Cannabis changes: Understanding dynamics of use and dependence

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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 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.

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\(^1\) 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 study

<table>
<thead>
<tr>
<th></th>
<th>T0</th>
<th>T1</th>
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<td>NNN</td>
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<td>Non-dependent</td>
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</tr>
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<td>Non-dependent</td>
<td>7</td>
</tr>
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<td>Non-dependent</td>
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<td>Non-dependent</td>
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<tr>
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<td>Cannabis dependent</td>
<td>Cannabis dependent</td>
<td>Non-dependent</td>
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</tr>
<tr>
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<td>Cannabis dependent</td>
<td>Cannabis dependent</td>
<td>Cannabis dependent</td>
<td>7</td>
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</tbody>
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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, 2000).

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2 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.
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 (Rönkä, 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 & McKeganey, 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 that 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 a-typical.

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.