither     | Neither     | 1          | 1          | -          | -        | -         | -         | -         | 2            | 4             |
| Study          | Work        | Neither     | Neither     | -          | -          | -          | -        | 1         | -         | -         | 1            | 1             |

Concerning occupational status (study, work or neither) and trajectories some interesting patterns emerged. Firstly, many participants remained student during our study (23/47) and, although they can be found in six different trajectories, the overall tendency over time is away from cannabis dependence (Table 4.3).

Four of these students were persistent non-dependent (NNN). While 14/23 participants who remained student were dependent at T0, only five were at T2. In general, the students who became non-dependent (7 DNN, 4 DDN, 3 NDN) stated that their study became more demanding as it progressed, which
they found difficult to combine with frequent cannabis use. From their narratives it became clear that they decided for more control over their cannabis use, through being more selective in when to use and when not and/or through less frequent use.

I concluded for myself that if I really want to succeed in life, I have to fully go for this study now. And that has changed my cannabis use as well. I still use, every week I do, but not daily anymore. Because when I do, the next day I don’t feel alert, I notice I can’t really concentrate. That interferes with what I want to do, my study. So now I only smoke in the weekends, or when I don’t have any obligations the next days. I plan my use, take it into account. More seriously. My study is the first priority now, definitely. From February till June 2011 it wasn’t, and I used cannabis very often. That was less serious, I wasn’t devoted to my study and I attended the university mainly to socialize. (Max, I2, DDN)

In contrast, four of the five participants who remained student and who were dependent at T2 (3 DDD, 2 NDD) expressed in their narratives a lower level of agency regarding their study, e.g. reported that they did not take their study very seriously, or did not spend enough time on it.

I can’t convince myself of the need to quit using cannabis. I don’t encounter adverse effects. There are things, such as my study delay, that cannabis contributed to. But the real decisive factor is if I really had the willpower and would go for it, then I would succeed in my study. Even when using that much cannabis. It’s just my own laxity I think. I have had that my whole life. (Eduard, I2, DDD)

Secondly, all seven students who became employed, either after quitting their study (by choice or involuntary due to poor performance) or after graduation, were non-dependent at T2. Four (with stable or reduced cannabis use) showed a persistent non-dependent trajectory (NNN) and three shifted from dependent to non-dependent (1 NDN, 2 DNN) in the same period as their occupational status changed from student to employed. Although this shift co-occurred with change in occupational status, it was not necessarily induced by events related to study or work. Mike (DNN), for example, said that between T0 and T1 he felt that the use of cannabis sometimes made him a bit paranoid. Therefore he decided to decrease his cannabis use, and finally he quit. In the meantime he discontinued his study and started working fulltime. Similarly, Isabel (DNN) expressed that the way she used cannabis evolved as part of a general change in lifestyle rather than specifically because of a shift in occupational status from study to work.
Like with other things, you need to find a certain balance in cannabis use. For cannabis I have found that balance, I guess. I have that for a year now. Also because I live on my own now, I really got to know myself. You’re alone, there is nobody else around. It has changed me, made me more independent. (Isabel, I1, DNN)

Regarding the group that remained employed (10/47), no clear patterns in trajectories could be observed. These participants were represented in six different trajectories (2 NNN, 2 NDN, 2 NDD, 1 DND, 1 DDN, 2 DDD). At T0 this group included four dependent participants versus five at T2. The extent to which employed participants said that they were committed to their job varied, and also their type of job, but this did not appear to be related to their cannabis dependence status. However, sometimes change in cannabis use did not result in a dynamic trajectory, as was the case with Jonas, who stated that over time he had taken more control over his cannabis use, but was diagnosed as persistent dependent (DDD).

The regularity got out of my cannabis use. I used to smoke every day, a joint before bedtime, perhaps one in the early evening and when I had a day off I could sometimes start in the afternoon. Well, that's not really something to be proud of, and I always thought: if I want, I can stop using. It was time to prove that. It was a rude awaking [laughs]. Before, I didn’t try to control my use, I never saw the need to. But I began to feel the effects: the relatively easy college life was over, employed life was more demanding, and I had to better take care of myself. Perhaps I still don’t fully regulate my use, I sometimes have relapses. It’s difficult, because after I haven’t been smoking for a while, I think: why not smoke? I don’t have any problems with my use, I’m functioning fine, also when I smoke. I can do my job well, or quite well and my social life as well. (Jonas, I2, DDD)

Also in the case of the other participants (7/47) no consistent patterns could be observed in the relationship between cannabis dependence trajectories and (events in) the occupational domain. Alternatively, agency, more specifically their ability to regulate their cannabis use appears to be related to (transitions in) their dependence status. This became most clear for three participants with young children in the neither group (NNN, NDN, DDD). During our study these three mothers experienced the event of one or two children going to school for the first time, which created a considerable change in their daily time schedule. Although they all underlined not to use cannabis in presence of their children, the way they organized their cannabis use was quite different. Samantha (NNN) believed to be in control over her cannabis use. She used cannabis mainly at night, before going to sleep and only after she had taken care of her daily responsibilities. Contrariwise,
Charlotte (DDD) said that her kids often arrived too late at school, because she had difficulties getting up in the morning, and that she smoked a joint right after she had brought her children to school, even though she knew that by doing so she often postponed her daily tasks. She felt addicted, not in control over her use and in both in-depth interviews she said she would want to quit. Nathalie (NDN), on the other hand, often used cannabis after having finished her daily tasks, but between T0-T1, when her son started to attend school, she experienced a period that she used more frequently and also in the morning. In retrospect, she believed during that time she was addicted to cannabis, and she had decided to change her use and to (successfully) retake control over it.

**Discussion**

In this qualitative study we explored the role of study and work in cannabis use among a group of young adult initially frequent cannabis users. We were particularly interested in analysing how study and work, and more specifically events related to these domains, contributed to transitions in cannabis use and dependence. We interviewed 47 young adults in-depth twice retrospectively covering a period of three years. All interviewees were frequent cannabis users at the start of the study (T0). During the follow-up period, there were wide variations and strong dynamics in their patterns of cannabis use, the presence of cannabis dependence, and their occupational situation. Overall, there was a declining tendency in frequency and quantity of cannabis use, including a few interviewees who had quit using cannabis altogether at the second in-depth interview. Various trajectories concerning cannabis dependence appeared. One quarter of the sample remained persistent non-dependent during the study. Some participants were persistent dependent, and others switched from a dependent to non-dependent status and vice versa, yet, at the end of the study more participants were non-dependent than at baseline (34 versus 23 of all 47 interviewees).

Almost two-thirds of the interviewees were students (often with a job on the side) at baseline and remained student during the total study period. Most other participants were in paid employment, and in the course of our study some students became employed as well, indicating that long-term frequent cannabis use does not necessarily restrain individuals in their professional life (cf. Hathaway, 1997; Osborne & Fogel, 2008). Most interviewees considered cannabis use as inappropriate before or during hours of study or work (cf. Frank, Christensen, & Dahl, 2013).

As expected in this age group (mean age 21 years), life events related to study or work were quite common, nearly all participants experienced at least one such an event. Overall, participants evaluated slightly more events as positive...
than negative. Similar events could be valued differently, and it was evident that agency did matter. In line with Rönkä et al. (2003), events were likely to be experienced positively when personal choice was felt to be present, e.g. when students decided themselves to discontinue a study rather than being forced to stop, or when individuals choose to start a new job rather than being fired. Our study shows that events in the context of study or work have the potential to, but not necessarily do, influence cannabis use. It should be noted that events that did have an impact on cannabis use often were gradual rather than abrupt, and often cannabis use changed gradually. The feeling of being in control, i.e. agency, in the case of occupational events also appeared relevant for cannabis use. Many events did not lead to changes in cannabis use, but negatively experienced events were mainly associated with stable (43%) or more (38%) cannabis use, whereas positively experienced events were mainly associated stable (72%) or less (18%) cannabis use. Our findings further suggested that increases or decreases in cannabis use related to occupational events are at least partly explained by changes in the amount of leisure time. For example, participants tended to report more use after becoming unemployed, while those who started a new job reported less cannabis use. Changes in cannabis use were also explained by job and study related stress and how interviewees managed stress. Some reported less use, because using while stressed would enhance negative emotions, or simply because of too little time left to use. Conversely, others reported more use in stressful periods, because cannabis helped them to relax, or was a reward at the end of a day of study or work.

We also found indications for reverse causation, i.e. changes in cannabis use can lead to changes in study or work. Several interviewees, because of events such as study delays, or (expected) stressful times, gradually managed to rigorously cut back or even quit their cannabis use, which eventually was conducive to their occupational performance. Overall, interviewees, who considered their study or work as being rather important, were more committed and motivated and were more willing to rule out any possible influence of their cannabis use on their occupational functioning.

Inspections on occupational events in relation to cannabis dependence (trajectories) revealed that in response to events, participants who were non-dependent at T2 mostly had not changed their use, or equally often used less or more cannabis. In contrast, interviewees who were dependent at T2 were more likely to use more rather than less in response to (negative) occupational events. Besides, interesting patterns emerged concerning occupational status (study, work, or neither). Among participants who remained student during our study, the overall tendency over time was away from cannabis dependence. The students who switched to non-dependence found their study, as it progressed and became more demanding, hard to
combine with frequent cannabis use and decided for more control, through being more selective in timing and frequency of use. All students who became employed during our study were non-dependent at T2. Besides, none of the students who entered the workforce were dependent at T2, although the transition was not necessarily induced by study or work events. For other participants, including those who remained employed, no clear patterns in trajectories could be observed. Alternatively, agency, more specifically their ability to regulate their cannabis use, appeared to be related to (transitions in) their dependence status.

Taken together, our study supports a reciprocal relationship between occupational life (events) and frequent cannabis use and dependence. On the one hand cannabis use and dependence impact occupational life either negatively, in terms of worsened occupational functioning, or positively, e.g. when users deliberately cut back on or stop using cannabis to improve their professional performance. On the other hand our findings support Laub and Sampson’s (2003) line of reasoning that employment and education impact cannabis use and (indirectly) dependence by limiting leisure time and facilitating structure resulting in attenuated cannabis use. However, it could be argued, and as indicated by our findings, that the available leisure time is influenced by several factors, such as the way participants give meaning to their life and study or job, including motivation, priorities and agency. For example, some interviewees prioritized study over cannabis use and thereby had less leisure time, while others prioritized cannabis use over study, thus had more leisure time. This might require a certain level of agency, i.e. feelings of being in control or believing in one’s own capabilities. In this perspective, the restricting impact of leisure time on cannabis use might be ascribed to the amount of leisure time one has as well as to the amount of leisure time one creates to use cannabis. As our findings show the relationship works both ways, this provides a nuance for the debate on the ‘amotivational syndrome’. Our study also supports previous research stating that occupational stress can bring about an increase in drug use (Reed et al., 2006), yet, might depend on the person (characteristics) experiencing it. For some participants cannabis use was a way of managing everyday demands (see also Hathaway, 1997; Osborne & Fogel, 2008) or coping with psychiatric symptoms. Especially for AD(H)D participants, cannabis use may reduce symptoms, attenuate sleep problems, and improve social functioning (self-medication) (Gudjonsson, Sigurdsson, Sigfusdottir, & Young, 2012). Regarding the relationship between stress, depression, and cannabis use, this self-medication hypothesis – and its potential contra productive effect – is somewhat supported by our quantitative findings that coping motives (although not specifically for depression) were one of the few cannabis related differences between dependent and non-dependent frequent users.
Occupational life and cannabis trajectories

(van der Pol et al., 2013), a predictor of cannabis dependence onset (van der Pol, Liebregts, de Graaf, Korf et al., 2013) and a predictor of dependence persistence (van der Pol et al., 2015).

Limitations
Our findings add to the growing insight into the relationship between occupational life and cannabis use of young adult cannabis users. Nonetheless several factors might limit the results of this study. An enriched sample was selected, and therefore we cannot guarantee representativeness. However, this does not necessarily mean that the sample is highly biased. Our sample includes many students, but being a student is rather common for young adults in the Netherlands. Cannabis use and occupational status in our study were quite dynamic, but to some extent this was affected by the study design. We deliberately included dynamic dependence trajectories between T0 and T1 for in-depth interviews. More generally, our sample of young adults is likely to be dynamic or even volatile in different aspects, including education and employment. From the life course theory perspective, a decline in cannabis use during young adulthood was to be expected with ageing.

Moreover, we investigated the process of cannabis use in the periods between interviews (T0-T1-T2), whereas cannabis dependence was dichotomously captured in diagnoses of dependence versus non-dependence, based on the presence of symptoms within a certain period. Not only could much variation underlie these diagnoses, since they refer to the time between two interviews, also the ‘effect’ of an event related to study or work on cannabis dependence might not have been revealed, and only become apparent afterward, in a next interview. Likewise, participants who had stopped using were categorized as non-dependent, while they were actually non-users.

Furthermore, it should be noted that some results presented here may not be universally replicable because they are related to the country where the study is conducted. Dutch policy officially tolerates possession and sale of small amounts of cannabis, and this may limit extrapolation of our results to countries with formal penalties. Yet, we intended to explore in-depth the role of study and work in cannabis use and dependence rather than to portray a representation of all cannabis users. Although research suggests cannabis laws have little impact on cannabis use patterns of regular users (e.g. Fergusson, Swain-Campbell, & Horwood, 2003; Korf, 2002; Reinarman et al., 2004), their experiences of certain life events, feelings of personal choice and control, and therefore the outcomes of life events might be indirectly affected by cannabis policy. Hence, a comparable study in another country might therefore find different results.
Finally, as mentioned before, our analyses are based on the narratives of the interviewees, and they largely create their own reconstructions of their cannabis careers and lives. Consequently, their self-perception and self-reflection formed the foundation of our analyses and interpretations. It should be noted that when interpreting the results, all data were based on self-report. We mainly looked into the subjective, not objectified, meanings of (occupational) events. Although subjective, participants’ evaluation of events often corresponded with how one would categorize them objectively (from an outsider’s perspective). Also the use of context-based timelines, including data participants (quantitatively) reported intermediately, positively contributed to the recall of their lives and cannabis use. More importantly, our approach gave novel insights in the perceptions, experiences and attributed meanings of participants, which is reflected in the emerging importance of agency in the narratives. For example, although many interviewees stated that they had to learn by their own experience how cannabis use can impact job or study performance, most prioritized their obligations, out of personal motivations or an overall strong work ethic.

How can we explain that occupational events left cannabis use largely unchanged? An explanation could be that for young adults, events such as a new study or a job switch are quite normal and part of a normal career. In fact, sometimes these events were not changing participants’ daily lives. Besides, cannabis use appeared to be primarily a leisure activity. These findings relate to the normalisation thesis, which suggests that in the past decades, for many users cannabis use has become a normal part of their life, which includes clear choices about whether, where and when (not) to use (Measham & Shiner, 2009; Parker, 2005). Cannabis use assimilates quite well with studying and/or being employed, but rules and norms are applied: users do not use cannabis just anytime and anywhere. Cannabis is preferably not used with colleagues and is reserved for leisure time. In this study we focused on the professional life domain, thereby somewhat artificially taking this domain out of its wider context. Life events in other domains, for example social relationships with relatives, partners, and friends, might be equally or even more important.

Life course theory appeared a useful framework to explore how and why education and employment are related to cannabis use and dependence over time. Our study showed that life events in the realm of education and employment were rather common in young adults’ lives and can have a strong impact on their cannabis use. Changes in cannabis use are sometimes temporary, but turning points in cannabis use careers can evolve from events in education and employment, as became most clear for the interviewees who fully quit using cannabis. To conclude, and similar to desistance from
crime, cessation of cannabis use often is a gradual process, in which agency plays a major role. Besides, regarding the occupational life of young adult cannabis users, leisure time is a (important) factor underlying changes in frequent cannabis use.
5

THE ROLE OF LEISURE AND DELINQUENCY IN FREQUENT CANNABIS USE AND DEPENDENCE TRAJECTORIES AMONG YOUNG ADULTS

Abstract
The link between leisure and cannabis use has been widely studied, but less so for young adults, and rarely with a focus on frequent cannabis use. Also, little is known about how changes in leisure develop over time and how they are related to transitions in cannabis use and dependence. As part of a 3-year longitudinal project, in a qualitative study 47 frequent male and female young adult cannabis users with (n = 23) and without (n = 24) dependence at baseline were interviewed in-depth after 1.5 and 3 years. Frequent cannabis users (at baseline ≥3 days per week in the past 12 months) are involved in similar leisure activities as the general young adult population and live rather conventional lives, generally away from a delinquent subculture. They mostly regulate their cannabis use to leisure time, to enhance other leisure activities, including socialising and video gaming. While they often give precedence to responsibilities (e.g. work and study), dependent and non-dependent users differed in whether they actively adapted their leisure activities to their cannabis use, or their cannabis use to their leisure time. Both types of and time spent on leisure activities were associated with transitions in use and dependence. While our findings generally support the normalisation thesis, it is questionable whether frequent but non-problematic cannabis use is socially accepted in wider society. This study also questions the diagnostic dependence vs. non-dependence dichotomy, and adds finer distinctions to the concept of cannabis dependence. Implications for prevention and treatment include facilitating structured spending of leisure time (e.g. sports), and targeting frequent users who spent much leisure time video gaming at home.

Keywords: Cannabis trajectories; Cannabis dependence; Qualitative methods; Longitudinal; Leisure; Normalisation
Introduction

It has been argued that cannabis has become normalised, referring to the process of social and cultural accommodation of recreational drug use as becoming part of everyday life for young people, for both users and non-users (Parker et al., 1998; Parker, 2005). Normalisation has been defined by six indicators: higher access and availability; increased drug trying rates; increased regular use rates; a degree of cultural accommodation among adolescents; trying and use extending to the adult population; and more liberal policy shifts (Parker, 2005). Basically, these indicators can be reduced to two dimensions: (1) growth in drug demand and supply, and (2) increasing levels of social and cultural acceptability. In contrast to normalisation, a subcultural perspective focuses on social formations, where drug users belong to a certain social group not bound to conventional or mainstream society. From a subcultural perspective, cannabis use could be understood as part of political opposition or as signifier of rejecting mainstream values (cf. Pedersen, 2009; Sandberg, 2013). Alternatively, and in line with the normalisation perspective, Duff and Erickson (2014) argue that cannabis use, since it has become an accepted feature of mainstream adolescents and young adults, should be assessed in terms of lifestyle and leisure rather than subcultural connections.

Researchers from several countries found support for the normalisation thesis (Duff, 2003; Duff, 2005; Parker, Williams, & Aldridge, 2002), showing that the choice to use cannabis is a rational consideration of costs and benefits and users do not belong to a deviant subculture; they are bound to mainstream society, and their lifestyles are rather conventional (Duff et al., 2012; Hathaway, 1997; Pearson, 2001; Shukla, 2006). Others criticised the normalisation thesis for simplifying youth’ choices about drug use (Shiner & Newburn, 1997) and underemphasising the role of the (wider) social context of drug use attitudes and choices (Measham & Shiner, 2009; Pennay & Moore, 2010). Hathaway, Comeau, and Erickson (2011) showed that, notwithstanding indicators of normalisation, Canadian adult users had internalised stigma and experienced a mainstream perspective about cannabis as deviant.

The normalisation thesis is also criticised for being too broad and relying on a too simplistic distinction between recreational and problematic drug use (Shildrick, 2002). Moreover, scholars recently called for attention to social and structural contexts of cannabis use (Duff et al., 2012; Measham & Shiner, 2009; Pennay & Moore, 2010). A recent follow-up of the sample that had been the basis for the original normalisation thesis (Parker et al., 1998) provided some revision (Aldridge et al., 2011). The follow-up study showed that as participants aged, they continued using drugs, yet through considering costs and benefits fitting their use around their (new) responsibilities,
including jobs and children. The authors concluded that normalisation continued, yet acknowledged some critics, e.g. the meaning attributed to drug experiences and the role of structural factors in rational choice. The lives of these young adults were more in common with moderate alcohol use than with dependent drug use. Many studies on normalisation have focused on recreational party drug use, and far less on frequent cannabis use (Järvinen & Ravn, 2014). The debate would thus benefit from further examinations of the normalisation of cannabis. This qualitative longitudinal study in frequent cannabis users focuses on two aspects: the extent to which cannabis use is regulated to leisure time, and to what extent frequent cannabis users live conventional lives, away from delinquent or otherwise deviant subcultures.

Leisure and cannabis use
Classic studies demonstrated cannabis users are not a homogeneous group; most use recreationally and have various motivations to use (Becker, 1963; Goode, 1970). They choose when and where to use (Erickson, 1989; Hathaway, 2003; Zimmerman & Weider, 1977): mostly in private venues, with peers or partners and in suitable situations and moods, applying informal rules for regulation (Reinarman & Cohen, 2007). Rather than the leisure activity itself, the social setting (i.e. persons sharing leisure time) is associated with changes in cannabis use (Schaub, Gmel, Annaheim, Mueller, & Schwappach, 2010). Adolescents who regularly use cannabis have more selective lifestyles than occasional users, spending more time at a friends’ place, concerts or (Miller & Plant, 2002; Peretti-Watel & Lorente, 2004). Although an association between going out and occasional rather than regular cannabis has been reported (Peretti-Watel & Lorente, 2004), a partying lifestyle has commonly been linked to increased adolescent cannabis use (Ciairano, Bosma, Miceli, & Settanni, 2008; Thorlindsson & Bernburg, 2006). Frequent users holidaying in Ibiza were more likely to increase than diminish their frequency of use (Bellis, Hale, Bennett, Chaudry, & Kilfoyle, 2000; Briggs & Turner, 2012). In contrast, sports participation relates to less cannabis use (Lisha & Sussman, 2010; Terry-McElrath, O’Malley, & Johnston, 2011; Thorlindsson & Bernburg, 2006), although not in all studies (Peretti-Watel & Lorente, 2004).

Only few recent qualitative studies devoted attention to why and when adults frequently use cannabis, particularly to changes in use. Hathaway (2004) showed that long-term frequent cannabis users predominantly use to relax, feel good and enjoy music or television. Increased use was often associated with more personal freedom, and decreased use with more responsibilities. Users generally considered positive aspects to outweigh negative aspects of their use (Hathaway, 2003). This was corroborated in a study among regular cannabis-using adults (Osborne & Fogel, 2008). Respondents used cannabis
while engaged in various leisure activities (e.g. socialising, watching movies, doing sports, and playing computer games); they did not report dependence problems or compulsive use, and rational decisions to use were generally accompanied by moderate use. Cannabis was used to enhance “leisure activities and manage the challenges and demands of living in contemporary modern society” (Osborne & Fogel, 2008, p. 562). Similarly, other studies concluded that cannabis is not a central aspect in the lifestyle of adult frequent users, and users are generally not part of a ‘drug subculture’ (Pearson, 2001; Shukla, 2006). Instead, cannabis use was largely a leisure time activity to disengage from daily stress, and is generally subordinate to other roles and responsibilities. Moreover, the majority is not involved in criminal behaviour apart from acquiring and using cannabis. Previous studies reporting a link between regular cannabis use and criminal offences and convictions (Bennett, Holloway, & Farrington, 2008; Fergusson, Horwood, & Swain-Campbell, 2002) are hampered by the illegality of the drug, as it is suggested that most offences are related to possession and use (Fergusson et al., 2003; Pedersen & Skardhamar, 2010). The more lenient Dutch policy allows deeper investigation of this association, as use is not liable to prosecution and the possession and sale of cannabis in so-called coffee shops for personal use are tolerated (Wouters et al., 2010).

This study
The link between leisure and young adult cannabis use has received some attention, and although changes in cannabis use have been found to be associated with to changes in life circumstances (Hathaway, 2004; Shukla, 2006), it is largely unknown how changes in leisure develop over time and how they are related to transitions in cannabis dependence, as most studies are retrospective, have been limited to adolescence, focused on use and not dependence, or generated quantitative data. This study aims to contribute to the existing literature on normalisation and the relationship between frequent cannabis use, dependence and leisure over time. More specifically, this study will gain insights in the extent to which frequent cannabis use is socially accepted in a country known for its liberal cannabis policy (i.e. the Netherlands), and is stripped of subcultural and deviant associations. The existence of coffee shops makes cannabis readily available. This offers a great opportunity to assess whether easy supply (being part of the first dimension of normalisation) also implies that cannabis use (in our case: frequent cannabis use) is socially and culturally accepted in wider society (the second dimension of normalisation), comparable to alcohol use for example. We prospectively studied the course of cannabis use and dependence in 47 young adult frequent users over three years using qualitative in-depth interviews. First, we explore how frequent users construct their leisure time
and how changes in cannabis use interact with changes in leisure, and vice versa. We also assess the centrality of cannabis in their lives, and the absence of (subcultural) delinquency, which would be expected from the nominalisation thesis. Dutch coffee shops allow users to easily acquire cannabis without any specific knowledge or subcultural affiliations. However, the cultivation of cannabis has neither de jure nor de facto been legalised in the Netherlands (albeit that growing up to five marihuana plants for personal use is tolerated). Moreover, success- fully growing cannabis, either as a smallscale activity for own use or for large-scale purposes, requires specific knowledge and expertise that is gathered and shared through connections with other growers (Decorte, Potter, & Bouchard, 2011).

Second, we distinguish dependent from non-dependent frequent cannabis users and investigate to what extent leisure activities and the importance of cannabis in their lives differ, and to what extent their leisure pursuit explains cannabis dependence transitions. Obviously, dependent users, by definition (see: Method), would be expected to neglect social and work-related activities in favour of cannabis use and experience reduced control over their use. The normalisation thesis understands cannabis use among youth as a rational choice, yet this only applies to recreational use (Aldridge et al., 2011). Problematic use is considered as non-recreational use, interfering with everyday functioning (cf. Kronbæk & Asmussen, 2013). From this rationale, while a cost–benefit consideration would apply to frequent non-dependent users, different considerations would be expected in the case of frequent dependent users. However, cannabis dependence is not a homogeneous condition (McBride, Teesson, Slade, & Baillie, 2010). Therefore, it is important to examine whether and how frequent dependent users differ in leisure from frequent but non-dependent users and trajectories. Furthermore, understanding the relationship between leisure and cannabis dependence trajectories helps target prevention and treatment specifically at frequent users at high risk of dependence, as most frequent users limit cannabis use to their leisure time (Liebregts et al., 2013b).

**Method**

In a qualitative study the dynamics underlying changes in cannabis use and transitions in cannabis dependence were investigated. Participants were selected from a cohort study with a quantitative approach including 600 frequent cannabis users (≥3 days cannabis use per week in the past 12 months) with follow-up assessments at 1.5 and 3 (see for details Liebregts et al., 2011; van der Pol et al., 2011). Briefly, participants were recruited in coffee shops and through respondent-driven sampling and interviewed three times: T0, September 2008–April 2009; T1, March–November 2010; T2, September 2011–March 2012. Additionally, participants were contacted
every 5 months via e-mail or telephone (intermediate updates), for more
detailed assessment of the dynamics of their cannabis use. In all interviews
and updates, frequency of cannabis use was assessed (days of use in the past
month), as well as possible changes in several life domains. At all interviews,
DSM-IV diagnoses of cannabis dependence were assessed with the Composite
International Diagnostic Interview (CIDI 3.0). Dependence according to the
DSM-IV is a maladaptive pattern of cannabis use, leading to clinically
significant impairment or distress, as manifested by three (or more) of the
following seven criteria occurring within a certain period: tolerance;
withdrawal syndrome or using cannabis to relieve or avoid withdrawal
symptoms; using larger amounts or for a longer period than intended;
persistent desire or unsuccessful efforts to cut down or control cannabis use;
spending much time obtaining cannabis, using, or recovering from the effects;
giving up important social, occupational, or recreational activities in favour of
cannabis; and continued using despite a physical or psychological problem
caused or exacerbated by cannabis use (APA, 1994). In this study, this period
referred to the last 12 months (T0) or within a 12-month period since the
previous interview (T1 and T2). Trajectory groups were formed, and based on
the non-dependent (N) or dependent (D) status of the interviewee at a given
wave. For example, a person with a CIDI dependence diagnosis at T0 and T1,
but not at T2 would be in the DDN group. At T1, four trajectories in cannabis
dependence were distinguished (NN, DD, DN, and ND). At T2, the number of
possible trajectories extended to eight (NNN, NND, NDN, NDD, DNN, DND,
DDN and DDD).

From each of the four trajectories at T1, 12 participants were randomly
selected for the qualitative study, stratified by gender (8 males, 4 females),
totalling 48 interviewees. At T2, these interviewees represented seven of the
possible eight trajectories: all but NND (Table 5.1). The first qualitative
interview (I1) took place immediately after T1, between December 2010 and
April 2011, the second qualitative interview (I2) directly after T2, between
March and April 2012. One participant could not be traced at I2 and was
excluded from the analysis, resulting in a final sample of 47 participants. A
medical ethics committee approved the study.

To allow users to freely express themselves through their narratives, in-depth
interviews were conducted with a topic list including questions about
participants’ cannabis use career, i.e. changes in patterns of cannabis use,
motives for changes, and the occurrence of life events in various domains.
Using detailed personal timelines interviewees, were asked to recall changes
in life domains and in cannabis use patterns (see Liebregts et al., 2013b). One
timeline referred to their cannabis use (using days per month), the other to
life domains (including leisure activities). Data on cannabis use and leisure
provided by the quantitative interviews and intermediate updates were used
to prepare the timelines. During the qualitative interviews these timelines were used as guidelines and comprehensively elaborated. Both in-depth interviews (I1 and I2) focused on the period between the fully structured interviews (T0–T1 and T1–T2, respectively). The interviews lasted between 1.5 and 3.5 h and were located mostly at participants’ home and sometimes at the research institute.

In-depth interviews were recorded (with participant’s consent), transcribed verbatim and imported into QSR Nvivo. All transcripts were analysed with a combination of deductive strategies, using codes and categories based on the literature (a priori coding, Miles & Huberman, 1994), and inductive strategies, allowing new codes and categories to evolve from the data when new patterns emerged (pattern coding, Miles & Huberman, 1994). Interview transcripts were read and reread to identify and link evolving codes, categories and themes. To guarantee anonymity fictitious names are used.

### TABLE 5.1
**Cannabis dependence trajectories T0-T1-T2 and characteristics**

<table>
<thead>
<tr>
<th>Cannabis dependence trajectory</th>
<th>NNN (n=12)</th>
<th>NDN (n=7)</th>
<th>NDD (n=4)</th>
<th>DNN (n=10)</th>
<th>DND (n=2)</th>
<th>DDN (n=5)</th>
<th>DDD (n=7)</th>
<th>Total/mean (n=47)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>16</td>
</tr>
<tr>
<td>Mean age T0</td>
<td>21.8</td>
<td>20.4</td>
<td>20.5</td>
<td>21.2</td>
<td>22.5</td>
<td>19.8</td>
<td>22.4</td>
<td><strong>21.3</strong></td>
</tr>
<tr>
<td>Mean cannabis career T0</td>
<td>7.4</td>
<td>6.1</td>
<td>6.2</td>
<td>7.8</td>
<td>8.5</td>
<td>6.4</td>
<td>7.4</td>
<td><strong>7.1</strong></td>
</tr>
<tr>
<td>(Near-) daily use T0</td>
<td>6</td>
<td>4</td>
<td>3</td>
<td>7</td>
<td>1</td>
<td>3</td>
<td>5</td>
<td><strong>29</strong></td>
</tr>
<tr>
<td>(Near-) daily use T2</td>
<td>3</td>
<td>5</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td><strong>20</strong></td>
</tr>
</tbody>
</table>

*Italics refer to row means*

**Participants**

At baseline (T0), age ranged 18–30 years (mean = 21.3), length of cannabis use careers ranged 1–15 years (mean = 7.1), 29 participants were (near-) daily users (5–7 days per week) and the other 18 participants used 3–4 days per week (Table 5.1). All respondents inhaled their cannabis mixed with tobacco in a ‘joint’.

Over time there was an overall decline in cannabis use, including 3 interviewees who had not used cannabis for at least 1 year and said they had quit permanently, and 3 others who considered themselves as quitters and had been using cannabis only a few times in the past year. At T0, 24 participants were last-year cannabis dependent and 23 were non-dependent, whereas at T2 only 13 were dependent and 34 were non-dependent.
Results

Cannabis use: when, where and why

The amount of leisure time varied, but most interviewees had professional obligations (work/study) and cannabis use was mainly a leisure activity (Liebregts et al., 2013b). Most interviewees thus used cannabis only at the end of the day, when daily tasks were finished. Some said not to use late at night, because cannabis would bother their night’s rest, whereas others believed they slept better ‘stoned’ or ‘high’.

All participants spoke about inappropriate settings for use and emphasised not to use cannabis before or during study/work or at formal occasions, e.g. job interviews or funerals. Most participants did not use in the company of non-users, and preferred not to be stoned in public, afraid to be judged by either strangers or acquaintances. Yet being in a park with using peers in summer was generally seen as a suitable and pleasant setting to use cannabis. Cannabis was often used at home settings and with others. About half of the participants (25/47) considered cannabis use as primarily a social activity, sharing a joint being conditional to use cannabis. Others had only few using peers and thus used mostly alone, or rather smoked their own joint with their favoured type and potency of cannabis. Several participants reported to mainly enjoy using cannabis for inspiration and deeper consideration of topics.

Being stoned you have good conversations: you have the peace to take in matters very deeply and elaborate on things. Consequently, you can see the key points of problems; I noticed marijuana can really contribute to that. And that creates very deep friendships, something I find important. All my friends use cannabis. (Levi, I1, NDN)

Unlike interviewees who used cannabis (also) to get engrossed in leisure activities, others emphasised its relaxing effects. Cannabis use allowed them to let go, take a break from daily stress and take a moment for oneself, not in the least because of the activities they preferred when smoking cannabis. For example Steven, who quit in the course of our study, talking about when he still used cannabis.

Using cannabis for me was leisure, therefore relaxation. Time for myself. The relaxation was created by the effect of cannabis, but also by my activities when I was using, like reading, gaming, relaxing. I didn’t do much when I smoked a joint, nothing active, so for me it was mainly the pleasant idleness. (Steven, I1, DNN)

Our findings reconfirm the importance of setting for cannabis use. Generally, participants consciously choose when and where to use cannabis (cf.
Reinarman & Cohen, 2007); preferably at home settings, at the end of the day when their daily obligations were fulfilled. The two motives, to use cannabis to be more open to experiences or to relax did not differentiate dependence trajectories. However, dependent interviewees, especially DDD, more often used cannabis alone than non-dependent interviewees, for whom it was more often a social activity (T1, 12/23 vs. 6/22; T2, 8/13 vs. 11/31 excluding non-users).

*Homebodies and gadabouts*
Most interviewees were engaged in various leisure activities, yet overall two types were distinguishable: homebodies and gadabouts, with 5 participants changing type during the study (Table 5.2). Homebodies (22/47 all interviews) spent their leisure time mostly at home settings, either at their own place (alone) or at/with friends (social), playing videogames, surfing the Internet, watching television, listening to music and reading books. Gadabouts (20/47 all interviews) were quite active and often outdoors, met their friends several times a week, were creatively occupied (painting, photographing and playing music) and/or participated in sports. Particularly, they spent much of their free time in nightlife settings. While the number of (near-) daily users in homebodies and gadabouts slightly differed at T1 (13/22 vs. 9/20), disparity was bigger at T2 (12/22 vs. 5/20).

Often, narratives of homebodies revealed a more prominent role of cannabis use in leisure, planning time at home to use and relax. Contrasting to gadabouts planning time to spend outdoors, homebodies were more inclined to select leisure activities suitable for cannabis use.

> Cannabis use is totally in my system, it’s pretty important. I use after work. Sometimes I have a period when friends call to meet after work, and I’m like: no, first I’m going home, smoke a joint. (Jim, I1, DDN)

A substantial part of participants (18/47), especially home-bodies, could be characterised as ‘gamers’, i.e. they reported to often (≥weekly, sometimes daily) play computer or videogames (Table 5.2). Using cannabis while playing games enhanced the experience or moderated the emotional arousal.

> Gaming and using cannabis go together, pretty well actually. I like to be stoned when gaming: you’re in a bubble, get totally absorbed by the game, and your concentration is enhanced. (Niels, I2, NNN)

For me, gaming and cannabis use go hand in hand, in fact, I smoke the adrenaline of gaming away. Sometimes the adrenaline of gaming can be really frustrating; I don’t want to feel it. At times I gamed 42 hours per week, 42 hours...! Include a
joint and you forget time. Gaming makes you forget the rest of the world, and using cannabis makes you forget that you forget the rest of the world. (Lars, I1, DDD)

Generally, interviewees’ main leisure activities remained unchanged during the study. Although some took up sports, went out more frequently for some time, or switched from a homebody to a gadabout, changes in leisure were often related to availability of leisure time due to study or work changes.

Nonetheless, about a quarter (12/47) reported in total 17 life events in the realm of leisure that took place during our study and had been important to them. These events could increase or reduce participants’ cannabis use (i.e. frequency, joints per occasion, amount of cannabis per joint), or had no impact on use. Recreational projects (i.e. engaging in a play, band; organising a festival) were reported as positive experiences, and the impact on cannabis use depended on whether time was spent with users or non-users. Some interviewees found it difficult when the project ended and they fell into a sort of limbo. For two DDD interviewees this led to more cannabis use; they found it more difficult to handle unpleasant situations, and to resume their life after a period of intense activities. Other events are examined per topic below.

Leisure events occurred in all trajectories except NDD and were more common in persistent (dependent and non-dependent) trajectories. Gadabouts were mainly found in trajectories that were non-dependent for a longer time (NNN, DNN), while interviewees who spent their leisure time mainly at home were often dependent two or all three measurements (DDD, DND, DDN, NDD). Four of the five homebodies who turned gadabouts, in the same period moved from dependence to non-dependence. Gamers were present in all trajectories, but homebodies spending much time alone gaming were more prevalent among dependent than non-dependent users at T2 (6/13 vs. 6/34). Gaming homebodies were particularly found in the DDD and DDN trajectories.
# Table 5.2

Participants and their main leisure activities (n = 47)

<table>
<thead>
<tr>
<th>Participant</th>
<th>Trajectory</th>
<th>Leisure Type</th>
<th>Gamer</th>
<th>Going out</th>
<th>Party Phase</th>
<th>Sports</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>NNN</td>
<td>Alone</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Active -&gt; No</td>
</tr>
<tr>
<td>5</td>
<td>NNN</td>
<td>Alone</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>1</td>
<td>NNN</td>
<td>Alone</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>6</td>
<td>NNN</td>
<td>Alone</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Occasional -&gt; No</td>
</tr>
<tr>
<td>12</td>
<td>NNN</td>
<td>Social</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>7</td>
<td>NNN</td>
<td>Gadabout</td>
<td>No</td>
<td>Both</td>
<td>Yes -&gt; No</td>
<td>Active</td>
</tr>
<tr>
<td>8</td>
<td>NNN</td>
<td>Gadabout</td>
<td>No</td>
<td>Pub</td>
<td>No</td>
<td>Active</td>
</tr>
<tr>
<td>10</td>
<td>NNN</td>
<td>Gadabout</td>
<td>No</td>
<td>Pub</td>
<td>No</td>
<td>Active</td>
</tr>
<tr>
<td>11</td>
<td>NNN</td>
<td>Gadabout</td>
<td>No</td>
<td>Pub</td>
<td>No -&gt; Yes</td>
<td>No</td>
</tr>
<tr>
<td>4</td>
<td>NNN</td>
<td>Gadabout</td>
<td>No -&gt;</td>
<td>Both</td>
<td>Yes -&gt; No</td>
<td>No -&gt; Occasional</td>
</tr>
<tr>
<td>2</td>
<td>NNN</td>
<td>Gadabout</td>
<td>Yes</td>
<td>Pub</td>
<td>No</td>
<td>Active</td>
</tr>
<tr>
<td>9</td>
<td>NNN</td>
<td>Gadabout</td>
<td>Yes -&gt;</td>
<td>Pub</td>
<td>No</td>
<td>No</td>
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**Legend:**
- **Unless mentioned otherwise activity did not change,** e.g. gadabout = T0-T2; gadabout -> alone = gadabout T0-T1, homebody alone T1-T2.
- **Leisure type:** alone = spending much leisure time at home alone; social = spending much leisure time at home with friends; gadabout = spending much leisure time outdoors, particularly in nightlife settings.
- **Gamer:** yes = ≥ weekly playing computer or video games.
- **Going out:** pub = ≥ weekly going to pubs; club = ≥weekly going to clubs; both = ≥weekly going to pubs and/or clubs.
- **Party phase:** a period of 1-12 months frequently visiting parties, having little sleep, and using much more alcohol and drugs.
- **Sports:** occasional = < weekly practicing sports; active = ≥ 1x a week practicing sports.

**Going out**

Around three quarters of the interviewees (34/47) were going out in clubs and/or pubs at least once a week at T1, and at T2 most still did. Some went predominantly to pubs, others to clubs, and yet others visited pubs and clubs alternately (Table 5.2). Comparing dependence trajectories, NDN, DND and DNN participants stand out going out more often: all but one of the participants in these trajectories went out at least weekly during the study (Table 5.2).

The majority believed that cannabis and going out are incompatible, as the effects of cannabis are unsuitable for nightlife.

> When going out we don’t use cannabis. I don’t want to be sluggish in a club, I want to be active. Rather drunk than stoned, but not both, because then you’ll throw up. So, never when we go out. But we do smoke afterwards, when we’re at someone’s place at 4–5 AM. (Robert, I1, DDN)

Many participants (35/47) drank alcohol at least weekly and most thought alcohol was more appropriate than cannabis in nightlife. Interviewees reported that when they had used hard drugs, they particularly felt like using cannabis, e.g. to extend the diminishing high or to relax. However, using hard drugs was much less common than alcohol. Although the majority (36/47) had used ecstasy, cocaine and/or amphetamines at least once during our study, only a few did so monthly or more often.

When talking about life events, about a quarter (10/47) reported experiencing a “party phase” during our study. These phases were quite different from their ‘normal’ life and lasted between 1 month and a year, and
characterised by frequenting parties, little sleep every weekend, and using much more alcohol and drugs. They all initially experienced such a phase as positive, but in retrospect three interviewees considered their phase as mainly negative, as Daphne explains.

It started to break me down, partying the whole weekend, a lot of drugs. Monday a zombie, Tuesday also wretched, by Wednesday I started to feel human again. By then it’s almost weekend, finally feeling fresh – and there we go again. It made me sick, also literally. Tired, pale, fainting easily and so on, because you didn’t eat and sleep enough. You don’t sleep for entire weekends, so you also smoke at night, one joint after the other. After a while you get used to that, so you keep that rhythm also during the week. (Daphne, I2, DDD)

For other participants, although they were aware that their lifestyle and substance use was not particularly good for their health, their party phase did not leave them with an unpleasant aftertaste – possibly because this episode did not last as long and/or they did not take as much hard drugs. They said that their phase passed more or less spontaneously or that the desire to party diminished because of a new partner or the start of the academic year. The impact of the party phase on cannabis use varied (1 decreased use, 3 stable use, and 6 increased use, motivated by more leisure time and/or more cannabis use after hard drug use). Nonetheless, most participants subsequently resumed their previous use levels. In sum, our findings are in accordance with past studies in adolescents: going out per se seems unrelated to frequency of cannabis use (Peretti-Watel & Lorente, 2004), but a partying lifestyle is related to (temporarily) more use (e.g. Ciairano et al., 2008). Notably, regardless of whether this episode went along with more, stable or less use, most participants experiencing a partying phase were thereafter non-dependent: six remained or became non-dependent (3 NNN, 1 NDN, 2 DNN), two shifted from dependent to non-dependent, but remitted to dependence again (DND), and two were persistent dependent (DDD).

Sports
Nearly all participants were physically active, particularly cycling for daily functional purposes. Close to one third (14/47) were active sportspersons (≥1× a week), most of them actively practiced sports during the whole study (T0–T2), some (5/14) only for a certain period (Table 5.2). This ranged from a weekly yoga course, to high-level water polo or (near-) daily fitness. Others practiced sports occasionally (<weekly), e.g. going to the gym, running and street soccer in summer (10/47 either whole or part of the study). For two
interviewees' sports played a central role in their life, spending much leisure time exercising. They had little difficulties combining active training with cannabis use, with a long history of doing so, but never using before sports.

I have always been able to combine cannabis use and water polo. It’s in your system, we’re so used to training 3–4 times a week that you’re able to combine it with cannabis use, you learn to manage it. We smoke a joint together afterwards. Not beforehand, I want to concentrate on sports. Stoned that’s less easy: if you want to be alert, don’t be stoned. (Robert, I1, DDN)

Whether or not they currently exercised, many interviewees believed that cannabis use and sports inversely were related, and often based on earlier experiences: if cannabis use increased, sports decreased and vice versa.

I practiced sports for a long time, which declined when my cannabis use increased. Perhaps that became my relaxation. I need an outlet for my energy, and sports give you a high as well. Using cannabis reduces your energy level, so there is less energy left to lose. By using cannabis the chances you’ll go to the gym drop, because you’re not going to the gym stoned. You’re like: whatever, or, I’ll go later, but probably you won’t. And you simply have less time for sports when you smoke first. (Tom, I1, NNN)

Tom’s explanations that active sports participation was related to a decrease in cannabis use and vice versa were voiced by others, and are consistent with past research (Lisha & Sussman, 2010; Terry-McElrath et al., 2011; Thorlindsson & Bernburg, 2006). Yet, our interviewees reported this pattern was often temporary. Some stated to purposively practice sports as a strategy to diminish cannabis use, and to replace the relaxation of cannabis with exercise. By spending leisure time on sports, less time was left for cannabis use. This confirms and extends Thorlindsson & Bernburg’s hypothesis (2006) hypothesis for adolescents to young adults. Active sportspersons were found in all trajectories, but more so among participants who at the last interview had remained or become non-dependent (11/34 vs. 3/13).

Holidays
All but three participants travelled abroad during our study. Whereas in the Netherlands cannabis can be easily obtained through coffee shops, this is not the case in other countries. When traveling abroad, some participants considered this in advance, but none reported to be restrained by it. Participants’ views and behaviour concerning cannabis use and holidays varied. The majority of those travelling to foreign countries between T0 and
T2 reported to have used cannabis there (35/44), although not necessarily every holiday. Most of them brought cannabis for personal consumption, yet only within Europe, and solely by car, bus or train. They perceived low risks of getting caught because of open borders and relatively casual custom control within the EU, and were not very worried about any possible consequences because they did not traffic large quantities.

When travelling in Europe by car, I usually take it with me, a little bit, few grams. So I can smoke now and then. I’m not afraid to get caught, no, because by car, open borders... Ok, there is a chance, but if so, you’ll be fined. You’re not going to jail, not in Europe. That fine won’t be nice, but worth the risk. By plane I’ll never take cannabis with me, no way, too risky. You have to pass so many control points, which is not the case by car. Schiphol Airport is guaranteed screenings, and again in that other country, so you have to get away with it twice. (Max, I2, DDN)

Some interviewees concealed their cannabis quite well, e.g. in a shampoo bottle. Others reported to put little effort in hiding and carried it in their bag or pocket; so they could say they accidentally left it there if customs would find it. Regarding air travel, all participants firmly stated not to take cannabis with them, because they considered it too risky. Alternatively to bringing cannabis along, participants reported to obtain cannabis at their holiday destination, which was perceived quite easy in various countries. While some had actively searched for cannabis, others had run into it when they met local people offering it to them. According to several interviewees, the Dutch are seen as cannabis experts, thus making it easier to acquire cannabis in foreign countries.

You go to a park or a street corner and observe the people hanging around. Last time in Spain, only once the guy I approached didn’t sell, but his friend did. And well, in such countries, you’re a tourist; they know you’re looking for cannabis when you’re hanging around in a park, doing nothing. It’s so easy. You chat a bit, say you’re from Amsterdam and they know enough. When I search for it somewhere, I’ll find it, in half an hour max. (Jonas, I2, DDD)

Other interviewees disclosed similar strategies. Most of them were careful where to use once they had obtained cannabis. Some were rather well informed about other countries’ drug laws, yet participants thought it was best to use at a ‘safe’ place, usually indoors or otherwise assured law enforcement was not nearby. Conversely, holidays in foreign countries were also considered a prime opportunity for not using cannabis for some time, even by interviewees who had used abroad during our study. Various reasons were mentioned: the
related risks are too high; unnecessary, as one is already relaxed or because of the different environment; cannabis would hinder holiday activities.
Another motivation was to prove oneself not to be dependent on cannabis, as several interviewees argued that one of the symptoms of not being addicted is being able to sometimes do without. Some participants reported that when they returned home from holidays, they tried to continue abstaining as long as possible. Others said that they already thought about using cannabis on their way home.
Going on a long journey was considered a leisure event. Of the three interviewees who went travelling for several months, one had stopped using before leaving, the other two stated that their trip had largely contributed to a sharp decline in use. Similar to some participants on holidays, they claimed that the change of environment and lower availability of cannabis than at home reduced the urge to use, which was continued at home.
Overall, in our study holidays abroad were associated with decreased use. Even when cannabis was acquired on site or brought along, this was always less than participants used at home. This contrasts with Bellis et al. (2000), however, they researched substance use at a party-destination (Ibiza, Spain), whereas we investigated holidays in general.
Not surprisingly, non-dependent interviewees reported to experience less difficulties abstaining from cannabis on holidays than dependent interviewees, and 8 of the 32 non-dependent and only 1 of the 12 dependent interviewees at T2 who went on a holiday had not used during foreign holidays. While all participants in NDN, DND and NDD trajectories used cannabis on foreign holidays, particularly participants in NNN and DNN trajectories did not or used less. All three interviewees who went on a long journey were thereafter non-dependent.

**Delinquency**
Do the frequent cannabis users in our study live a conventional life, free of involvement in criminal activities, as would be expected from the normalisation perspective? As stated before, past research on the association between cannabis use and crime has been troubled by the illegal status of cannabis. This might be less of a problem in our study, as Dutch drug policy tolerates possession and sale of cannabis in coffee shops for personal use, even though these formally are still illegal acts. Obviously, for our participants buying cannabis was common practice. Almost all of them bought their cannabis in coffee shops, and in line with the coffee shop policy never got arrested for it. Likewise, participants who (also) bought from other sources, e.g. cannabis growing acquaintances, were not arrested. Some interviewees said they sometimes drove a car after having smoked a joint, and many interviewees regularly cycled while being stoned, but also for this illegal
behaviour they had not been arrested. However, one interviewee was fined for smoking a joint in his parked car. Although cannabis cultivation is illegal in The Netherlands, the possession of up to 5 cannabis plants is generally condoned. During our study, nine interviewees (19%) were engaged in cannabis cultivation. One had been trimming cannabis plants as a non-declared job, and eight had grown their own cannabis. Seven of them stayed within the 5-plant limit, but the other one cultivated many more plants and had a steady flow of cannabis. Again, none of them were arrested.

About half of the participants (21/47; totalling 28 offences) reported having committed non-cannabis-related offences during our study, e.g. theft/shoplifting (8×), vandalism (4×), fights (3×) and small scale dealing hard drugs (5×). Offences were often occasional misdemeanours, e.g. stealing a Christmas tree, fight when going out or having drinks without paying. Concerning eight offences interviewees said they were alcohol-related, e.g. drunk-driving, public intoxication or vandalism. About half of the participants involved in non-cannabis-related offences (9/21) had been convicted, varying from a fine, or community service to three days imprisonment and probation. Three were more structurally engaged in more serious criminal activities, including credit card fraud, providing false alibis and assault. Finally, many had been in possession of hard drugs at some point during our study. To conclude: several participants violated the Dutch drug law, but they did not arrive in criminal statistics. Other offences occurred, varying from misdemeanour to more serious crime, and conviction was not unusual. The presence of cannabis-related and delinquent behaviours was not confined to certain dependence trajectories patterns as both types of criminal activities occurred in all trajectories.

The importance of cannabis use
A minority of the interviewees (7/47) sometimes had difficulties giving precedence to other things over cannabis. They indicated considering cannabis as something they needed and very important, planned their leisure time mainly around cannabis use, and would neglect other (leisure) activities in favour of using cannabis.

Cannabis is important to me, I can’t deny that. It has become a kind of love–hate relationship. There are the pleasant effects, being relaxed. However, the adverse effects that apparently do impact your life... You have to choose between those two, so sometimes I decide not to use. And sometimes I’m inclined to cancel an appointment. Because I’m at home, all stoned. (Daphne, I1, DDD)

Noteworthy, all these interviewees were homebodies, except one, who in the course of the study became more outgoing, and mostly spent time at home.
alone (6/7). They were dependent at T1, and 5 out of 7 also at T2 (including 4 DDD).
In contrast, a substantial proportion of the interviewees (20/47) reported having no problems to give precedence to other things over cannabis. These participants were often gadabouts, and predominantly in persistent non-dependent or shift from dependent to non-dependent trajectories (7 NNN, 8 DNN). They also stressed cannabis use was important, but subordinate to all other things in their life.

I would be lying to say cannabis isn’t important. Because I use and I have used it very often. I used to plan my cannabis use, but I don’t anymore: nowadays I finish everything I have to do first and then see if there is time to smoke weed. Why did that change? Well, you get older, get commitments. You just have to do things, and if you don’t, you lose your house, your job, your study and so on. You don’t have much choice. It’s also about your attitude; I automatically prioritize those things, not weed. (David, I1, NNN)

Several narratives revealed that changes in the role of cannabis in interviewees’ life and the prioritising of responsibilities often happened rather gradually, as David continues:

But that change takes time, it’s something you learn through trial and error. (David, I1, NNN)

Similarly, other interviewees (8/47) reported during the study a declining importance of cannabis as they aged and/or got more involved with their professional career or romantic relationships. These participants, either homebodies or gadabouts, were present in different dynamic trajectories, yet were all but one thereafter non-dependent.
Finally, there were participants (12/47) who were fairly in-between regarding centrality of cannabis use. They zigzagged between organising their leisure time around cannabis, and cannabis use around their leisure time, and also could switch between homebody and gadabout. Although their leisure time evolved largely around cannabis and they considered cannabis as important, they had fewer difficulties in giving precedence to social activities, study or work over cannabis. They were found in different trajectories, albeit relatively often (5/12) in the NNN group.

Discussion and conclusion
The majority of frequent cannabis users in our study live a ‘conventional life’, including professional obligations, a social life, going out and participating in sports. While participants’ lives were not without delinquency, these included
mainly minor delinquency. More important, delinquency was commonly not related to or induced by cannabis, and convictions were all except one not associated with cannabis use. These findings suggest support for the normalisation thesis. Moreover, while for many users cannabis played a rather large part in their life, this was often not an essential role. Even among frequent and dependent users, cannabis use was mostly considered subordinate to responsibilities and restricted to leisure time, including rational choices about whether, where and when (not) to use (cf. Hathaway, 2003; Kronbæk & Asmussen, 2013; Osborne & Fogel, 2008). With some exceptions, cannabis appears no fundamental part of lifestyle, as precedence is given to other things, and lives and priorities did not revolve around cannabis (cf. ‘maturing despite continued use’, Shukla, 2006; Pearson, 2001; Aldridge et al., 2011). Furthermore, our finding that the majority does not cultivate cannabis themselves or have to turn to other users for supply is another indicator that users are not members of a subculture, which would suggest normalisation. This however is also due to the existence of coffee shops in the Netherlands, making cannabis readily available.

On the other hand, our study shows that structural influences are at play, since for example life events in leisure could impact cannabis use as well as the persons involved in leisure activities, indicating Measham and Shiner’s concept of ‘situated choice’ (2009). Furthermore, the narratives point out that even in the Netherlands frequent users sometimes do experience stigma (cf. Hathaway et al., 2011), as for fear of being judged or labelled they carefully select settings for use: often at home and preferably not in company of non-users, or in public places. This might call into question to what extent frequent but non-problematic use is socially accepted, or normalised, or whether this only applies to non-frequent use. Finally, our study supports Shildrick’s (2002) argument that the distinction in normalisation between recreational and problematic drug use might be too simplistic.

Cannabis dependence is no stable, homogenous condition, as we found dynamics into and out of dependence. While dependent, especially persistent dependent interviewees could in some aspects quite clearly be distinguished from non-dependent users, in others they were very similar. Our findings underline that many dependent users seem very capable of controlling their use and, similar to non-dependent users, prioritise other aspects of life, limiting their use to their leisure time. This calls into question whether dependence as operationalised by the DSM-IV suggests an oversimplification of the concept, at least for cannabis. The DSM-IV defines dependence as a maladaptive pattern of cannabis use leading to impairment or distress. However, our findings indicate that dependent users adapt their cannabis use to their leisure time and are selective in their use, thereby avoiding negative consequences of cannabis use for their daily functioning, e.g. work or study.
Leisure, delinquency and cannabis trajectories

For example, a user who within the past 12 months, during summer holidays spent much time using cannabis and used larger amounts than intended, and whose lung problems exacerbated by continued cannabis use fulfills three DSM-IV criteria for last year cannabis dependence. The DSM-IV criteria to measure dependence thus not seem to fully capture this maladaptive pattern of use. Moreover, this study illustrates that DSM-IV diagnosis of cannabis dependence not equates to problematic use (cf. Temple, Brown, & Hine, 2011).

It should be noted that our findings might differ from studies in other frequent cannabis users or from studies in treatment seeking cannabis users, because the frequent users in our study to their own accounts were all, at least to a certain extent, participating in society in all aspects, including the persistent dependent users. Although our sample is rather heterogeneous, the vast majority of participants were employed or student, had a monthly income, a social life, often a relationship, and participated in various leisure activities. Albeit some interviewees sometimes for example skipped an appointment with friends, they were still socially active. In this perspective our sample is perhaps a-typical and not representative for all frequent cannabis users. Still, our study shows that frequent cannabis users are not necessarily marginalised individuals. Although this might be due to the de facto legal status of cannabis in the Netherlands, our findings do not fundamentally differ from studies outside the Netherlands, indicating that cannabis laws have little impact on use patterns and leisure activities of frequent cannabis users (EMCDDA, 2011; Fergusson et al., 2003; Korf, 2002; Reinarman et al., 2004). Nonetheless, Dutch cannabis policy should be kept in mind when interpreting the results. Furthermore, it should be realised that all analyses are based on narratives of the interviewees and their constructions of their personal and social world. Therefore, our findings and conclusions are based on their feelings, perceptions and interpretations. Although some might consider these not to be ‘objective’, our aim was to gain an insider’s view on the relationship between cannabis use and leisure.

This study contributes new insights into the course of cannabis use and dependence and leisure, indicating that transitions in use and dependence are rather gradual and occur over extended periods of time. Contrary to Schaub et al. (2010), we found that leisure time activities could explain transitions in cannabis use as well as in dependence, and ‘turning points’ can evolve from leisure (Laub & Sampson, 1993). Still, we acknowledge the influence of the people with whom leisure time is spent. Moreover, our findings suggest that more engagement in leisure activities (outdoors) leaves fewer opportunities and/or time to use cannabis. Nonetheless, some users would be more inclined than others to select opportunities suitable for use (Peretti-Watel & Lorente, 2004; Schaub et al., 2010).
The importance of cannabis could change by trial and error and participants who decreased their use generally reported step-by-step cutting down and a slowly declining centrality of cannabis in their life. As might be expected by virtue of its definition, dependent, especially persistent dependent interviewees assigned a more central role to cannabis in their leisure time, by planning their leisure activities around cannabis use, and being inclined to prioritise cannabis over other leisure activities. For some cannabis became less central during our study: as they aged and/or got more involved with other responsibilities, its centrality waned. These interviewees transitioned to non-dependence. Nonetheless, both dependent and non-dependent users limited their cannabis use to their leisure time and both seemed to make conscious choices about their use, considering other responsibilities, and their company and situation. This is similar to participants in a study by Osborne and Fogel (2008) who concluded that “their use is purposively intended to enhance their leisure activities and manage the challenges and demands of living in contemporary modern society” (p. 562). Therefore, differences between dependent and non-dependent cannabis users seem rather related to how (easily) this choice is established, the tendency to use and the centrality of cannabis in their lives; to what extent and with what ease do they prioritise cannabis within their leisure time.

Finally, concerning prevention and treatment, several implications could be taken into account. Without wanting to imply any judgement as to the best activities for young adults on how best to engage or how best to spend leisure time, from a prevention and treatment perspective it might be recommendable to target frequent users who spent much leisure time at home gaming, as our findings raise questions about a possible relation between cannabis dependence and game dependence. While game dependence is still relatively unexplored, a recent study indicates a correlation between problematic gaming and cannabis use (Walther, Morgenstern, & Hanewinkel, 2012). Future research should explore this relationship in greater detail. Also, to improve treatment, or self-supported change of use, structured spending of leisure time, such as sports (cf. Buchowski et al., 2011) seems recommendable, as this would replace the relaxation and time spent on cannabis use.
6
PERSISTENCE AND DESISTANCE IN HEAVY CANNABIS USE: THE ROLE OF IDENTITY, AGENCY AND LIFE EVENTS

Abstract
Many cannabis users ‘mature out’ of their drug use, and factors of cannabis use cessation have been identified. However, very little in-depth knowledge is available about the mechanisms underlying this phenomenon. Criminological studies have gained interesting insights in desistance from crime, yet these perspectives are rarely used in drug research. This qualitative, three-year longitudinal study explored the processes involved in desistance from frequent cannabis use for young adults.

Using a narrative approach, desisters (frequent users who successfully quit their cannabis use) and persisters (frequent users with a persistent desire and unsuccessful attempts to quit) were compared. In the course of the study, desisters mainly exhibited increasing agency and goal setting, established strategies to achieve these goals, and could envision another self. Desistance was generally induced by life events that became turning points. Persisters experienced largely similar events, but lacked goals and strategies and held external factors responsible for their life course and failed quit attempts. Identity change is at the core of desistance from frequent cannabis use, and the meaning-giving to life events and experiences is essential. Agency is a necessary ingredient for desistance, develops over time and through action, and leads to a new drug-free identity with desistance in turn increasing agency.

Keywords: Cannabis trajectories; Desistance; Narratives; Longitudinal; Agency; Identity
Introduction
Drug use, like crime, generally peaks in adolescence and young adulthood and then declines. Although both age curves peak somewhat earlier in the USA than in the Netherlands, the overall patterns are very similar, showing a steep increase during adolescence and a more gradual decrease from young adulthood onwards, with cannabis being mostly the first, and often the only illicit drug ever used (Johnston et al., 2001; Kalidien & De Heer-de Lange, 2011; Van Laar et al., 2013). While involvement in such behaviour is a temporary phase for most, not all individuals desist. In recent decades, desistance has been increasingly studied, and predictors that were identified include marriage, stable relationships, stable employment, engagement in prosocial activities, psychological reorientation, and motivation (Veysey, Martinez, & Christian, 2013). Yet, the mechanisms underlying desistance are less well studied (Veysey et al., 2013). The aim of this study is to improve our understanding of these mechanisms, particularly in desistance from frequent cannabis use. Our focus is on ‘natural’ or spontaneous desistance, leaving aside treatment-related desistance. Despite progressing insights into desistance from crime, only few studies have applied perspectives from desistance research to drug use. We assume that research into desistance from frequent cannabis use could benefit from the criminological literature on desistance from crime, as both are gradual processes of discontinuing deviant behaviour. Our line of reasoning is not that crime and drug use are similar in content. Instead, we assume that scholar insights into desistance from crime can aid unpacking processes and mechanisms underlying desistance from frequent cannabis use. There are multiple pathways into and out of drug use, and self-change and maturing out do not imply effortless or passive processes. In a review on self-change from drug use, Klingemann, Sobell, and Sobell (2010) conclude that despite considerable progress in natural recovery research, several topics deserve attention, including studying mechanisms through which people change or fail to change. In this study, we address this lacuna by exploring these topics from a desistance approach, focusing on frequent cannabis use.

Desistance from crime
Desistance is a common term in criminology and has been well studied in recent years. Studies showed that desistance is a process of ‘drifting’ toward desistance, including progression and relapse (Carlsson, 2012; Farrall, 2005). In addition, it has been suggested to distinguish primary desistance, referring to any crime-free gap in the course of a criminal career, and secondary desistance, which comprises more than behavioural change, specifically the internalization of change and the reconstruction of a delinquent identity (Farrall & Maruna, 2004; Maruna, Lebel, Mitchell, & Naples, 2004). It is
increasingly recognized that desistance is a process comprising an interplay between structural factors (social institutions, e.g. marriage, employment) and individual factors (subjective meaning, identity, and personal agency), as well as aging (Farrall et al., 2011; Maruna, 2001; McNeill, 2009). Desistance is not likely to occur under the appropriate structural conditions alone, or with willpower only (King, 2013) and change is rarely the result of a specific event, rather the result of a process (Carlsson, 2012; Maruna, 2001). Life events can act as a trigger for the decision to change, yet they will only be influential if a person considers them as meaningful and desirable (Lloyd & Serin, 2012). Consequently, desistance cannot occur without individual’s given meaning to events or without agency. Agency refers to an individual’s self-efficacy, the ability to be self-reflexive, to set personal goals and to decide upon courses of action to realize them, and a sense of feeling in control over one’s life. Some scholars place in desistance more emphasis on structural factors (Laub & Sampson, 2003), others on individual factors (Paternoster & Bushway, 2009; Vaughan, 2007), including cognition (Giordano, Cernkovich, & Rudolph, 2002).

People construct personal narratives to give meaning to their lives, and these shape their identity and guide their behaviour (Farrall & Maruna, 2004; Irving, 2011; Maruna, 2001). Maruna (2001) compared desisters (those who quit crime) and persisters (those who continued in crime) and found that persisters attributed their life story to external forces, lacked agency and the belief or hope in another self; life happened to them. Desisters, conversely, created a narrative in which they found ways to ‘make good’ for their past behaviour. They reconstructed their life story which reflected a strong sense of agency, clear future goals, and the desire to prove others they had changed and achieved a new identity. Paternoster and Bushway (2009) distinguish between a current identity (a sense of who we are) and a future identity (a sense of who we want and do not want to become). They believe that agency is expressed through intentional self-change. Here, a key concept is the self-regulating component of the possible self, that compares the current and the future self, and provides directions, strategies, or plans, which are necessary for successful change (Bushway & Paternoster, 2013). In a similar vein, King (2012) showed that agency is essential for desistance and comprises two aspects: the desire to desist and recognition of the ingredients necessary for change, and the ability to envision new social roles and future identities to detach oneself from the past. It is important to note that this ability and intentional self-change are enabled by social structures. Would-be desisters may relapse or be less likely to desist when confronted with unmanageable or uncertain social contexts (King, 2012).
Recovery from cannabis and drug addiction
When it comes to drug use, instead of desistance, more common terms are: cessation, natural recovery, or self-change (and in clinical research: remission). Several factors have been linked to successful recovery from cannabis use, e.g. life changing events and responsibilities, less leisure time, developing activities unrelated to cannabis use, avoidance of triggers to use, self-control, and health concerns (Chauchard et al., 2013; Ellingstad et al., 2006; Kwong et al., 2010; Liebregts et al., 2013b). Rooke, Norberg, and Copeland (2011) were among the first to compare frequent cannabis users with successful and unsuccessful quit attempts and found that unsuccessful quitting was predicted by amongst others frequent exposure to other users. Caviness and colleagues (2013) focused on the perceived ability to resist cannabis use in tempting situations (‘refusal self-efficacy’) and found that this was positively associated with motivation to quit and prior quit attempts. They suggest that prior attempts to quit, whether or not successful, via enhanced skills and experiences might enhance one’s refusal self-efficacy. However, Terry et al. (2007) argue that these studies are unable to make causal statements and that findings might be different at the individual level. A users’ perspective might help disentangle cause and effect for changes in cannabis use, so they analysed the reasons that regular cannabis users gave for changes in use. Almost their entire sample reported periods of abstinence because of short-term events such as holidays or exams, while (periods of) decreased use was due to long-term life changes such as a new job or to negative effects of cannabis.

Similar to desistance studies, some scholars explored the role of identity in cessation and concluded that quitters often realized they had become someone with undesirable features related to their drug addiction to cannabis and/or other illegal drugs. This is described as a ‘spoiled identity’ (Goffman, 1963; Biernacki, 1986). According to McIntosh and McKeganey (2000; 2001), the motivation to restore one’s spoiled identity, and the envisioning and advantages of an alternative future, and a new self were important elements for a successful decision to stop using drugs. Individuals distanced themselves from the person they had become by their addiction, and the belief that a new identity and lifestyle were feasible was essential for cessation. Similarly, reorientation to the future and an increasing sense of agency are central for recovery from gambling addiction (Reith & Dobbie, 2012). Yet, these scholars argue that recovery is more than an identity change and also involves social relationships and material conditions.

This study and aims
In summary, identity change thus seems the core of desistance, and previous research generally suggests that a conflicting current and future identity
could lead to a desistance narrative and (re)construction of a nonoffender (nonuser) identity. Agency in this process would be achieved through action and developed over time (King, 2012). Strategies and a realistic, feasible plan for identity change have been linked to successful desistance (Maruna, 2001; McIntosh & McKeaganey, 2001; Paternoster & Bushway, 2009; Rooke et al., 2011).

Despite these increasing insights from desistance studies in deviant careers, perspectives from desistance studies have been rarely used in studies on natural recovery from drugs. Although a few scholars (McIntosh & McKeaganey, 2000; 2001) revealed the role of identity in drug addiction recovery, they specifically studied problematic drug use (i.e. addiction) and drugs in general. While factors of cannabis use cessation have been identified in previous studies, most studies focused on irregular use, or on quitters only, or investigated risk factors of use leaving out perceptions of users (Rooke et al., 2011; Terry et al., 2007).

Our aim is to better understand the underlying processes of desistance from frequent cannabis use. We compare and portray persisters and desisters in frequent cannabis use, cross-sectional and longitudinal, and we mainly focus on aspects/concepts that have been shown to be important in desistance studies, such as the role and development of identity change, agency and life events, and strategies. Recovery studies might benefit from a broader desistance approach, as this knowledge can help develop prevention and treatment specifically at frequent users at risk of persistence and to advance desistance. Qualitative methods, particularly a narrative approach, can uncover the dynamics underlying the relationship of cannabis use with identity and agency (Sandberg, 2012). Furthermore, as recovery or desistance is a process, which occurs over time, it is best captured with longitudinal research methods (Klingemann et al., 2010). We examined the three-year developments of initially frequent cannabis users taking a narrative (identity) approach.

**Methods and data**

This study is part of CanDep, a project on the course of frequent cannabis use and dependence, including a quantitative prospective cohort study among 600 at baseline (T0) frequent cannabis users (>3 days use per week in the past 12 months), with follow-up assessments at 1.5 and 3 years (T1, T2). The project was ethically approved and participants provided written informed consent.

At baseline, participants were 18–30 years old and recruited from so-called coffee shops and via respondent-driven sampling (Liebregts et al., 2011; van der Pol et al., 2011). Overall, cannabis use declined over the years of follow-up. Yet, two-thirds remained a frequent cannabis user, and only one in eight...
participants had desisted and considered themselves quitters. Two thirds reported at least one phase of abstinence (i.e. primary desistance).
To gain deeper insights into the dynamics underlying changes, a random – gender stratified – selection of 47 participants (32 males, 16 females) from the total sample was also interviewed in-depth twice about their life and cannabis use (Liebregts et al., 2013a). The topic list included participants’ cannabis use career (i.e. changes in cannabis use, motives for change), occurrence of life events, personal goals, and feelings of control over their life. The first in-depth interviews (I1) took place December 2010–April 2011, some months after the first follow-up interview (T1), and focused on the period between T0–T1. The second in-depth interviews (I2) were conducted March–April 2012, shortly after the final follow-up interview (T2), with focus on the time span between T1–T2.
In the current study, among the 47 participants in the qualitative sub-study, we focus on two extreme groups to maximize contrast and uncover mechanisms of desistance. Inspired by Maruna (2001), we explore differences and commonalities between desisters, i.e. frequent cannabis users who quit using cannabis during follow-up (n = 7), and persisters, i.e. interviewees who from baseline onwards reported a persistent desire to quit or cut back and/or had unsuccessful attempts to do so, but were still using cannabis regularly the whole study period (n = 7). None of the participants were in treatment for their cannabis use during the study.

Analysis
All qualitative interviews were digitally recorded, fully transcribed, and imported into QSR Nvivo. Transcripts were analysed combining deductive and inductive strategies. Codes and categories were partly developed beforehand, based on the literature (a priori coding, Miles & Huberman, 1994), mainly desistance from crime. Categories and codes included: current and future identity, future goals, strategies to quit/reduce, refusal self- efficacy, agency, and life events. In addition, new codes and categories evolved from the data, and new patterns emerged, such as desire and reasons to quit, and negative effects of use. Interview transcripts were read and reread to identify and link evolving codes, categories, and themes (pattern coding, Miles & Huberman, 1994). Interviewees are identified with fictitious names to guarantee anonymity.

Participants
Although both groups varied, desisters and persisters were rather comparable in age (M = 20.9 vs. 22.0 years), educational level, and gender (three females in both groups). Both groups included students and employed interviewees, but desisters also included students who during the study became employed,
and persisters included a full-time mother and a participant on benefits for disabled persons. At baseline (T0), 3/7 desisters were (near-) daily users and the others used 3–4 times per week, while 6/7 persisters were (near-) daily users. Persisters had at T0 somewhat longer cannabis careers than desisters (M = 7.3 vs. 6.6 years) and tended to use cannabis more often alone (6/7 vs. 3/7).

All desisters had actively decided to quit using cannabis. Some quitted soon after baseline, others near the end of the study. At the last in-depth interview, three desisters had not used cannabis for one year or more and said they had quit permanently, and another three considered themselves as quitters, and had been using cannabis (‘some puffs from friends’) only rarely in the past year. The last desister still used cannabis between T1–T2, but had seriously cut down and at the last in-depth interview she considered herself a nonuser. Of the persisters, all who were (near-) daily users at baseline still used (near-) daily at the last in-depth interview, and the other persister reduced his cannabis use from 3–4 times to 1–2 times per week. The course of their cannabis use during the study varied: 2/7 persisters were rather stable daily users, and cannabis use of the others fluctuated (mostly between daily and weekly, sometimes with periods of no use) with a slight decrease or increase at the end of the study.

Results

Reasons and desire to quit

For desisters, generally a combination of reasons led to the decision to quit, which they were generally able to verbalize very well. Two main patterns emerged: quitting because of acute negative effects and quitting because of an event that made cannabis use no longer suitable in the interviewees’ live. For some desisters (4/7), an important reason was that the acute effects when using cannabis suddenly had changed for the worse. Interviewees talked about ‘attacks’ that implied feelings of fear, panic, or insecurity, and sometimes paranoia. They started to worry after using cannabis and sometimes even without using. After years of frequent cannabis use, the first time they experienced these symptoms took them by surprise. They sometimes heard about this phenomenon before and then recognized the uncomfortable effects. Later on, participants experienced more ‘attacks,’ and although they all thought that these might have been induced by fear for an attack rather than by cannabis per se, using cannabis lost its attraction.

In the beginning they weren’t so bad: a bit short of breath, nauseous, weak legs. Suddenly. It just was all too much, I was very busy with my study (…) So I decreased my use. But they became worse. Probably these attacks were not related to cannabis use, but to the whole situation. Using cannabis suddenly had
changed: I once used during such an attack, or the attack occurred just after I used cannabis, and you link those two. From then on whenever I used, I worried it could happen again, and obviously sometimes it happened. And at a certain point when you’re stoned and nothing happens, you’ll think: oh still I don’t feel really good, and you deceive yourself. I created the connection of cannabis with these feelings. Eventually, I thought: I do have some issues [to deal with], so if I can quit using, I’ll do that too. A new me. (Steven, I1, desister)

For these desisters, acute negative experiences after using cannabis were at the core of the changed reflections on their use. They were uncertain about the causality of the sudden unpleasant effects and attributed them not only solely to cannabis, but also to life events such as a very stressful final year at university, or a more general sense of not feeling well. Whether they saw the ‘attacks’ as the main reason or as one of the multiple reasons seems to be less important, and all believed that for them, using cannabis had become largely unpleasant and they quit using.

Other desisters (3/7) experienced life events that made them reflect on their cannabis use and brought about a drastic change. For one, a more demanding study period was a major reason to quit (see Liebregts et al., 2013b). Another desister faced a hard time when his mother fell ill, and he also entered a new romantic relationship, and decided to immediately quit using. The final desister stopped using overnight when she travelled abroad for four months. While traveling, she was surprised to feel so much better when sober, and when she returned home the desire to use cannabis had strongly diminished. Nonetheless she resumed her use, according to herself due to routine, but now she used only weekly instead of daily. After some months she decided not to buy cannabis anymore, and only used when offered by peers. From then on, her use decreased more and more, also because of new friendships with nonusers, and within a year her use had changed from a joint per day to a few puffs every now and then, and she considered herself as a quitter.

Persisters’ reasons for wanting to quit were mainly related to general health concerns, such as (future) respiratory problems. They also argued that they experienced negative effects of use on their daily functioning, e.g. difficulties getting out of bed, memory loss, and decreased productivity. Additional reasons were financial costs of cannabis and wasting time when being ‘stoned.’ Unlike desisters, none of the persisters reported ‘attacks.’ Even though persisters also had feelings of discomfort concerning their use, their motivations for quitting or reducing were more abstract and less pronounced or personalized.

I think I’ll soon have to quit. At a certain point, you have to start doing things. I notice that my productivity heavily decreases by it [cannabis use]. It’s not really an
obstructive level, I can still function. But if I have to write a bachelor thesis some time, I can’t keep living like this. (Eduard, I1)

All persisters experienced failed attempts to quit or reduce their use during our study. Their use fluctuated, with decrease being attributed to focus on exams or to reclaim feelings of being in control and increase to stress, more leisure time, or negative events. They kept reporting a desire to quit or cut back and to change their use. Their attempts greatly varied in seriousness, time they persevered, and reasons of failure. Some pursued to quit completely, but most wished to decrease or to gain better control over their use, and over time some persisters became more convinced that they wanted to quit. Zooming in on openness to change, all persisters believed that their cannabis use had a negative impact on their life. Nonetheless, while for some the desire to quit was an almost daily struggle to decide whether or not to use, others hinted that quitting or reducing was a matter of should, or should want, rather than actually want.

Quitting, not quitting ... I want it really badly, but at the same time not at all. The word addiction is very negatively charged, addiction in our society is bad: then you’re weak and should find help. But for me, it’s not that negative, perhaps I even cherish it a bit. (Eva, I1, persister)

We noticed that for several desisters life events played an important role in their decision to quit. Persisters also experienced life events. Although both groups experienced a similar number of life events (52 and 47 in total, respectively, both included 21 negatively experienced events) and life events were of a similar type (e.g. ended/new relationship, job loss, disease of relative, traveling), their (subjective) attributed meaning appeared to be very different. Desisters gave meaning to events in a way that they would better quit using. In contrast, life events (especially negative ones) gave persisters reason to continue or even increase their cannabis use. When feeling out of sorts, they were inclined to use (more) cannabis, even when they thought they suppressed emotions by doing so. Their mood was in turn influenced by other, mainly external factors, they claimed.

Desistance process and identity
Desisters’ narratives revealed some interesting patterns in their desistance process. For most, the decision to quit was preceded by negative experiences or life event(s), which led them to reflect on their life. For all but one desister quitting was a process of drifting, in both their mind and behaviour. They gradually reduced their use, sometimes interrupted by a temporary increase, and step-by-step cut down on their use. Usually this process took 2–6
months. Rather than not using at all, quitting cannabis use implied breaking the (daily) habit, not purchasing cannabis anymore, little to no use, and feeling oneself a nonuser. Taking a few puffs every now and then when with a using friend, did in their perspective not count for being a user. For several reasons, quitting was easier than desisters generally had expected: they felt better, more self-confident, more energetic, and more in control of their life. Also, it was not uncommon that desisters started to hang out more with nonusers and as a result were less tempted to use. Some also said that occasional use is more difficult to integrate in their life, because the effects are stronger and last longer. Desisters generally reported having little difficulties to refuse a joint when offered by peers, even in exactly the same situation as when they were frequent users. They exhibited a high level of refusal self-efficacy, which went rather naturally. Cannabis was no longer attractive, they had turned the page and had distanced themselves from their past user identity. The desisters’ narratives showed elements of reinterpreting the effects of cannabis from pleasant into unpleasant. They realized they were unhappy with how their life had become (i.e. ‘spoiled identity’, McIntosh & McKeganey, 2001).

One reason to quit was my study delay; the main reason. Yet also the fact that I didn’t enjoy life anymore. I used to be very active, but I had become so passive, didn’t do anything anymore. I couldn’t summon the motivation anymore to do fun things, to meet new people. When you’re stoned everything is too much effort. I didn’t want that any longer, I was done with it. (…) I changed my mind about cannabis use. If other people enjoy it, fine, but for myself I’m like: it gave me all this shit, catching up and so on … unnecessary. (Sofie, I1, desister)

In contrast to findings of McIntosh and McKeeganey (2001), desisters’ sense of spoiled identity was not accompanied by a general revulsion toward the ‘cannabis scene’ they had been part of. Instead of disapproving or regretting their past, desisters had often integrated their cannabis use history into their new future self, and it had contributed to the person they had become. They no longer were users, but their attitude toward cannabis had not necessarily become negative.

Both desisters and persisters reflected on negative effects of their cannabis use such as laziness, passivity, feeling bad, and troubles getting out of bed. However, desisters mainly acknowledged these effects in retrospect and compared to how they felt after they had quit. In fact, they placed more emphasis on how their life had improved since. Desisters created a distance between their life and well-being as users in the past and as ex-users today. A clear example is Lisa, who at the first in-depth interview was a daily user for several years. When asked about her future view regarding her cannabis use,
she replied that she expected no change in the years ahead. She felt no need to quit, as she experienced no unpleasant consequences of her use, except difficulties waking up. But at the second in-depth interview, 16 months later, she stated:

I quit using a long time ago – well, if I use, it’s only on some occasions with/from friends. It works really well for me. And I noticed that since I’ve quit, many things have become so much clearer, and that cannabis … withheld many things, or suppressed them. I suddenly see things in a way I’d never thought about, or paid attention to. I feel so good now, so much better than in previous years – again, I think quitting cannabis did so much for me. (Lisa, I2, desister)

Lisa effused that quitting opened her eyes, and made her see that, different from what she previously believed, regular cannabis use had blurred her vision. It could be argued that after quitting, she produced this narrative to make her life coherent and give meaning to and reinforce her behaviour and new identity, distancing herself from her old identity. Alternatively, when she was still using, she might have preferred to be unaware of possible effects, to make her narrative coherent and support her behaviour at that time. Lisa gave insight into this dynamic phenomenon:

My friends don’t mind I’ve quit. Like real stoners, they don’t say much about it ha-ha. I’m telling them how happy I am that I’ve quit using, and how good I feel now, and then they reply with: ah okay, well I still enjoy smoking. Yes of course, I would have said that too if I was still a daily user. You don’t wanna know. (Lisa, I2, desister)

This example shows the importance of reinforcing new behaviour through distinction. Distancing oneself from being a user, critically reflecting on previous life, and identity reconstruction were also visible in other desisters’ narratives. This supports Vaughan’s (2007) notion that would-be criminal desisters who can take both an internal and external self-reflexive perspective, judge their actions and construct a new nonoffender identity, are more likely to become successful desisters. Similar to desisters, persisters’ narratives revealed features of a spoiled identity: effects of cannabis had become unpleasant and they felt unhappy with how their life had become.

Using cannabis has negative effects, certainly. It affects your memory. And you get a sort of paralysed, both in thinking and in behaviour, you suppress things. That can’t be good, although I do talk about emotions. I think that when you feel bad and accidentally gonna smoke you notice you eliminate your emotions. The next
day you just continue, but if you do that too often, you notice at the end of the week you don’t feel better. And maybe if you hadn’t used, you could have dealt with it. But you only notice the difference when you stop doing that. (Ryan, I1, persister)

Some persisters also expressed the impact of not using cannabis for some time, yet resumed to use. All persisters believed that cannabis negatively affected their life and were unhappy with that, but they did not manage to structurally change their cannabis use. Notably, when talking about decreasing or quitting, desisters referred to the number of days of use (or nonuse), whereas persisters mentioned the number of joints per day, or postponing use to a later time of the day. Persisters’ attempts to quit generally lasted a few weeks at most. Some participants reported that they just gave up quitting, because they found it difficult to persevere or ‘didn’t feel like it anymore.’ Some started again after a negative experience such as a breakup, others stated that their attempt failed because they ‘forgot’ they had quit. Although persisters did not explicitly talk in terms of craving, their narratives suggested a strong desire to use cannabis again.

Once you want to try quitting, your mind fools you. You think like: well, now I may well use. You can’t really sustain and you start fooling yourself. Or you just forget it because you’re used to use at a certain time, after school for example, and you might resolve it. (Charlotte, I2, persister)

Finally, persisters often explained that they relapsed when they were in company of using peers or partners, as they had difficulties not to use cannabis when it was around – even though they used more often alone than desisters did before they had quit.

**Agency, goals, futures, strategies**

Desisters’ narratives exhibited high levels of agency, reflected in goals and future directions, the know-how and belief to achieve them, and a sense of being in control over their life. For some, their goals and alternative future were quite specific, e.g. obtaining an academic degree, while other desisters envisioned a fully new lifestyle. All were firmly convinced they could achieve their goals. Quitting cannabis use was a necessary step for that. Their main quitting strategies were to actively search for substitution or distraction, to have a plan to cut back, and/or to consciously decide how to handle or avoid certain situations.

I began to cut back: only at weekends or only when I really felt like it. And no longer smoking alone, if I really felt like it, then I should share a joint with friends,
instead of smoking away half a gram at home only because I allowed myself to
smoke that night. I was consciously working on it. It was hard, and I started to
smoke cigarettes a lot. Well, when I had things to do it was okay, you’re busy and
you can use the energy. But the nights were the hardest; I wanted to go to bed
stoned, lovely, dreaming away. But that doesn’t outweigh waking up tired, not
getting started (...). My friends surely respect that I’ve quit. They think it’s really
good, and some say: ‘I would like that too.’ That motivates as well. (Sofie, I1,
desister)

All the sudden I didn’t want to smoke anymore, overnight actually. I smoked for a
long time and then I thought: fuck it. A sharp decrease and quit. My consciousness
changed, due to what was going on at home, and my new girlfriend. I realized
cannabis added nothing anymore. It wasn’t hard to quit, it’s just a state of mind.
You make a choice and act upon it. I didn’t search for substitution, just kept going
with my life. I needed to keep both feet on the ground, substitution wasn’t
necessary, I moved on. My friends still used, and said ‘hey good thing you’ve quit,
dude.’ That really has a positive effect. (Leroy, I1, desister)

These narratives show that desisters fully acted on their decision to quit using
cannabis, although it sometimes was hard. Reactions from their social
environment were also important in supporting and maintaining their new
behaviour. All desisters reported that they had changed since they had
stopped using. They felt better, their self-confidence had grown, and they
thought more consciously about their life and what they wanted to achieve.
Their level of agency contributed to the decision and action to quit and
quitting strengthened their self-efficacy. Some participants stressed to feel
particularly in control over their life since they had quit cannabis use.

If I want to achieve something, I will. You see, your unconsciousness seeks to
justify things, especially when you’re using cannabis. If I had continued using, my
life wouldn’t be like I wanted it to be. Because I had the most beautiful and nicest
ideas, however they remained ideas, intentions. You won’t take actions, like it
prevents you. (Leroy, I1, desister)

After quitting, several desisters had taken other big decisions that contributed
to a change in their life (e.g. ending their relationship after years, stopping
their study, or planning a long journey), putting themselves first now and
willing to re-evaluate and realign their life goals. This further supports
reciprocity in agency, i.e. higher levels of agency facilitate quitting cannabis
use and quitting strengthens agency.
While all but one persisters stated to feel in control of and responsible for
their life, their narratives indicated that their level of agency was rather low
when compared to desisters. Persisters tended to explain occurrences, predominantly negative ones, by external factors, in which to their opinion they had little choice or influence. While desisters deployed strategies for quitting, only one persister did so, including avoiding using peers and physical exercise. Particularly unsuccessful attempts to change their cannabis use were attributed to external factors, such as a broken relationship, using peers and/or partners, or stress that would make them return to cannabis. Notably, persisters often expressed to prefer a structured life and things to stay the same, while desisters reported to embrace change. Persisters argued that they would be able to quit under certain conditions (e.g. structured life, no using peers), but often these circumstances were just not there yet.

If I quit I need to plan every minute of my entire life, so I have a daily structure without the temptation. In that way, I managed to stop using for 1–2 weeks a few times over the past years, but I really needed a Spartan discipline. And a job. And as few stress as possible. (…) And good weather, a good shape, so that I can run two hours a day instead of one, and go to bed immediately after running. (…) And if I quit, I’ll have fewer friends. I have to find an alternative for that, so that when I finally really have quit, my whole social life won’t fall apart. It’s hard. (Lars, I2, persister)

Although Lars was a rather extreme example, other persisters echoed the presence of ‘the right circumstances to quit.’ As mentioned earlier, life events were quite comparable in number and type for desisters and persisters. However, a closer look at life events and contextual factors reveals some striking differences. For all persisters, the main daily occupations (work, study, or other) remained unchanged during the study. This was less so for desisters (3/7 who were students got full-time jobs). Most desisters experienced several events in different domains, such as a new relationship and a new job; persisters usually just one. Again, the relevance of the attributed meaning of life events becomes apparent. For instance, both persisters and desisters entered new relationships with nonusers. While desisters considered new relationships meaningful and seized them as contributing to the decision to quit, persisters ascribed little value to their new partner and saw no reason to change their use, even though both described comparable attitudes of their new partner toward cannabis use. Similar differences were shown for other events (i.e. study delay, ended relationship).

Despite persisters describing concerns with quitting or decreasing, their narratives revealed a tendency to postponement.
Actually, I had this plan to decrease my use until my birthday. But that’s within two weeks ... So I probably just keep smoking and then I quit. I’ve set another date again: some days after my birthday. (Charlotte, I2, persister)

Goals and envisioned future selves were also repeatedly postponed, with arguments such as ‘when I turn 30,’ ‘when I have to write my bachelor thesis,’ and ‘when the weather gets better.’ In fact, contrary to desisters, persisters expressed no clear, tangible goals that motivated them to maintain their changed behaviour. If at all, their goals were generally not in the near future, and without clear visions about how to realize them. Interestingly, several persisters were convinced that cannabis use impacts the envisioning of and the willpower to achieve goals: it would cause passivity and lower ambitions or the necessary actions related to future goals.

It’s not so much that you don’t have goals, but the distance between goal and starting point is enlarged in your head, that’s the problem. I can say to myself, okay I have to read mortgage documents so I cannot use for a week. But things like I want to do a study ... cannabis use is such a part of your life, and you’ll keep it in mind. Four years using less or not at all ... you’ll have to change your life. Then I appeal to cannabis. (Daphne, I1, persister)

The latter quote indicates that persisters had a weak sense of self-efficacy: although they sometimes could envision an alternative future self, the know-how to achieve this, i.e. strategies, was insufficient. Paradoxically, some persisters not only seemed quite reflexive about their cannabis use and quitting behaviour, but also acknowledged they would always find excuses for themselves to postpone the moment of quitting.

Discussion
To better understand the processes underlying desistance from frequent cannabis use, we analysed narratives from two groups of young adult experienced users who were followed-up in a three-year longitudinal study: desisters and persisters. Both desisters and persisters were experienced users, albeit persisters were at baseline more often daily users, and used more often alone. During follow-up, both experienced life events, comparable in number and type, and both reported on similar negative effects of cannabis use. Both persisters and desisters expressed that due to their use, their life was no longer as they actually wanted, and therefore that their cannabis-using identity should change. This recognition can be understood as the central feature of a ‘spoiled identity’ (McIntosh & McKeeganey, 2001). How then can we explain that desisters could and persisters could not manage to change and/or reconstruct their identity? In line with previous desistance
studies (Farrall et al., 2011; Healy, 2013; Bottoms, Shapland, Costello, Holmes, & Muir, 2004; Carlsson, 2012; Vaughan, 2007), our findings reveal that desistance from cannabis is a process involving agentic and structural factors. Desisters’ narratives indicated rather high levels of agency. They set goals that enabled them to envision another future self and exhibited self-efficacy. Refusal self-efficacy (Caviness et al., 2013) appeared important to maintain behaviour change and contributed to desistance. Simultaneously, it increased through successfully resisting cannabis use in tempting situations, thus confirming the new nonuser identity. In contrast, persisters were rather incapable to set goals and to take stock of the actions to realize them. Notably, while for persisters quitting or decreasing cannabis was an end in itself, for desisters quitting was a means necessary to achieve goals. Desisters could and persisters could not envision another self. Sometimes persisters were able to reflect upon their own behaviour, suggesting features of having an internal conversation and an ingredient for successful desistance (Vaughan, 2007). However, despite reporting feelings of control over their life, persisters tended to hold external factors responsible for events in their life course and more specifically for failed quit attempts. Persisters exhibited low refusal self-efficacy: quit attempts were often postponed, and relapses were often attributed to the company of using peers or partners. Structural influences also played a role in the desistance process. Regarding social factors, significant others were important in desisters’ identity reconstruction and behaviour change. First, by distancing themselves from other users (peers, partners) and reflecting upon their ‘user behaviour’ (and thus their own previous behaviour as well), the process of identity reconstruction was supported, and consequently their new behaviour reinforced. Second, acknowledgments of their quitting by significant others (social feedback) reinforced their new nonuser identity and behaviour (cf. Maruna et al., 2004). Life events also supported desistance. Both positive and negative events triggered desisters to reflect on their life (cf. Paternoster & Bushway, 2009) and to decide that cannabis was not conducive anymore.

We should emphasize that this study was based on participants’ narratives, their constructions of their life and the world, and are our selections and interpretations. Aware of our role as researchers, we kept questions as open as possible during the interviews and aimed in the writing process to clearly distinguish between participants’ stories and our interpretations/analyses. Also, as numbers of participants in each group are rather small, we cannot claim our findings to be representative for all frequent cannabis users, or all desisters and persisters. However, we conducted an exploratory study concerned with meaning, and representativeness was not our goal. Moreover, both groups were rather heterogeneous in socio-demographics.
and lifestyle and we believe that these desisters and persisters are no stand-alone cases. Also, small sample sizes are generally considered more powerful to achieve depth (Crouch & McKenzie, 2006), and focusing in-depth on these two contrasting groups enabled true understanding of the underlying mechanisms of desistance. Although we cannot claim with these numbers that saturation was achieved, our analyses consistently showed important dominant patterns. Furthermore, we used the terms persister and desisters as analytical categories, with focus on differences. Thereby, our analysis does not completely do justice to all empirical diversity we discovered within and between the two groups. However, we kept an open eye for similarities. Also, we applied contrast analyses to portray processes of change and of continuity, while there is actually a whole world between, as well as variation within, these two contrasts. Finally, apart from exceptional cases, desistance was a gradual process (drifting). Although participants were followed-up for three years, interviews were still snapshots of a life course, which could change in the future. As agency is achieved through action and developed over time, and level of agency is likely to interact with feelings of (un)certainty to quit, persisters might at a later age become desisters and vice versa.

For many years cannabis has been decriminalized in the Netherlands. It is not illegal to use cannabis, and selling cannabis to consumers in coffee shops is condoned. Therefore, it could be questioned whether the term ‘deviant’ is appropriate. However, despite the Dutch ‘normalisation policy’ (Van Vliet, 1990), the frequent cannabis users in our study sometimes fear stigma (Liebregts et al., 2015). This is probably different for nonfrequent users. In case of full legalization, it might also be different for frequent users, but even then it is not self-evident that frequent cannabis use will be stripped of stigma. Probably, more important is that stigma is no prerequisite for people (in our case frequent cannabis users) to experience a ‘spoiled identity.’ Our study underlines the importance of meaning-giving. Life events can only become turning points if they are considered as meaningful (Lloyd & Serin, 2012). Similar life events gave persisters reason to keep using and desisters reason to quit. Until now, it was unclear whether agentic individuals are more likely to desist or if desistance increases individuals’ sense of agency (Lloyd & Serin, 2012, p. 547). Our findings indicate that agency is a necessary ingredient for desistance, yet also is developed over time and through action, and desistance increases individuals’ sense of agency. Our study hereby corroborates previous desistance research (e.g. King, 2013) and contributes to new insights on desistance from frequent cannabis use and the role of agency. We acknowledge that dependence is a factor that can make the content of mechanisms in the process of desistance from frequent cannabis
use different from the content in desistance from crime. However, when it comes to agency and self-defined identity, such differences might be less relevant, as it is not uncommon for individuals frequently involved in crime to perceive themselves as ‘addicted’ to crime (Potter & Osiniagova, 2012). Furthermore, we found that rather than whether or not people fully stop using cannabis, desistance is above all about the internalization of change and identity reconstruction (i.e. secondary desistance, Maruna et al., 2004). Desisters considered themselves as ex-users, even though some of them still used once in a while. Resemblances and differences between desisters and persisters, such as self-efficacy, levels of agency, integration of their past behaviour, and identity into the new sense of self, were strikingly similar to what has been found in studies on desistance from offending (Maruna, Wilson, & Curran, 2006; Maruna, 2001). Correspondingly, desisters and persisters differed in their balance of internal and external locus of control: desisters saw themselves as active agents, responsible for their life course, and in control of their future (‘you reap what you sow’), while persisters attributed experiences, particularly failure, to external forces, and had little belief in achieving goals by own actions only (‘life is like a game of chance’). In conclusion, our findings overall support that identity change is at the core of desistance processes, whether desisting from offending or cannabis use. A discrepancy between one’s current identity and future identity seems essential, yet change implies a sense of who one does not want to become (Paternoster & Bushway, 2009), involves social relationships (Reith & Dobbie, 2012), and strategies to change (McIntosh & McKeganey, 2001; Paternoster & Bushway, 2009; Rooke et al., 2011). Our findings point to lacuna not only in previous quantitative but also qualitative studies on recovery from cannabis as they seem to neglect the role of agency and identity, as well as meaning-giving and the relevance of strategies for change.

Accumulation of meaningful events combined with agency to change might have created the ‘right circumstances’ for desisters (cf. Paternoster & Bushway, 2009). Persisters, by emphasizing the ‘right circumstances,’ expected their context to change and blamed external factors for their unsuccessful attempts to quit/reduce. It has been argued that would-be desisters in supported accommodation are more likely to relapse when they are uncertain to change and vulnerable to influences of negative social relationships (Mackintosh & Knight, 2012). Could this apply to our persisters? Indeed, vulnerability to social influences was clearly expressed in their narratives, for example, their difficulties with not using cannabis when in company of other users. And although in the in-depth interviews (as well as at all standardized interviews) they reported a strong desire to quit, sometimes their narratives did show uncertainty, and some stated explicitly that desistance was something they should do, instead of really wanted to do.
Consequently, persisters failing to change their use might produce narratives that support that fail, just as desisters might produce narratives that support their changed behaviour, in order to make sense of their life retrospectively. Nonetheless, this study presented in-depth insights and novel patterns in the mechanisms of desistance from frequent cannabis use and more broadly the process of maturing out. As for implications for prevention, treatment, and self-supported change of use, our findings suggest to empower agency and refusal self-efficacy, to encourage would-be desisters to set goals and concretize strategies to achieve them, and to support users to cope differently with experiences and not to increase their use in tempting situations. Eventually, it is not what happens, rather the reaction to what happens that makes a change.
CONCLUSION AND DISCUSSION
At the start of the CanDep study, knowledge on the natural course of frequent cannabis use and dependence was scarce. Much of the existing research on cannabis use was restricted to initiation, and far less attention had been paid to continuation, persistence in or desistance from frequent use. Also, research often focused on irregular use, or on quitters only, rather than on frequent use. In addition, studies on cannabis use have often been limited to adolescence, but current cannabis use have often been limited to adolescence, but current cannabis users are often young adults. Although it is well-known that some cannabis users increase and others decrease or quit their use over time, very little is known about the reasons why frequent young adult users increase, decrease or quit their use, why some develop dependence and others not, and why some recover from dependence and others not. Against this background, the aim of the research in this thesis was to gain more insights into the dynamics in frequent cannabis use and in cannabis dependence, particularly the processes and mechanisms underlying these. Therefore, the central question was: What are the processes and mechanisms underlying transitions in the natural course of frequent cannabis use and cannabis dependence, and how can these be understood?

CanDep is a large-scale longitudinal study, combining quantitative and qualitative methods. At baseline, 600 frequent cannabis users aged 18-30 years (mean age 22 years) were recruited for the quantitative study and interviewed using standardized instruments. Around three quarters (79%) were male and of Western origin (72%). Participants were diagnosed as either last-year cannabis dependent (based on DSM-IV criteria), or non-dependent. Participants were re-interviewed after 1.5 (T1) and 3 years (T2). From each of the four possible dependence trajectories at T1, 12 participants were randomly selected to participate in the qualitative study, stratified for gender (8 male, 4 female), totalling 48 interviewees. They were interviewed in-depth twice shortly after the standardized interviews, with an intermediate period from 18 months, to gain comprehensive insight into the processes involved in and mechanism underlying this 3-year natural course of cannabis use. One participant could not be traced back at the second in-depth interview and was excluded from the analyses, resulting in a final group of 47 participants for the qualitative study. The qualitative study formed the empirical core of this thesis. The central question was translated into more specific research questions, that were addressed in previous chapters, starting with environmental (social relationships, study and work, leisure) and ending with individual elements (identity, agency), with each chapter covering specific life domains and themes.

The life course perspective was used as the theoretical framework in several chapters. Also other theoretical insights guided the questions and analyses,
including peer processes, the normalisation thesis, and notions from theories on desistance from crime. In this concluding chapter, the findings from the previous chapters are integrated and discussed, followed by a critical reflection and ending with suggestions for future research.

**Decreasing use and dependence during life course**

Before exploring the processes and mechanisms underlying transitions in the natural course of frequent cannabis use and cannabis dependence, we zoomed in on the natural course in itself: *What is the natural course in cannabis use and cannabis dependence in young adult frequent cannabis users?*

In the quantitative study, patterns of frequent cannabis use and cannabis dependence trajectories during the three-year follow-up period were quite varied, yet overall there was a tendency of declining use and dependence over time (van der Pol, 2014; van der Pol et al., 2015). From the participants in the qualitative study, at baseline (T0) 29 of the 47 were (near-) daily users (5-7 days per week) and the other 18 used cannabis 3-4 days per week.

At the final in-depth interview (T2), 20 participants were (near-) daily users, 19 used 3-4 days per week, and five used one day per week or less. Of the latter five participants, four had been using cannabis only rarely in the past year and considered themselves as non-users at the last in-depth interview. Another three had not used cannabis for one year or more, and said they had quit permanently. Between baseline and T2, cannabis use of 24 interviewees remained stable, 19 showed a general decrease, and four reported more cannabis use at T2 than at baseline.

At baseline, 24 participants were cannabis dependent, versus 13 at T2. Various trajectories concerning cannabis dependence appeared (Table 7.1).

Around one quarter of the qualitative sample remained persistent non-dependent (NNN) during the study. Some participants were persistent dependent (DDD), and others switched from a dependent to non-dependent status and vice versa. Yet, at the end of the study more participants were non-dependent than at baseline (23 versus 34, respectively).

In sum, even though four participants that were non-dependent at baseline had become dependent at T2\(^1\), overall both cannabis use and cannabis dependence declined in the course of the qualitative study.

\(^1\) These four participants were not the same as those who had increased their use at the end of the study.
TABLE 7.1
Transitions in cannabis dependence status T0-T1-T2 during the qualitative study²

<table>
<thead>
<tr>
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<th>T0</th>
<th>T1</th>
<th>T2</th>
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<tbody>
<tr>
<td>NNN</td>
<td>Non-dependent</td>
<td>Non-dependent</td>
<td>Non-dependent</td>
<td>12</td>
</tr>
<tr>
<td>NDN</td>
<td>Non-dependent</td>
<td>Cannabis dependent</td>
<td>Non-dependent</td>
<td>7</td>
</tr>
<tr>
<td>NDD</td>
<td>Non-dependent</td>
<td>Cannabis dependent</td>
<td>Cannabis dependent</td>
<td>4</td>
</tr>
<tr>
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<td>Non-dependent</td>
<td>Non-dependent</td>
<td>10</td>
</tr>
<tr>
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<td>Cannabis dependent</td>
<td>Non-dependent</td>
<td>Cannabis dependent</td>
<td>2</td>
</tr>
<tr>
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<td>Cannabis dependent</td>
<td>Cannabis dependent</td>
<td>Non-dependent</td>
<td>5</td>
</tr>
<tr>
<td>DDD</td>
<td>Cannabis dependent</td>
<td>Cannabis dependent</td>
<td>Cannabis dependent</td>
<td>7</td>
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</table>

The importance of social relationships in cannabis trajectories

In life course theory, trajectories into and out of drug use are largely bounded by social relationships (e.g. Granfield & Cloud, 2001). Parents are generally most influential during childhood; adolescence marks a decline in parental influence, as peers, and in emerging adulthood also partners, become the most important reference group in the private domain for (deviant) behaviour (Arnett, 2005; Erikson, 1980). Many studies acknowledge that peers and partners play a strong role in drug use (Brook, Brook, Arencibia-Mireles, Richter, & Whiteman, 2001; Coffey, Lynskey, Wolfe, & Patton, 2000; Knight, 2011; Rhule-Louie & McMahon, 2007), through mechanisms that can be grouped into selection (people select peers and/or partners who are similar in behaviour to themselves) and socialization (people influence each other’s behaviour in interaction). Social relationships in the professional domain can also be of influence. From the perspective of the differential association theory, it is argued that exposure to and associations with ‘pro-social’ co-workers or fellow students can contribute to pro-social behaviour, and decreases in cannabis use (Wright & Cullen, 2004). Equally, ‘anti-social’ colleagues could have negative influences, i.e. increased cannabis use. Specifically concerning quitting cannabis use, unsuccessful quit attempts are linked to frequent exposure to other users and the inability to resist cannabis use in tempting situations (Caviness et al., 2013; Rooke, Norberg, & Copeland, 2014).

Due to a random stratified selection of participants from each of the four dependence trajectories at T1 from the quantitative sample, the dependence trajectory NND was not present in the qualitative sample.
2011). Thus, previous research showed that social relationships play a central role in cannabis use careers. However, much previous research on the role of social environment and cannabis use has been restricted to a specific type of social relationship such as peers (and often were limited to adolescence). Moreover, studies show different results regarding the underlying mechanisms (selection and/or socialization) as well as their directions (more or less use, or desistance) in social relationships. In the Candep study, we explored several social relationships, instead of just one type, and their role in several life domains.

As a first step, in Chapter 2 we analysed baseline data from the quantitative sample (n=600) to explore how cannabis use characteristics and cannabis dependence play a role in the social networks of frequent cannabis users. Drug use is often a social activity that occurs in an environment with other users (Fountain & Korf, 2007), and includes informal rules and norms regarding drug use. Violating the appropriate informal rules and norms regarding drug use within a group of users leads to social sanctions, perhaps eventually exclusion from the group. Thus, processes of social inclusion and exclusion may play an important role in drug using careers. Cannabis use might be a factor that unifies peers in a social network. The research question was: How do cannabis use characteristics and cannabis dependence play a role in social networks of frequent cannabis users? While many participants had several cannabis-using peers, the analyses showed that neither cannabis use characteristics nor cannabis dependence (versus non-dependence) are factors that unite frequent users in social networks: with whom, where and when cannabis is used plays a role, but not a decisive one. In larger social networks of frequent cannabis users, cannabis dependent users were not fully socially excluded from/by other cannabis users, but tended to flock together as sub-groups within social networks of frequent but non-dependent users.

In subsequent chapters, we assessed various aspects regarding the role of social relationships in cannabis trajectories using the longitudinal data from the qualitative sample (n=47). More specifically, in Chapter 3, the research question with regard to this theme was: What is the role of social relationships in frequent cannabis use and cannabis dependence trajectories and what is the (relative) contribution of selection and socialization? We found that in line with the life course theory, influences of peers and partners in cannabis use were generally considerable, whereas the influence of parents was small. Commonly, interviewees with many cannabis-using peers were more likely to use cannabis together. As a result they often used more than they would normally do alone, especially participants without partners. While short-time relationships had no effect on cannabis use, the influence of
longer relationships mainly depended on the partner’s use (cf. Rhule-Louie & McMahon, 2007). The mechanisms of selection and socialization were both present. Participants often used more cannabis in the company of using peers and/or partners, and used less in the company of non-using peers and/or partners. All in all, peers and partners were very influential and the ones they spent most of their time with most strongly influenced participants. They often adapted their cannabis use to others, depending on cannabis use of the associate.

Participants mentioned that they were hardly influenced by other people with whom they generally spent a lot of time, i.e. colleagues and fellow students. Yet, indirectly, these associates were rather influential, as participants generally avoided using cannabis at work or school (Chapter 4). Instead, cannabis use was largely restricted to leisure time, and then social relationships were important, because most participants spent their leisure time with peers and/or partners (Chapter 5). Interviewees were engaged in various leisure activities, some predominantly at home settings (homebodies), others mostly outdoors (gadabouts). While participants did not conceal their use from their social relationships (with in some cases the exception of their parents), neither did they make a show of it: cannabis was preferably used at home and not in the company of non-users. About half of the participants considered cannabis use as primarily a social activity, sharing a joint being conditional to use cannabis.

Peers and partners were also very important when interviewees wanted to quit their cannabis use (Chapter 6). For desisters (those who quit using cannabis during our study), social relationships were important in their identity reconstruction and behaviour change. They enabled them to distance themselves from other users (peers, partners) and to reflect upon their ‘user behaviour’ (and thus their own previous behaviour as well), which supported the process of identity reconstruction and reinforced their new behaviour. Also social feedback reinforced their new non-user identity and behaviour (Maruna, Lebel, Mitchell, & Naples, 2004). Conversely, for persisters (who from baseline onwards reported a persistent desire but unsuccessful attempts to quit), being in the company of cannabis-using peers and partners often led to relapse, as they had difficulties not to use cannabis when it was around.

Taken together, social relationships are essential in frequent cannabis use and cannabis dependence trajectories, and processes of both socialization and selection are at play.
Birds of a feather flock together? Age, gender, ethnicity in cannabis trajectories

Age is an important concept in the life course perspective, because it is one of the markers associated with psychosocial development and with transitions in the life course. Like delinquency and crime (Laub & Sampson, 2003; Laub & Sampson, 1993), cannabis use peaks in adolescence and young adulthood and then declines. Regarding gender, cannabis use is more common among males than females, men are more often frequent users than women (EMCDDA, 2014), and more men than women are cannabis dependent (Hayatbakhsh, Najman, Bor, O'Callaghan, & Williams, 2009; von Sydow et al., 2001). However, relatively little is known about the relationship between ethnicity and cannabis use (e.g. Chen & Jacobson, 2012; McCabe et al., 2007). In the Netherlands, cannabis is used somewhat more often by people with a Western (versus a non-Western) ethnicity (Korf, Doekhie, & Wouters, 2011). As stated before, and as expected from the life course perspective, overall we found a decline in cannabis use and dependence during follow-up. Although it should be noted that the age range of the participants was small (18-30 years at baseline), our findings suggest that age did not matter much with regard to transitions in frequent cannabis use and dependence within this age range. Neither in the quantitative study was age a predictor of (transitions in) cannabis dependence (van der Pol et al., 2013).

Chapter 2 (on the quantitative sample, at baseline) showed that in structures of larger social networks of frequent users, gender and ethnicity played some role. In one large network females tended to flock together with female using peers. In other large networks, participants clustered together in same ethnicity sub-networks. However, with regard to the role of peers (Chapter 3), work and study (Chapter 4), leisure (Chapter 5), and desistance and persistence (Chapter 6) in cannabis trajectories ethnic differences played no role. Hence, ethnicity did not appear to be related to cannabis dependence or the course of frequent use and dependence.

In contrast, gender was associated with transitions in frequent cannabis use and dependence. Two key findings emerged. Contrary to previous studies, females remained or became dependent more often than males (Chapter 3) and this was (partially) related to underlying mechanisms in romantic partnerships, primarily to selection and secondary to socialization processes. Females in our study tended to select partners that were also frequent users, and as a result increased their use. This effect generally continued as long as the relationship lasted, and they reduced or stopped their use when the relationship ended. For female participants, transitions towards dependence could be explained by a new relationship with a cannabis-using partner. Male users, on the other hand, selected non-using partners and accordingly
decreased their use when entering new relationships. However, on the longer term this socialization effect disappeared: for males with steady/cohabiting relationships, their non-using partner seemed to have little to no influence. Remarkably, females were almost always the leaver while male participants were equally often the leaver or the left. Therefore, it seems that females are more interpersonally focused than males and thus the behaviour of partners would be more salient to females than males’ problem behaviour (cf. Rhule-Louie & McMahon, 2007). This could clarify why we found gender differences in romantic partnerships, but not in other areas. An explanation for these gender differences could be that females are perhaps more likely to have a cannabis-using partner than males, simply because there are more using males than using females. However, this argument is partly refuted by the fact that four out of the sixteen females in our qualitative study were (also) in same-sex relationships. A more plausible explanation is that, if females are indeed more interpersonally focused than males, females - especially ‘deviant’ females - actively pursue common interests and acceptance in a relationship, unlike males. It might as well be that once female cannabis users have become frequent users and have been using for quite some time, they are already more deviant than their male counterparts. Alternatively, stereotypically, females might be attracted to ‘bad boys’, whereas males prefer a partner who sets limits and assumes a caring role. In fact, processes of stigma might be at play here, as many males expressed negative opinions about frequent female cannabis users, picturing them as ‘sluggish’ and ‘lazy’, while female interviewees did not use such terms when talking about male users. Certainly, these issues are worth investigating more deeply in future research.

**Turning points: the occurrence of life events and its influence**

Life happens – just as any other young adult, the participants in this study experienced several events in different life domains during the three years they were monitored. Life course theory considers transitions, such as changes in relationships, education and work, as potential turning points in explaining desistance from deviance (Laub & Sampson, 1993). Turning points are preceded by life events and while they could (objectively) be categorized as positive or negative, their (subjective) meaning depends on how the person experiences and evaluates them (Laub & Sampson, 1993). Consequently, similar events can have different meanings for different individuals. The events that participants experienced were somewhat more often evaluated as positive than as negative. As has been shown by previous research (Rökkä, Oravala, & Pulkkinen, 2003), the amount of personal choice in an event has an impact on how someone evaluates an event: events are likely to be experienced positively when participants feel that personal choice
is present. However, this was not the case for negatively experienced events: they went equally often with or without personal choice.

Life events leading to a lasting change over time in an individual’s life course are considered turning points, and can only be identified retrospectively (Teruya & Hser, 2010; Wheaton & Gotlib, 1997).

The life events that our participants experienced largely varied, and could impact all life domains. Yet, the most common life events included a broken and/or new romantic relationship, starting and/or ending a job or study, new and/or ended friendships with peers, and stress related to study and/or work.

The relevance of the occurrence of life events for cannabis trajectories was already suggested by our finding that people with a dynamic cannabis dependence trajectory experienced more life events than those with stable trajectories. Chapter 6 showed that for desisters mainly negatively experienced events contributed to their decision to stop using cannabis.

The life course perspective argues that life events can become turning points when they lead to a lasting change over time or a redirection of someone’s life course, including a change in substance use or dependence (Teruya & Hser, 2010). In our study, life events not necessarily affected cannabis use of the participants, but this also depended on the life domain. Negative partner and parent events were most likely to impact cannabis use, while positive study or work events often did not influence cannabis use, particularly when the event created little contrast in participants’ life. Some events commonly influenced cannabis only temporarily and these were often quite abrupt events, for example participants that experienced a breakup with a romantic partner and said they used more cannabis for some time to forget the pain. Generally, life events with a (more) permanent impact on cannabis use were those with a rather gradual nature, such as building new friendships with non-users and simultaneously diluting friendships with users, that eventually lead to decreased use. Another example is the growing realization of the importance of an education and increasingly committing oneself for a diploma, and simultaneously step-by-step cutting back on cannabis use.

Table 7.2 summarizes the associations between life events and turning points and their relationship with an increases or decreases in cannabis use. If life events had an impact on cannabis use, negative life events generally went together with more use, and positive events with less use. More specifically, events that led to less leisure time led to decreased use, and events coupled with more leisure time led to increased use. Students, for instance decreased their use during examination periods, and employed participants that quit their job increased their use. However, also the person with whom leisure time is spent matters: changes in use are often result from socialization processes with peers and/or romantic partners.
Concerning dependence, we found several life event patterns to be related to transitions in cannabis dependence (see Table 7.2). Nonetheless, despite these patterns this study found that for an event to be influential on cannabis use and dependence, it must have some specific features. First, contrast and timing are important for events to generate change (cf. Wheaton & Gotlib, 1997; Elder, 1998). For example, employed participants who switched from a job to a similar one, often considered their new job, although they were pleased with it, as little influential on their daily life with also little effect on their cannabis use. Likewise, students who obtained their bachelor’s diploma and then continued a master study experienced their graduation as positive, but not life-changing. Second, and in a similar line, to be influential the event should have an impact on the (amount of) leisure time, as cannabis use commonly is a leisure activity. Thus, becoming unemployed led to more leisure time and thereby to more cannabis use, whereas a busy study period led to less leisure time, and consequently to less cannabis use. On the one hand this supports the life course perspective that employment and education, by limiting leisure time and facilitating structure, results in reduced cannabis use (Laub & Sampson, 2003). On the other hand, the available leisure time is influenced by several factors, such as the way participants give meaning to their life and daily routines. Sampson & Laub (1993) stated that the informal social control that comes with such life events
is commonly more important than the life events themselves. Our findings also show that it is indeed more about others aspects (see paragraph ‘narratives, identity, meaning-giving and agency’) rather than the life event itself.

**Occupational life, leisure and normalisation**

This thesis clearly shows that by and large young adult frequent cannabis users, both dependent and non-dependent, are very ‘normal’ people, living a ‘conventional life’ rather similar to other young adults, as expressed in their social activities, romantic relationships, study, work and sports. In general, cannabis use appeared to be a leisure activity. More specifically, it was one of their leisure activities, and, with few exceptions, cannabis was not used during work or study time. According to participants, cannabis use would negatively impact one’s daily occupational functioning (work and/or study), and most of them had experienced adverse effects themselves, such as difficulties getting out of bed the next day, having trouble memorizing, functioning more slowly and sloppy, and postponing tasks. In order to avoid adverse effects, almost all participants took it for granted not to use cannabis before or at school/work and when studying.

In Chapter 4, we focused on study and work in relation to cannabis use dynamics and cannabis dependence trajectories. The research question was: *What is the role of study and work in frequent cannabis use and cannabis dependence trajectories?* Participants could be divided into three categories of occupational status: employed, student and neither (e.g. fulltime parent, on social benefits). In the course of the study the number of students dropped from 31 to 24, the number of employed (almost exclusively fulltime) increased from 11 to 18, and the number of participants without study or work remained stable at 5. Evidently, the more important participants considered their study or job, the more effort they put into it and the more committed they felt. Frequent cannabis use often went quite well together with studying and/or being employed, but rules and norms were applied: users did not use cannabis just anytime and anywhere. Furthermore, participants’ narratives indicated a reciprocal relationship between (events in) occupational life and frequent cannabis use and dependence: changes in occupational activities could lead to changes in drug use/dependence and changes in drug use could lead to changes in occupational activities. In some cases cannabis use and dependence had a negative impact on occupational life, but in other cases the effects of cannabis use and dependence changed occupational life for the better, e.g. when the desire to improve ones professional performance was reason to deliberately cut back or stop using cannabis. At the same time our findings supported Laub & Sampson’s (2003) line of reasoning that employment and
education have an impact cannabis use and (indirectly) dependence by limiting leisure time and facilitating structure resulting in attenuated cannabis use. However, it could be argued, and as indicated by our findings, that the available leisure time is influenced by several factors, e.g. with whom participants spend time and the way participants give meaning to their life and study or job, including motivation, priorities and agency. In this perspective, the restricting impact of leisure time on cannabis use might be ascribed to the amount of leisure time one has as well as to the amount of leisure time one creates to use cannabis.

In Chapter 5, we explored interviewees’ leisure time and leisure activities in more detail. Given that frequent cannabis use is associated with leisure time, we were interested in how interviewees shape their leisure and in the role of cannabis in their life. We also analysed participants’ narratives from the perspective of normalisation. In Chapter 4 (on study and work) we showed that participants were often hiding their cannabis use for colleagues and/or fellow students. This opposes the idea that cannabis use in Western countries (especially in The Netherlands with its liberal policy) is normalised (Parker, 2005). However, our finding that cannabis use is predominantly a leisure activity, including choices about whether, where and when is (not) used, does support the normalisation perspective (cf. Measham & Shiner, 2009; Parker, 2005). Therefore, the leading research question in Chapter 5 was formulated as: What is the role of leisure and delinquency in frequent cannabis use and cannabis dependence trajectories and what does that tell us about the normalisation of cannabis use in young adults?

Normalisation has been defined by six indicators that can be summarized into two dimensions: (1) growth in drug demand and supply, and (2) increasing levels of social and cultural acceptability. In several Western countries support for the normalisation thesis has been found (e.g. Duff, 2005; Parker, Williams, & Aldridge, 2002), showing that the choice to use cannabis is a rational consideration of costs and benefits, and also that users do not belong to a deviant subculture (Duff et al., 2012; Hathaway, 1997; Pearson, 2001; Shukla, 2006). However, opponents have criticized the normalisation thesis for simplifying young people’s choices about drug use (Shiner & Newburn, 1997), being too broad and relying on a too simplistic distinction between recreational and problematic drug use (Shildrick, 2002) and underemphasizing the role of the (wider) social context and structural influences of drug use attitudes and choices (Measham & Shiner, 2009; Pennay & Moore, 2010).

In Chapter 5 we found both support and opposition for the normalisation thesis. Support for the normalisation thesis was found in the fact that most of our participants lived a ‘conventional life’. Cannabis use appeared one of
many facets of their lives, not one that (completely) defined their identity or lifestyle and they mostly considered it subordinate to responsibilities. Although they sometimes showed delinquent behaviour, this mainly referred to minor offences and in most cases was not related to or induced by cannabis. Subcultural membership was rather absent: the participants did not depend on others for cannabis supply and most did not cultivate cannabis themselves – yet this is of course also due to the existence of coffee shops in the Netherlands. On the other hand, and opposing the normalisation thesis, our findings indicated a role of structural influences in cannabis trajectories. Moreover, and perhaps somewhat surprisingly, the frequent users in our study occasionally felt stigmatized, and for fear of being judged or labelled they carefully selected settings for use: preferably not in company of non-users or in public places (cf. Hathaway, Comeau, & Erickson, 2011). As already mentioned before, participants did not want to present themselves as cannabis users at work and school, fearing stigma and a negative image. It is therefore questionable whether frequent but non-problematic use is socially accepted, or normalised, or whether this only applies to incidental use.

Chapter 5 also showed that the distinction in normalisation between recreational and problematic drug use oversimplifies the complexities of it (cf. Shildrick, 2002). Leisure plays a significant role in the dynamics of frequent cannabis use and dependence, as it is generally restricted to leisure time and that the more leisure time one has, the more time there is to use cannabis, and vice versa. More engagement in leisure activities (particularly outdoors) leaves fewer opportunities and/or time to use cannabis. Both dependent and non-dependent users limited their cannabis use to their leisure time and both seemed to make conscious choices about their use, considering other responsibilities, and their company and situation. However, dependent, especially persistent dependent interviewees assigned a more central role to cannabis in their leisure time, by planning their leisure activities around cannabis use, and being inclined to prioritize cannabis over other leisure activities. Therefore, differences between dependent and non-dependent cannabis users are rather related to how easily or difficult this choice is established, the tendency to use and the centrality of cannabis in their lives; to what extent and with what ease do they prioritize cannabis within their leisure time.

Narratives, identity, meaning-giving and agency

Even though our study showed that also for frequent and dependent users cannabis use is mainly a ‘leisure activity’, its effects obviously reach beyond the realm of leisure, but to what extent and how varies greatly. Interviewees had different reasons to use, and one person could use for different reasons with different effects. For some cannabis use helped being more focused
when studying, for others it was a way to close the day, and again others used cannabis to forget their worries. Some saw cannabis use as solely a social activity, while others enjoyed it at best when alone. The extent to which cannabis use impacted participants’ lives was not only related to cannabis use patterns, such as when, why, where and with whom they used, but also to the organization of their daily life and their levels of agency. Some were better able than others to limit the influence of their use on other areas of their life and were more capable to prioritize other things over cannabis use. Likewise, the extent to which life events impacted cannabis use and dependence differed from person to person.

This all came together in Chapter 6, were we focused on a more individual level and at that level brought together and analysed more comprehensively different aspects from preceding chapters.

While in preceding chapters it became clear that frequent cannabis use and dependence on the one hand and different life domains on the other hand definitely could impact each other, it was also evident that the interactions we found could not simply explain individual variations in dynamics in the course of frequent use and dependence. In this perspective, Chapter 4 (about the professional life domain) shed some light on the concept of agency. Agency refers to an individual’s self-efficacy, the ability to be self-reflexive, to set personal goals and to decide upon courses of action to realize them, and a sense of feeling in control over one’s life. In Chapter 6, the role of agency and other individual aspects was investigated in detail by comparing cannabis use in desisters (who quit using cannabis during follow-up) and persisters (interviewees who reported a persistent desire to quit or cut back and/or had unsuccessful attempts to do so, but were still using cannabis regularly the whole study period) using a narrative approach.

This approach assumes that people construct personal narratives to give meaning to their lives, and these chiefly shape their identity and guide their behaviour (Farrall & Maruna, 2004; Irving, 2011; Maruna, 2001).

Theoretically, studies on desistance from crime were an inspiration. Although different in content, both desistance from crime and desistance from frequent cannabis use (whether or not defined as deviant behaviour) can be understood as gradual processes of discontinuation (or: quitting). The literature on desistance from crime showed that identity change seems at the core of desistance. In addition, previous research suggested that a conflicting current and future identity could lead to a desistance narrative and a (re)construction of a non-user identity. Agency in this process would be achieved through action and developed over time (King, 2012). Finally, strategies and a realistic, feasible plan for identity change had been linked to successful desistance from crime (Maruna, 2001; McIntosh & McKeage, 2001; Paternoster & Bushway, 2009; Rooke et al., 2011).
The leading question in Chapter 6 was: *What are processes underlying desistance from frequent cannabis use, more specifically the role of perceived life events, identity change, agency, and strategies?* As already set out earlier in the current chapter, life events can influence cannabis use and dependence, and vice versa. This became even clearer in Chapter 6, showing that desistance from cannabis is clearly a process involving agentic and structural factors. Desisters’ narratives indicated rather high levels of agency, and they set goals that enabled them to envision another future self. In contrast, persisters could not, and were rather incapable to set goals and to draw up strategies to realize them. Interestingly, while for persisters quitting or decreasing cannabis was an end in itself, for desisters quitting was merely a means to achieve goals. Finally, persisters blamed external factors for events in their life course, and more specifically for failed quit attempts. Also structural influences played a role in the desistance process, and life events could support desistance. Interestingly, both positive and negative events triggered desisters to reflect on their life (cf. Paternoster & Bushway, 2009) and to decide that cannabis was not conducive anymore. Significant others were important in desisters’ identity reconstruction and behaviour change in two ways. Firstly, by distancing themselves from other cannabis users (peers, partners) and reflecting upon their ‘user behaviour’ (and thus their own previous behaviour as well), the process of identity reconstruction of desisters was supported, and consequently their new behaviour reinforced. Secondly, social feedback reinforced their new non-user identity and behaviour (cf. Maruna et al., 2004).

Meaning-giving and agency were of paramount importance in explaining desistance and persistence, and in the process of life events becoming turning points in cannabis trajectories. Similar life events gave persisters reason to keep using, and desisters reason to quit. Our findings exhibited that agency is a necessary ingredient for desistance. Agency is developed over time and through action, and desistance increases an individuals’ sense of agency. Rather than whether or not people fully stop using cannabis, desistance from frequent cannabis use was above all about the internalization of change and identity reconstruction was at the core of desistance processes (i.e. secondary desistance, Maruna et al., 2004). Desisters considered themselves as ex-users, even though some of them still used once in a while. Resemblances and differences between desisters and persisters, such as self-efficacy, levels of agency, integration of their past behaviour and identity into the new sense of self, were strikingly similar to what had been found in previous studies on desistance from offending (Maruna, Wilson, & Curran, 2006; Maruna, 2001).

In conclusion, eventually it is not what happens, rather the reaction to what happens that makes a change.
Cannabis dependence, its diagnosis and definition

As already mentioned in the general introduction (Chapter 1), the concept of cannabis dependence is not without discussion. This study provided some new insights regarding the diagnosis and definition of cannabis dependence (Chapter 5). It was shown that cannabis dependence is a heterogeneous phenomenon, which is in fact not surprising, as people can be dependent while endorsing different criteria. Theoretically, different combinations of 3 or more out of 7 DSM-IV criteria may result in 99 potential subtypes for cannabis dependence (McBride, Teesson, Slade, & Baillie, 2010). The dependent users in our study varied substantially in their cannabis use patterns, cannabis-related problems and lifestyle. Moreover, exploration of cannabis dependence trajectories that emerged during the three-year follow-up showed quite a variety of individuals and in cannabis use and course (as was also the case in the quantitative study, see van der Pol, 2014).

The current study also showed that a DSM-IV diagnosis of cannabis dependence not necessarily equates to problematic cannabis use (cf. Temple, Brown, & Hine, 2011). While the DSM-IV defines dependence as a maladaptive pattern of cannabis use leading to impairment or distress, the specific criteria do not seem to fully capture this maladaptive pattern of use, and the diagnosis can also apply to persons who, by their own account, are not experiencing any problem (see Chapter 5).

Cannabis dependence is also a matter of how individuals give meaning to their own use. The findings from this study suggest that the association between use levels and problems is not necessarily straightforward. Problematic use of cannabis appears to be highly subjective and strongly influenced by context and mostly attribution. The same holds for the diagnosis of dependence, as some cannabis users are more reflexive and more generally have higher levels of agency than others (Chapter 6).

Overall, our study showed that the diagnosis of cannabis dependence is often an encapsulated moment in time and that cannabis dependence is not an irreversible condition. A technical problem with the DSM diagnosis of dependence is that when an individual fulfils three out of the seven criteria in a time span of some weeks, a diagnosis of last-year cannabis dependence is applied. Thereby, the diagnosis does injustice to the dynamics or developments that already have occurred in that given period, and thus to the complexities of the phenomenon. On the other hand, our study also included persisters, individuals that diagnostically remained cannabis dependent during more than three years, and it was not uncommon that their situation would clearly fit their diagnostic label. Moreover, we found some similarities within the persistent dependent group, as well as within the persistent non-dependent group.
In May 2013, DSM-5 was introduced, a revision of the previous DSM. This updated version includes a combination of abuse and dependence rather than a distinction between the two; also a criterion of craving or strong desire to use was added, and the threshold for a cannabis use disorder was set at two or more criteria (APA, 2013). The number of criteria indicates the severity of the disorder: 2-3 criteria of the 11 criteria is a mild cannabis use disorder, 4-5 criteria is a moderate and ≥6 criteria is a severe disorder. Although this new DSM-5 has been well received, studies on the concordance of the DSM-IV and DSM-5 yield inconsistent results: some find a higher prevalence for cannabis use disorders with DSM-5 compared to DSM-IV, whereas others find a lower prevalence with DSM-5 compared to DSM-IV (e.g. Mewton, Slade, & Teesson, 2013; Peer et al., 2013). Future studies will further clarify how both versions relate to each other and possibly provide feedback for future improvements. Although the inclusion of severity perhaps addresses some aspects of the oversimplification of the concept of dependence, and to a lesser extent the issue of injustice to dynamics, our arguments regarding not capturing the maladaptive pattern of use and the relevance of agency also apply for DSM-5. It could be argued that a severity score of dependence is related to someone’s level of agency, and future research should make this clear. Scholars, (prevention and treatment) professionals and policy makers should keep these issues in mind.

Critical reflections and future research
Our qualitative research revealed that the course of frequent cannabis use as well as cannabis dependence is rather dynamic, even during a relatively short time span of three years. While cannabis careers were very diverse, the general trend was towards less use and non-dependence. This tendency was also visible in the much larger quantitative sample of the CanDep study (see van der Pol, 2014; van der Pol et al., 2015). The longitudinal, prospective study design allowed for close and intensive monitoring of participants. Our qualitative approach in the subsample provided insights in the perceptions, experiences and attributed meanings of participants, and contributed to a better understanding of the mechanisms involved in the dynamic course of frequent cannabis use and dependence. Contrary to many previous studies, we explored cannabis use and the interviewees’ live into great detail. Where previous studies often focused on one particular theme or group (e.g. marriage, peers, or adolescents), our study captured all important life domains and themes that might be important for the dynamics and psychosocial processes underlying transitions in cannabis use and dependence.
Despite the fact the CanDep study is unique, every study has its limitations, and so does this one. Moreover, science is never finished, and there are some interesting future challenges. The first potential limitation is related to representativeness. We started with frequent users only, and an equal number of dependent and non-dependent interviewees, evenly distributed over four cannabis dependence trajectories. At the end of the study, after three years follow-up, non-dependent participants were the majority, and cannabis use had decreased. Interestingly, in our qualitative subsample, 7 of the 47 frequent cannabis users at baseline (15%) had desisted from cannabis at the end of the follow-up period; a percentage that is very similar to the quantitative CanDep study (n=600), where 12% of the participants reported to have quit cannabis use at the last interview (T2) (van der Pol, 2014).

The second limitation has to do with the duration of the follow-up. During the three-year natural course, cannabis use and dependence decreased, and at the last interview, most participants had established a form of self-regulation. Desistance from frequent cannabis use is a gradual process, in both behaviour and mind, as this thesis showed. On that account, our follow up interviews were just snapshots of a life course, and many changes may have occurred after our last interview. Persisters might at a later age become desisters (and vice versa). This is all the more true since this study made clear that agency is achieved through action and developed over time, and level of agency is likely to interact with feelings of (un)certainty to quit. Still, interviewees were followed for three years. For young adults this is a considerable time, and we have seen that many developments in different life domains took place. However, additional follow-up assessment could further improve our knowledge and understanding of the natural course of frequent cannabis use and dependence. This could also add to even deeper insights into and understanding of persistence and desistance processes, as expectedly more participants would mature out of their cannabis use as they age. A longer follow-up period could also shed more light on the impact of life events in cannabis trajectories that are more common at a later age, including marriage and child birth (from crime: e.g. Laub & Sampson, 2003; Maume, Ousey, & Beaver, 2005). Participants in our study barely experienced such events probably due to the relatively young age of the participants (on average 24.5 years at the final in-depth interview) and the fact that in the Netherlands the average age for these events is 30 and 35 years, respectively.

Third, and in a similar line, the cultural context can differ across countries. For example, the role of marriage might be less pronounced in The Netherlands and other countries in Northern and Western Europe compared to the USA and most non-Western countries: in The Netherlands, cohabitation without being married is more common. Therefore, it would be interesting to cross-
nationally study the role of life events such as marriage, but also cohabitation, in the natural course of and desistance from frequent cannabis use and dependence in Europe. In addition, it should be noted that Dutch policy officially tolerates possession and sale of small amounts of cannabis in coffee shops, and coffee shops gave a perfect opportunity to recruit participants. Dutch policy officially tolerates possession and the sale of small amounts of cannabis. This may limit extrapolation of our results on the relationships between cannabis use, delinquency and stigma to countries with different cannabis policies.

The use of a qualitative methodology allowed for an in-depth exploration of topics. It enabled us to better capture the dynamic and complex processes beyond the numbers than quantitative research would have, and uncover the mechanisms involved in the life course and cannabis use and dependence trajectories. Apart from the many advantages, our qualitative study also had some important methodological limitations. For example, we cannot claim that saturation was achieved during recruitment for the qualitative study. However, the data consistently showed important dominant patterns suggesting that sufficient participants were included to discover meaningful patterns of behaviour. We also cannot claim that our findings can be generalized to all frequent cannabis users. However, we wanted to uncover meanings and underlying processes and mechanisms, and theoretical rather than statistical representativeness was our goal. The participants in our study were quite varied, and did not seem to be stand-alone cases. While this study showed that many frequent and dependent cannabis users are participating in society in all aspects and are not necessarily marginalized individuals, our group of participants might be atypical.

Cannabis users’ narratives, their (re)constructions of their life, cannabis careers and the world they live in, and consequently their interpretations, perceptions and reflections formed the basis of our analyses and interpretations. Some might consider these not to be ‘objective’. However, in line with Bergman & Coxon (2005), we would argue that also ‘objective facts’ have an assigned meaning and have been interpreted, and that “... the assessment of causes and consequences of social phenomena cannot be achieved in the absence of evaluation and interpretation. To understand is to interpret.” (Bergman & Coxon, 2005, para. 2). The aim here was to gain an insider’s view on the relationship between interviewees’ cannabis use and their lives, and vice versa. Several steps were kept in mind to reassure the quality of this research. Based on their transition status, participants were randomly selected from the larger sample, and we used a topic list to guide the interviews. During the interviews, aware of our role as researcher, we kept questions as open as possible. The use of context-based timelines, including information participants (quantitatively) reported intermediately,
positively contributed to the recall of their lives and cannabis use, and partly facilitated data triangulation. For the analyses, a combination of deductive and inductive strategies was used. On the one hand, codes and categories were partly developed beforehand, based on the literature (a priori coding, Miles & Huberman, 1994). In addition, new codes and categories evolved from the data, and new patterns emerged. Interview transcripts were read and reread to identify and link evolving codes, categories, and themes (pattern coding, Miles & Huberman, 1994). In the writing process, we aimed to clearly distinguish between participants’ stories and our analyses and interpretations. Along this line, a life course perspective was generally applied to explore the course of frequent cannabis use and dependence, and their interaction with different life domains and events. A premise of the life course perspective is the recognition that lives are embedded and shaped by context (Elder, 1998; Sampson & Laub, 2003). Through contextualization, a true understanding of the dynamics, underlying mechanisms and natural course of frequent cannabis use and dependence was enabled. Also other life course theory principles were applied, acknowledging the role of agency in decision-making and life courses, and the importance of timing with regard to events (Sampson & Laub, 2003). However, what qualifies as ‘life event’ is perhaps debatable. While some events need no clarification (e.g. death of a significant other, marriage), others could lead to more discussion. Some author argue life events are sudden and life changing, others see this different. In this study, life events were qualified as such, when participants reported it as an event in their life.

The narrative approach assumes that people give meaning to their lives by constructing personal stories. However, meaning can often only be ascribed in retrospect to events, and similarly only retrospectively life events that have become turning points can be identified (Teruya & Hser, 2010; Trahar, 2009). Moreover, memory is selective and it could be argued that recall bias may have coloured our findings. Also, our interviews may have had an effect on the individual’s behaviour, as the detailed questions might have created forced moments to reflect upon participants’ own cannabis use. Having said that, all participants in the large CanDep sample (thus including all participants in our qualitative study) were asked whether they believed that participating in the study had changed their cannabis use. As only 5% confirmed this, the impact of our questioning seems minimal. Moreover, the chance that these participants were all included in the qualitative study is minimal. Still, we cannot preclude the study has possibly influenced interviewees’ behaviour, including their cannabis use. This might even be more likely for the in-depth interviews, as they were extra moments of reflection, and participants were questioned rather thoroughly.
Finally, from the life course perspective, a decline in cannabis use during young adulthood was to be expected with age and ‘maturing out’. Cannabis use and lives of the interviewees in our study were quite dynamic, but to some extent this was due to the study design, as we deliberately included dynamic dependence trajectories between T0-T1 for in-depth interviews and young adults are likely to be dynamic or even volatile in different aspects. Additionally, as only frequent users were enrolled into the study at baseline, and part of them were already daily users, a decline in (frequency of) use was to be expected (regression to the mean). Although they can use more joints per day, daily users cannot use on more days, but can only decrease or remain stable in cannabis use frequency. However, as other studies also showed a decrease of cannabis use during years of emerging adulthood (e.g. Perkonigg et al., 2008; Schulenberg et al., 2005; von Sydow et al., 2001) and there was a steady decline during the entire follow-up of CanDep, it seems more plausible that indeed frequent cannabis use among young adults decreases as they mature.

**Cannabis changes**
In this study, the use of cannabis was generally limited to leisure time, and did not take place in company of non-users. Cannabis dependence was not necessarily experienced as problematic and not related to crime. Moreover, frequent cannabis use appeared to be not inevitably inherent to cannabis dependence, and neither did cannabis dependence appear to be irreversible. In fact, cannabis dependence was often a temporary stage in the natural course of cannabis use and frequent cannabis users were often greatly in control of their use.

The users in our study that quit or strongly reduced on their use all did so without any formal treatment. Several users remained frequent users though, but were not dependent, thereby indicating at least some degree of self-regulation. Nonetheless, other users, albeit constituting a minority in our study, did not manage to quit or cut back, despite the repetitious desire to do so, indicating that cannabis dependence can be quite persistent. These users in particular might benefit from treatment or other interventions. However, as this study makes clear, these should not necessarily target all frequent users, but rather those who are at higher risk of dependence. For example, users who increased their use when experiencing negative events often were or became dependent, and they could be supported to cope differently with experiences and not to increase their use in tempting situations (skills training). Also, it might be recommendable in interventions to target frequent users who spent much leisure time at home gaming, as our findings raise questions about a possible relation between cannabis dependence and game dependence. Interventions should thus not necessary target all dependent
users, but particularly individuals who (persistently) want to quit using but are unsuccessful in doing so. These users could for instance gain from interventions that would support them to set goals and practice strategies to achieve these goals. Social relationships showed to be of great importance in frequent cannabis use and cannabis dependence trajectories, including in processes of desistance and persistence. Another recommendation for self-supported change of use or users in treatment would be to advise to refrain from associating with co-users, and to associate with non-users instead. This would protect them from temptation, and more importantly could support reconstructing a non-user identity. Additionally, the possible deteriorating effect of relationships with co-users could be made explicit in particular to female users, and treatment interventions could focus on the exhibition of more self-control. More generally, empowering agency would be recommended, as agency turned out to be crucial in the process of desistance. To improve treatment, or self-supported change of use, structured spending of leisure time, such as sports seems recommendable, as this would replace the time spent on cannabis use and can be a substitute for similar relaxation. This fits in rather well with recent national and international developments in addiction care and treatment that emphasize the empowerment of individuals and focuses on personal recovery, as it would be necessary step for clinical recovery (e.g. Slade, 2009; GGZ Nederland, 2013).

Internationally, there is much debate about cannabis policy. Will it move in the direction of less control – or even legalization? Or will legal control and criminalization remain a central feature in the international drug conventions? The coming years will tell whether The Netherlands will keep or will stop having coffee shops – and whether a next step will be made and the ‘back door’ of coffee shops, the production of cannabis will be regulated. Whatever the direction in Dutch cannabis policy will be, this study demonstrates that contemporary Dutch cannabis policy with coffee shops as the most striking feature does not necessarily lead to ‘uncontrolled’, rampant use.

Trajectories of frequent cannabis use and dependence are very dynamic and tend to decline over time. This study uncovered the reciprocal relationships and mechanisms involved in cannabis trajectories and life (events) of young adult frequent users. Social relationships, work and study, leisure and life events have different meanings for individuals, even when they are similar, yet what matters eventually is the action that is taken by individuals. Agency appeared to be a necessary ingredient for desistance and in the process of life events becoming turning points in cannabis trajectories. Over time, either gradually or abruptly, cannabis use and dependence can change, and so do the lives of young cannabis-using adults.
REFERENCES


in social activities, roles and beliefs. Mahwah, NJ: Lawrence Erlbaum Associations.


Carter, A., & Hall, W. (2012). Addiction may not be a compulsive brain disease, but it is more than purposeful medication of untreated psychiatric disorders. *AJOB Neuroscience, 3*(2), 54-55.


References


Mackintosh, V., & Knight, T. (2012). The notion of self in the journey back from addiction. *Qualitative Health Research, 22*(8), 1094-1101.


Schulenberg, J. E., Merline, A. C., Johnston, L. D., O'Malley, P. M., Bachman, J. G., & Laetz, V. B. (2005). Trajectories of marijuana use during the transition to


van der Pol, P., Liebregts, N., de Graaf, R., Have, M., Korf, D. J., van den Brink, W., & van Laar, M. (2013). Mental health differences between frequent
cannabis users with and without dependence and the general population. *Addiction, 108*(8), 1459-1469.


References


Cannabis is the most widely used illicit drug worldwide, including The Netherlands. The main patterns of cannabis use are well-known. Most of the people that ever use cannabis, only use it infrequently and/or during a short period in their life. Others continue their use over a longer period, ranging from occasional and selective to frequent or daily use, and some become cannabis dependent. Cross-sectional studies show that frequent cannabis use generally peaks in younger age groups and is much less prevalent in the older age groups. This indicates that transitions in cannabis use predominantly take place during young adulthood. However, very little is known about how and why transitions into and away from frequent cannabis use and dependence occur. Young adulthood is not only a stage in life during which changes in cannabis use are common, it is also a period characterized by other and often significant life changing events in various domains. It is not unlikely that these events influence transitions in cannabis use and dependence, and vice versa. This makes young adults a specifically fascinating group to study the dynamics of cannabis use and cannabis dependence, and to gain a better insight into and understanding of the factors and processes involved in transitions in cannabis use and dependence. Why do young adult frequent cannabis users increase, decrease or quit their cannabis use, why do some develop dependence and others not, and why do some recover (or: desist) from dependence and others not? These are the questions addressed in this thesis. Our central question was: What are the processes and mechanisms underlying transitions in the natural course of frequent cannabis use and cannabis dependence, and how can these be understood?

The CanDep study
In order to answer this question, we conducted a longitudinal study (CanDep), combining quantitative and qualitative methods. For the quantitative study, at baseline 600 frequent cannabis users (≥ 3 days cannabis use per week in past 12 months) aged 18-30 years were recruited via coffee shops and by respondent-driven sampling (RDS), and interviewed. Nearly half of the participants (42%) met DSM-IV criteria for cannabis dependence in the 12 months prior to the interview. After 1.5 years (first follow-up) and 3 years (second follow-up), they were re-interviewed.
In addition to the quantitative part of the CanDep study, we carried out a qualitative study among a selection of the participants. After the first follow-up interview in the quantitative study, 48 participants were randomly selected based on their transition state with regard to cannabis dependence with an equal number (n=12, 8 males, 4 females) from each of the four dependence trajectories: non-dependent at baseline and first follow-up, dependent at baseline and first follow up, shift from non-dependent to dependent, and shift from dependent to non-dependent. Participants in the
qualitative study were interviewed in-depth twice shortly after the standardized follow-up interviews from the quantitative study with an intermediate period of 1.5 years. One participant was lost at the second follow-up, leaving a total group of 47 participants in the full qualitative study. Their narratives formed the empirical foundation for most part of this thesis.

**The research themes and theoretical perspectives**

The central question was translated into sub questions, which generally reflected different life domains: social relationships (Chapter 2 and Chapter 3), occupational life (Chapter 4), and leisure (Chapter 5). Chapter 6 was focused on a more individual level. In this chapter, different aspects from preceding chapters were more comprehensively analysed, by comparing desistance and persistence in frequent cannabis use. Various theoretical notions from social science, criminology in particular, were used to describe and understand the processes involved in the transitions in cannabis use and cannabis dependence. The life course perspective was used as the theoretical framework in several chapters. Life course theory has been applied to deviant behaviour, crime and delinquency in particular, but less to illicit drug use. In short, life course theory explains changes in deviance within the context of age and maturation, and life events such as changes in relationships, education and work are considered potential turning points in explaining desistance from deviant behaviour. Other theoretical insights also guided the questions and analyses, including peer processes of selection (people select associates similar in behaviour to themselves) and socialization (peers influence each other’s behaviour in interaction), and the normalisation thesis, which argues that cannabis use has become a mainstream leisure activity among youth rather than a sign of deviance or sub cultural values. Finally, we used several notions from theories on desistance from crime, including the role of identity and agency (an individual’s self-efficacy, the ability to be self-reflexive and a sense of feeling in control over one’s life) to understand the processes underlying changes in cannabis use and dependence.

**Social relationships**

Drug use is often a social activity that occurs with other users, and cannabis use might be a factor that would unify peers in a social network. Drug use in social settings include informal rules and norms regarding use, and violating these rules could lead to social sanctions, perhaps eventually exclusion from the group. Chapter 2 departed from the larger quantitative CanDep sample (n=600) to explore how cannabis use characteristics and cannabis dependence play a role in the social networks of frequent cannabis users. RDS
referrals were understood as a proxy for social networks and were used to explore peer associations and social exclusion. Findings showed that cannabis use characteristics and the presence of cannabis dependence (versus non-dependence) are not unifying factors in the social networks of frequent users: with whom, where and when cannabis is used plays a role, but not a decisive one. However, within segments of networks some clustering of cannabis dependence was found, indicating that cannabis dependent users were not fully socially excluded from/by other cannabis users, but tended to flock together as sub-groups within social networks of frequent but non-dependent users.

The subsequent chapters focused on the qualitative sample (n=47). During the three-year follow-up period, while patterns of use and dependence trajectories varied, there was an overall declining tendency in cannabis use and in cannabis dependence, including some participants (n=7) that stopped using cannabis altogether. In line with life course theory, influences of peers and partners on cannabis use were generally considerable, while parents had little impact in this stage in life (Chapter 3). Peer influence occurred both through mechanisms of selection and socialization, and the ones they spent most of their time with influenced participants the most. However, colleagues and fellow students were only indirectly influential: interviewees generally avoided using cannabis at work or at school (Chapter 4). In fact, cannabis use was largely restricted to leisure time, and then social relationships were quite important, as most participants spent their leisure time with peers and/or partners (Chapter 5). Users made rational choices about whether, where and when to use or not to use cannabis, and preferred using at home and not in the company of non-users.

Peers and partners also appeared very important in the processes of desistance and persistence (Chapter 6). For desisters (participants that stopped using cannabis during the study), social relationships could help in the process of identity reconstruction and subsequent behaviour change, which in turn could be strengthened by social feedback. Contrary, for persisters (participants that were still using cannabis regularly despite a persistent desire to quit or cut back but had unsuccessful attempts to do so and reported from baseline onwards), social relationships often contributed to failed quit attempts.

**Occupational life and leisure**
Participants’ narratives indicated a reciprocal relationship between (events in) occupational life and frequent cannabis use and dependence: changes in
occupational activities could lead to changes in drug use/dependence and changes in drug use could lead to changes in occupational activities. Frequent cannabis use often went quite well together with studying and/or being employed, but rules and norms were applied: users did not use cannabis just anytime and anywhere. In general, cannabis use appeared to be a leisure activity. More specifically, it was one of their leisure activities, and, with few exceptions, cannabis was not used during work or study time. However, dependent, especially persistent dependent interviewees assigned a more central role to cannabis in their leisure time, by planning their leisure activities around cannabis use, and being inclined to prioritize cannabis over other leisure activities. Nevertheless, similarities between dependent and non-dependent users prevailed: both limited their cannabis use to their leisure time and both seemed to make conscious choices about their use, considering other responsibilities, their company and the situation.

This study shows that both dependent and non-dependent users are very ‘normal’ people, living a ‘conventional life’ quite similar to other young adults, as expressed in their social activities, romantic relationships, study, work and sports. Cannabis use appeared one of many facets of participants’ lives, not one that (completely) defined their identity or lifestyle. Although they sometimes showed delinquent behaviour, this referred mainly to minor offences, generally neither related to nor induced by cannabis, and subcultural membership was rather absent. Perhaps somewhat surprisingly, the frequent users in our study occasionally felt stigmatized, and for fear of being judged or labelled they carefully selected settings for use.

**Meaning-giving, identity and agency**

The narratives of desisters and persisters were rather different. Desistance from frequent use was generally induced by life events that became turning points. Interestingly, persisters did experience largely similar events, yet lacked goals and strategies and held external factors responsible for their life course and failed quit attempts. In the course of the study, desisters mainly exhibited increasing agency and goal setting, established strategies to achieve these goals, and envisioned another self. Identity change appeared to be at the core of desistance from frequent cannabis use, and the meaning ascribed to life events and experiences is essential. Agency appears to be a necessary ingredient for desistance, develops over time and through action, and leads to a new drug-free identity with desistance in turn increasing agency.

**Life events and turning points**

Life events could (objectively) be categorized as positive or negative, but their (subjective) meaning depended on how they were evaluated by the person
experiencing them. Although life events did not necessarily affect participants’ cannabis use, and the effect would depend on the life domains, several patterns concerning life events and cannabis use trajectories were found. Life events with a longstanding impact on cannabis use were rather gradual than abrupt, such as building new friendships with non-users and simultaneously diluting friendships with users, that eventually lead to decreased use. Negative life events generally went together with more use, whereas positive events went together with less use. More specifically, events leading to less leisure time (e.g. getting a job) led to decreased use, whereas events coupled with more leisure time (e.g. job loss) led to increased use. Changes in cannabis use were also influenced by the person with whom leisure time was spent, yet the effects of life events were (partly) moderated by level of agency. Life events patterns were also associated with transitions in dependence trajectories. Spending much leisure time at home (homebodies), spending much time gaming alone, and often using cannabis alone were related to (shifts to) cannabis dependence. Contrary, transiting from study to work, or progressing with study, having a party phase, travelling (to foreign countries), and moving in with a partner were associated with (shifts to) non-dependence. Interestingly, gender was associated with transitions in both use and dependence: females remained or became dependent more often than males (Chapter 3). This effect was (partially) explained by the underlying mechanisms of romantic partnerships, primarily through selection and through secondary socialization processes. Beyond these patterns, this study disclosed that for an event to be influential on cannabis use and dependence, it must have some specific features. First, contrast and timing are important for events to generate a change. Second, and in a similar vein, to be influential the event should impact the (amount of) leisure time, as cannabis use commonly is a leisure activity.

Conclusions
This thesis shows that young adult frequent cannabis users are generally rather ‘normal’ people, generally living a conventional life, including social and romantic activities, jobs, education, sports, and incidental minor (cannabis-unrelated) delinquency. Although our data generally support the normalisation thesis, it is questionable whether frequent but non-problematic cannabis use is socially accepted in the wider society. This study also calls for refined distinctions within the concept of cannabis dependence. Furthermore, this thesis demonstrates that contemporary Dutch cannabis policy with coffee shops as the most striking feature does not necessarily lead to ‘uncontrolled’, rampant use. Apparently, a policy that with regard to users does not focus on legal control of the users does not preclude frequent users from reducing their cannabis use.
Finally, this study indicates that trajectories of frequent cannabis use and dependence are very dynamic and tend to decline over time. Moreover, it uncovers the reciprocal relationships and mechanisms involved in cannabis trajectories and life (events) of young adult frequent users. Social relationships, work and study, leisure and life events have different meanings for individuals, even when they are similar, yet what matters eventually is the action that is taken by individuals. Agency appeared to be a necessary ingredient for desistance and in the process of life events becoming turning points in cannabis trajectories. Moreover, frequent cannabis use appeared not inevitably inherent to cannabis dependence, and neither did cannabis dependence appear to be irreversible. In fact, cannabis dependence was often a temporary stage in the natural course of cannabis use and frequent cannabis users were often greatly in control of their use. Over time, either gradually or abruptly, cannabis use and dependence can change, and so do the lives of young cannabis-using adults.
Cannabis is wereldwijd en ook in Nederland de meest gebruikte illegale drug. Er zijn veel meer mensen die ooit wel eens hasj of wiet hebben gebruikt dan in het afgelopen jaar, en daarvan heeft maar een deel de afgelopen maand geblowd en een nog kleiner deel dat het (bijna) dagelijks. In veel gevallen is cannabisgebruik een eenmalig experiment, of wordt cannabis gedurende een korte periode in hun leven gebruikt (meestal tijdens de adolescentie of als jongvolwassene). Anderen gaan er langer mee door, variërend van af en toe en selectief tot frequent of dagelijks gebruik, en sommigen worden afhankelijk (of: verslaafd) ervan. Cross-sectionele studies laten zien dat frequent cannabisgebruik en -afhankelijkheid over het algemeen pieken in jongere leeftijdsgroepen en veel minder voorkomen op oudere leeftijd. Dit suggereert dat transities in gebruik en afhankelijkheid vooral plaatsvinden gedurende de jongvolwassenheid. Er is echter nog maar weinig bekend over hoe en waarom transities in en beëindiging van frequent cannabisgebruik en cannabisafhankelijkheid plaatsvinden. Waarom neemt het gebruik van frequent jongvolwassen blowers toe of juist af? Waarom stoppen ze met blowen (desistance), waarom worden sommigen afhankelijken anderen niet, en waarom komen sommigen van die afhankelijkheid af en anderen niet? Nog belangrijker is dat de onderliggende processen van het natuurlijke beloop van frequent cannabisgebruik en -afhankelijkheid tot op heden nauwelijks in kaart zijn gebracht. Jongvolwassenheid is niet alleen een leeftijdsfase waarin veranderingen in cannabisgebruik gangbaar zijn, het is ook een periode die gekenmerkt wordt door andere en vaak significante levensveranderende gebeurtenissen binnen verschillende domeinen. Deze ‘life events’ kunnen van invloed zijn op transities in cannabisgebruik en cannabisafhankelijkheid – en andersom. Dit maakt jongvolwassenen een bijzonder interessante groep om de dynamiek in cannabisgebruik en –afhankelijkheid te onderzoeken, en om een beter inzicht te krijgen in en begrip van de factoren en processen die meespelen bij transities in cannabisgebruik en cannabisafhankelijkheid. De centrale vraag in dit boek was: Welke processen en mechanismen liggen ten grondslag aan transities in het natuurlijke beloop van frequent cannabisgebruik en cannabisafhankelijkheid, en hoe kunnen deze worden begrepen?

De CanDep studie
Om het natuurlijke beloop van frequent cannabisgebruik en cannabisafhankelijkheid te onderzoeken hebben we een longitudinaal onderzoek gedaan met een combinatie van kwantitatieve en kwalitatieve methoden. Aan het begin van het onderzoek (T0) zijn 600 frequente cannabisgebruikers (≥3 dagen per week gedurende 12 maanden, 18-30 jaar oud) in coffeeshops en via de sneeuwbalmethode (respondent-driven sampling, RDS) geworven en geïnterviewd aan de hand van een
Samenvatting

gestandaardiseerde vragenlijst. Bijna de helft van hen (42%) was volgens de DSM-IV criteria cannabisafhankelijk in het jaar voor het interview. De deelnemers werden opnieuw geïnterviewd na 1.5 jaar (T1) en 3 jaar (T2). Na het eerste follow-up interview werden 48 deelnemers op basis van hun transitiestatus in cannabisafhankelijkheid willekeurig geselecteerd om deel te nemen aan een kwalitatieve deelstudie. Uit elk van de (na het eerste follow-up interview) vier mogelijke afhankelijkheidstrajecten werden random 12 deelnemers (8 mannen en 4 vrouwen) geselecteerd: niet afhankelijk aan het begin van het onderzoek en bij de follow-up; afhankelijk aan het begin van het onderzoek en bij de follow-up; transitie van niet-afhankelijk naar afhankelijk; en transitie van afhankelijk naar niet-afhankelijk.

Kwalitatief onderzoek is bij uitstek geschikt voor diepgaande inzichten in en het begrijpen van de dynamische en complexe processen en mechanismen die een rol spelen in de levensloop en in cannabiscarrières. Met een kwalitatieve methodologie is er ook meer ruimte voor het perspectief van de onderzochte groep – in ons geval cannabisgebruikers. Hun perspectief, hun ‘narrative’ kan in belangrijke mate bijdragen tot een beter begrip van de processen die betrokken zijn bij veranderingen in de levensloop en cannabisgebruik en -afhankelijkheid.

Met de deelnemers aan het kwalitatieve onderzoek werd tweemaal vlak na de gestandaardiseerde follow-up interviews een diepte-interview gehouden, met een tussenliggende periode van 1.5 jaar. Eén deelnemer was voor het tweede diepte-interview niet meer te traceren, dus is buiten de analyses gelaten; uiteindelijk bestaat de groep dus uit 47 deelnemers. Hun 'subjectieve' betekenissen, hun constructie van de werkelijkheid, en hun ervaringen en de betekenis hiervan voor hun levensloop, life events en cannabiscarrière vormden de belangrijkste empirische basis voor dit boek. De persoonlijke verhalen werden systematisch geanalyseerd, theoretisch geïnterpreteerd en geabstraheerd om patronen en mechanismen bloot te leggen.

De onderzoeksthema’s en theoretische perspectieven

De centrale vraag werd vertaald in deelvragen, die de verschillende levensdomeinen besloegen: sociale relaties (hoofdstuk 2 en hoofdstuk 3), het professionele leven (hoofdstuk 4), en vrije tijd (hoofdstuk 5). Hoofdstuk 6 focuste op een meer individueel niveau: verschillende aspecten uit de eerdere hoofdstukken werden uitgebreider geanalyseerd, door in te zoomen op een maximaal contrast: desisters (deelnemers die tijdens het onderzoek waren gestopt) en persisters (deelnemers die gedurende het gehele onderzoek aangaven een aanhoudend verlangen maar mislukte pogingen hadden om te stoppen) in frequent cannabisgebruik.
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Vanuit verschillende theoretische perspectieven uit de sociale wetenschappen, in het bijzonder de criminologie, zijn de processen die een rol spelen bij transities in cannabisgebruik en cannabisafhankelijkheid onder de loep genomen. De levenslooptheorie vormde het theoretisch kader in meerdere hoofdstukken. Deze theorie is vaak toegepast op deviant gedrag, criminaliteit en delinquentie, maar minder vaak op drugsgebruik. In het kort richt deze theorie zich op de ontwikkeling van deviante carrières door de tijd. Veranderingen in deviantie worden verklaard binnen de context van leeftijd en ontwikkeling: de meeste vormen van deviantie pieken tijdens de adolescentie en de jongvolwassenheid en nemen daarna af. Gebeurtenissen in het leven, zoals veranderingen in relaties, studie en werk worden beschouwd als potentiële keerpunten in het verklaren van desistance van deviantie. Ook andere theoretische inzichten werden gebruikt als leidraad voor de formulering van de deelvragen, het schema voor de diepte-interviews en de analyses, waaronder peer processen, en de normaliseringsthese, die stelt dat cannabisgebruik een mainstream vrijetijdsbesteding is geworden onder jongeren, in plaats van een uiting van deviantie of van een subculturele waarde. Ten slotte is gebruikgemaakt van verschillende noties van theorieën over desistance van criminaliteit om de processen die ten grondslag liggen aan veranderingen in cannabisgebruik en -afhankelijkheid te begrijpen, waaronder de rol van identiteit en agency (iemands zelfredzaamheid, vermogen tot reflectie, en gevoel van controle over het eigen leven).

Sociale relaties in cannabistrajecten

Eerder onderzoek toonde aan dat sociale relaties heel belangrijk zijn in cannabiscarrières. In het perspectief van de levensloop hebben ouders tijdens de kindertijd de ouders over het algemeen de meeste invloed; in de adolescentie worden dit leeftijdgenoten (peers), en in de jongvolwassenheid groeien (daarnaast) partners uit tot de belangrijkste referentiegroep voor gedrag in het privé domein, waaronder drugsgebruik. Volgens de levenslooptheorie worden trajecten in drugsgebruik grotendeels begrensd door sociale relaties. Drugsgebruik is vaak een sociale activiteit die plaatsvindt met andere gebruikers. Cannabisgebruik zou dus een factor kunnen zijn die vrienden in een sociaal netwerk met elkaar verbindt. Drugsgebruik in sociale settings omvat informele regels en normen met betrekking tot gebruik, en het schenden van deze regels kan leiden tot sociale sancties, zoals sociale exclusie van de groep. Mechanismen met betrekking tot de rol van sociale relaties in het drugsgebruik worden vaak ingedeeld in selectie (mensen selecteren peers en/of partners met soortgelijk gedrag) en socialisatie (mensen nemen met de tijd de opvattingen en het gedrag van anderen over).
Hoofdstuk 2 begon met de grote CanDep steekproef (n = 600) om te onderzoeken hoe kenmerken van cannabisgebruik en cannabisafhankelijkheid een rol spelen in de sociale netwerken van frequente blowers. De ketens die ontstonden tijdens de werving van deelnemers via RDS zijn gebruikt als proxy voor sociale netwerken om peer associaties en sociale exclusie te verkennen. Kenmerken van cannabisgebruik en afhankelijkheid (versus niet-afhankelijkheid) bleken geen unificerende factoren te zijn in de samenstelling van sociale netwerken van frequente gebruikers: met wie, waar en wanneer cannabis wordt gebruikt spelen een rol, maar geen beslissende. In segmenten van netwerken zagen we echter wel enige clustering van afhankelijkheid, hetgeen indiceert dat cannabisafhankelijken niet volledig sociaal worden uitgesloten van/door andere frequente gebruikers, maar geneigd zijn subgroepjes te vormen binnen bredere sociale netwerken van frequente, maar niet-afhankelijke gebruikers.

In de volgende hoofdstukken richtten we ons op het kwalitatieve sample (n=47). Gedurende de driejarige follow-up periode varieerden patronen van frequent cannabisgebruik en cannabisafhankelijkheidstrajecten sterk, maar over het algemeen lieten ze een dalende tendens zien, inclusief sommige gebruikers die geheel stoppten met blowen. Tussen T0 en T2 bleef het cannabisgebruik van 24 deelnemers stabiel, van 19 deelnemers nam het gebruik af (waarvan 7 bij het laatste diepte-interview zichzelf als gestopt beschouwden), en 4 meldten meer cannabisgebruik bij het laatste interview (T2) dan bij het begin van het onderzoek. Op T0 waren 24 deelnemers cannabisafhankelijk (daar waren zij ook op geselecteerd), tegenover 13 op T2. Kortom, over het algemeen nam zowel het cannabisgebruik als de cannabisafhankelijkheid af in de loop van het kwalitatieve onderzoek (en ook in het kwantitatieve onderzoek).

In lijn met de levenslooptheorie was de invloed van vrienden en partners op cannabisgebruik over het algemeen aanzienlijk, terwijl ouders weinig invloed hadden (hoofdstuk 3). Beide mechanismen van selectie en socialisatie waren aanwezig, en de deelnemers werden voornamelijk beïnvloed door degenen met wie zij het grootste deel van de tijd doorbrachten. Maar anderen met wie ook veel tijd werd doorgebracht, namelijk collega’s en medestudenten, waren slechts indirect van invloed: de geïnterviewden vermeden cannabisgebruik op het werk of op school (hoofdstuk 4). Cannabisgebruik werd juist hoofdzakelijk beperkt tot de vrije tijd, en dan waren sociale relaties heel belangrijk, omdat de meesten hun vrije tijd doorbrachten met vrienden en/of partners (hoofdstuk 5). Gebruikers maakten rationele keuzes met betrekking tot of, waar en wanneer wel of niet werd geblowd. Er werd bij voorkeur thuis geblowd, nadat was voldaan aan verplichtingen, en niet in gezelschap van niet-gebruikers. Cannabis hielp hen te ontspannen tijdens uiteenlopende
activiteiten zoals lezen, tv kijken, muziek luisteren, maar kon ook bijdragen aan een verhoogde concentratie tijdens bijvoorbeeld gamen. Voor anderen was cannabisgebruik voornamelijk een sociale activiteit. Vrienden en partners bleken ook zeer belangrijk te zijn in processen van desistance en persistentie van cannabisgebruik (hoofdstuk 6). Voor desisters konden sociale relaties helpen in het proces van identiteitsreconstructie en dienovereenkomstig verandering in gedrag. Sociale feedback kon dit vervolgens versterken. Voor persisters daarentegen droegen sociale relaties vaak bij aan mislukte stoppogingen.

Het professionele leven, vrije tijd en normalisering
De narratieve van de deelnemers suggereerden een wederkerige relatie tussen het professionele leven (en events op dat gebied) en frequent cannabisgebruik en -afhankelijkheid (hoofdstuk 4). Cannabisgebruik en -afhankelijkheid bleken van invloed te zijn op werk en studie, soms negatief, in termen van verslechterd professioneel functioneren, maar in andere gevallen veranderden zowel de effecten van cannabisgebruik als -afhankelijkheid het professionele leven op een positieve manier, bijvoorbeeld wanneer gebruikers bewust minderden of stopten met gebruiken om hun prestaties op het werk of in hun studie te verbeteren. Daarnaast beïnvloedden werk en studie cannabisgebruik en (indirect) -afhankelijkheid door het inperken van vrije tijd en het bevorderen van structuur, wat resulteerde in minder cannabisgebruik. Echter, de beschikbare vrije tijd die iemand heeft, wordt beïnvloed door meerdere factoren, waaronder agency. Kortom, frequent blowen ging vaak prima samen met studeren en/of werken, maar gebruikers hanteerden wel regels en normen: zij blowden niet zomaar altijd en overal (hoofdstuk 5). Over het algemeen zagen zij blowen als ondergeschikt aan verantwoordelijkheden op het terrein van werk en studie en beperkten zij hun cannabisgebruik tot de vrije tijd. Sterker nog, het was vaak een van hun vele vrijetijdsactiviteiten, en enkele uitzonderingen daargelaten, werd er niet geblowd onder werktijd of tijdens het studeren. Afhankelijke gebruikers, zeker persisterende afhankelijken kenden een centralere rol toe aan cannabis in hun vrije tijd, door hun vrijetijdsbesteding rond blowen te plannen, en door geneigd te zijn blowen boven andere vrijetijdsactiviteiten te stellen. Toch bleken afhankelijke en niet-afhankelijke gebruikers in verschillende andere opzichten vergelijkbaar. Beide groepen blowden over het algemeen uitsluitend in hun vrije tijd en leken bewuste keuzes te maken met betrekking tot hun gebruik, waarbij ze verantwoordelijkheden, gezelschap en de situatie in overweging nemen. Cannabisgebruik bleek een van vele aspecten in het leven van de deelnemers, niet een die (volledig) hun identiteit of leefstijl bepaalde.
Terwijl enkele decennia geleden cannabisgebruikers vaak nog werden bestempeld als ‘deviant’, definiëren onderzoekers tegenwoordig cannabisgebruik vaak als ‘recreatief’. Volgens de normaliseringsthese is cannabisgebruik nu uitgegroeid tot een geaccepteerde vorm van gedrag onder mainstream adolescenten en jongvolwassenen, en recreatief gebruik is niet langer een subcultureel fenomeen. Onze bevindingen toonden zowel ondersteuning voor als relativering van de normaliseringsthese. Enerzijds maakten blowers rationele keuzes wat betreft de vraag of, waar en wanneer (niet) te gebruiken. Hoewel delinquent gedrag voorkwam, betrof dit vooral kleine delicten - en belangrijker - stonden deze los van cannabis. Anderzijds, en misschien wat verrassend, voelden de geïnterviewde gebruikers zich soms gestigmatiseerd en selecteerden ze, uit vrees om te worden gelabeld, zorgvuldig de setting voor hun gebruik en vermeden ze andere settings.

**Betekenisgeving, identiteit en agency**

In hoofdstuk 6 is meer gefocust op individuele aspecten dan in de vorige hoofdstukken. Meer specifiek is dieper ingegaan op het stopproces van frequent cannabisgebruik (desistance). Het is bekend dat veel cannabisgebruikers na verloop van tijd uit hun gebruik ‘groeien’ (maturing out) en in eerdere (internationale) studies zijn factoren naar voren gekomen die samenhangen met desistance. Terwijl in de vorige hoofdstukken duidelijk werd dat frequent cannabisgebruik en afhankelijkheid enerzijds, en verschillende levensdomeinen anderzijds elkaar zeker beïnvloeden, werd ook duidelijk dat de interacties die we vonden, niet de individuele variaties in dynamiek in het beloop van cannabisgebruik en –afhankelijkheid konden verklaren. Volgens de literatuur op het gebied van desistance van criminaliteit is identiteit(reconstructie) de kern van desistance. Daarbij kan de spanning tussen de huidige en de (gewenste) toekomstige identiteit leiden tot een persoonlijk verhaal, een narratief van desistance, en de (re)constructie van een niet-gebruiker identiteit. Geïnspireerd door studies op het gebied van desistance van criminaliteit werden vanuit een narratieve benadering desisters en persisters nauwgezet vergeleken, inzoomend op identiteit en agency.

In de loop van ons onderzoek lieten desisters vooral een toenemende mate zien in agency. Zij stelden doelen voor zichzelf, kozen strategieën om hun doelen te bereiken, en konden een ‘andere zelf’ visualiseren. Desistance vond over het algemeen plaats door levensgebeurtenissen om te zetten in keerpunten. Persisters maakten soortgelijke levensgebeurtenissen mee, maar doelen en strategieën ontbraken. Zij hielden externe factoren verantwoordelijk voor hun levensloop, evenals voor hun mislukte stoppogingen. We concludeerden dat identiteitsverandering de kern vormt van desistance van frequent cannabisgebruik, en dat de betekenisgeving van
levensgebeurtenissen en ervaringen hierbij essentieel is. Agency is van groot belang voor desistance, ontwikkelt zich door de tijd en door actie, en leidt tot een nieuwe ‘drugsvrije’ identiteit, waarbij desistance vervolgens agency vergroot.

**Keerpunten: life events en hun invloed**
Levensgebeurtenissen kunnen (objectief gezien) worden bestempeld als positief of negatief, maar de (subjectieve) betekenis hangt af van hoe ze worden geëvalueerd door degene die ze ervaart. Blijkens ons onderzoek beïnvloedden gebeurtenissen niet per se het cannabisgebruik; dit was medeafhankelijk van het betreffende levensdomein. We vonden verschillende patronen met betrekking tot levensgebeurtenissen en cannabisgebruikstrajecten. Over het algemeen verliepen levensgebeurtenissen die een (meer) permanente invloed hadden op cannabisgebruik, eerder geleidelijk dan abrupt. Negatieve gebeurtenissen gingen meestal samen met een toename in gebruik en positieve gebeurtenissen met een afname in gebruik. Specifieker leidden gebeurtenissen die de hoeveelheidvrije tijd verminderen tot een afname in gebruik, en gebeurtenissen die gepaard gingen met meer vrije tijd tot een toename in gebruik. Echter, veranderingen hingen ook samen met wie vrije tijd werd doorgebracht, en de effecten van levensgebeurtenissen werden (deels) gemodereerd door de mate van agency. Verschillende patronen in levensgebeurtenissen hingen ook samen met transities in afhankelijkheidstrajecten. Onder andere frequent in je eentje gamen, veel tijd thuis doorbrengen, en meestal in je eentje blowen bleken samen te hangen met (transities naar) cannabisafhankelijkheid, terwijl onder andere de overgang van studie naar werk (al dan niet met een diploma), reizen en gaan samenwonen samengingen met (transities naar) niet-afhankelijkheid. Opvallend was dat vrouwelijke gebruikers vaker bleven of werden dan mannen (hoofdstuk 3). Dit bleek mede verband te houden met onderliggende mechanismen in liefdesrelaties. Terwijl mannen niet-blowende partners selecteerden en als gevolg daarvan minder gingen blowen wanneer zij een nieuwe relatie kregen, selecteerden vrouwen partners die ook frequente blowers waren, en als gevolg daarvan meer gingen blowen bij een nieuwe relatie. Hoewel verschillende patronen naar voren kwamen, moet een levensgebeurtenis echt impact hebben op (de hoeveelheid) vrije tijd om van invloed te zijn op (veranderingen in) cannabisgebruik en –afhankelijkheid.
Conclusies

Dit boek laat zien dat zowel niet-afhankelijke als afhankelijke frequente cannabisgebruikers over het algemeen tamelijk 'gewone' mensen zijn, die een conventioneel leven leiden net als andere jongvolwassenen, bijvoorbeeld waar het gaat om sociale activiteiten, relaties, studie of werk, en sport. Dit onderzoek daagt ook uit tot een meer verfijnd concept van cannabisafhankelijkheid.

Hoewel de bevindingen over het algemeen de normaliseringsthese ondersteunen, is het de vraag of frequent, maar niet-problematisch cannabisgebruik daadwerkelijk sociaal geaccepteerd is in de bredere maatschappij. Blijkens dit onderzoek leidt het hedendaagse Nederlandse cannabisbeleid, met coffeeshops als meest opvallende kenmerk, niet noodzakelijkerwijs tot 'ongecentreerd', ongebreideld gebruik. Beleid dat met betrekking tot gebruikers niet focust op een juridische (strafrechtelijke) aanpak, weerhoudt frequente gebruikers en klaarblijkelijk niet van hun cannabisgebruik te verminderen.

Tot slot laat dit onderzoek zien dat trajecten van frequent cannabisgebruik en -afhankelijkheid heel dynamisch zijn en met de tijd afnemen. Bovendien legt het de wederkerige relatie bloot tussen cannabistrajecten en (gebeurtenissen in) het leven van jongvolwassen frequente blowers en de onderliggende mechanismen die hierin een rol spelen. Sociale relaties, werk en studie, vrije tijd en levensgebeurtenissen binnen deze domeinen kunnen verschillende betekenissen hebben voor mensen, zelfs als ze vergelijkbaar zijn. Maar wat uiteindelijk telt is de actie die iemand zelf onderneemt. Agency blijkt een noodzakelijk ingrediënt bij desistance en in het proces waarbij levensgebeurtenissen keerpunten worden in trajecten van frequent gebruik en (herstel) van afhankelijkheid. Frequent cannabisgebruik ontwikkelde zich niet onafwendbaar tot cannabisafhankelijkheid, en evenzo bleek cannabisafhankelijkheid niet onomkeerbaar. Cannabisafhankelijkheid was juist vaak een tijdelijke fase in het natuurlijke beloop van cannabisgebruik, en frequente gebruikers hadden vaak in grote mate controle over hun gebruik. Met de tijd, geleidelijk of abrupt, kunnen cannabisgebruik en afhankelijkheid veranderen, evenals het leven van frequent blowende jongvolwassenen.
In this thesis


Other CanDep publications


CANNABIS CHANGES
understanding dynamics of use and dependence

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Voor het bijwonen van de openbare verdediging van mijn proefschrift.