Summary and general discussion.
Summary

Research questions

The studies presented in this thesis are part of the Netherlands XTC Toxicity Study (NeXT), a multidisciplinary research project on the causality, course and clinical relevance of the neurotoxicity of ecstasy and the social context and behavioural aspects of ecstasy use.

One of the main goals of the NeXT Study was to prospectively study a cohort of respondents who had never taken ecstasy before the study, but who were thought to have a relatively high probability of future ecstasy use. The first research question is devoted to the methodological and ethical aspects of the prospective study. The other five research questions elaborate on the social context and various behavioural aspects of ecstasy use.

1. How to find future ecstasy users in an ethically sensitive context? Is it possible to develop a simple and practically feasible on-the-spot recruiting method? (Chapter 2)
2. What are the motives and reasons that young people have for not using ecstasy? (Chapter 3)
3. Can predictors of first-time ecstasy use be identified? (Chapter 4)
4. What is the role of peers in the initiation and continuation of ecstasy use? (Chapter 5)
5. What is the influence of long-term ecstasy use on the management of work and relationships? (Chapter 6)
6. What are the implications of these findings for drug prevention and education? (This chapter, general discussion).

In order to answer these research questions, three samples were studied using questionnaires and/or face-to-face interviews:

- A prospective sample of 188 respondents (age range 18-35, mean age 21.2 years) who had never taken ecstasy before the study, but who were believed very likely to do so of their own accord during the course of the study. (Research questions 1, 2 and 3)
- A sample of 106 ecstasy users (age range 18-39, mean age 25.4 years) with a lifetime ecstasy use frequency of 10 occasions or more, including at least once within 12 months prior to the interview. (Research question 4)
- A sample of 29 long term heavy (+250 ecstasy pills) ecstasy users with a mean age of 45 years. (Research question 5)

Chapter 2. How to find future ecstasy-users: Targeted and snowball sampling in an ethically sensitive context

This chapter documented the design and the sampling procedures of the prospective cohort of 188 respondents. Targeted and snowball sampling were used to recruit 188 respondents who were ecstasy-naive at baseline. To increase the probability of securing participants who would start using ecstasy during the study, we focused the recruitment on people who were expected to have a reasonable probability of taking ecstasy in the near future. On the basis of the reviewed literature, we decided on two predictors of future ecstasy use that could be readily operationalised and applied during the fieldwork: the extent of peer group ecstasy use and/or the intention to use ecstasy. The prospective nature of our study enabled us to assess later in retrospect whether these variables were indeed valid and practically applicable predictors of future ecstasy use. The sampling was tightly constrained by
the strict medical and technical criteria. In a labour-intensive process we succeeded in recruiting 188 respondents in a period of more than two years. At the end of an 11- to 26-month follow-up period 160 respondents remained (85.1%). A total of 65 participants (40.6%) took ecstasy for the first time during the follow-up period. In a logistic regression analysis intention to use emerged as an independent predictor of ecstasy initiation, while peer group ecstasy use did not. We concluded that the ‘intention to use’ criterion proved to be a clear-cut inclusion rule that was practical to apply in the fieldwork.

Chapter 3: Fear, rationality and opportunity: reasons and motives for not trying ecstasy

While considerable knowledge is now available about why people use drugs, surprisingly little is known about the reasons and motives why many others do not take drugs. This chapter specifically explored the motives and reasons that young people have for not using ecstasy, by prospectively investigating the differences in motives for non-use between the 65 novel ecstasy users who started taking ecstasy during the study and the 95 persistent non-users.

Principal components analysis identified three main factors associated with non-use: (1) rationality, involving cognitive reasons and knowledge of risks, (2) lack of opportunity and (3) fear of the effects of ecstasy, reflecting fear of the effects of ecstasy, often based on negative reports and stories. At baseline (when none had ever taken ecstasy), persistent non-users scored higher than novel ecstasy users on all three factors. Rationality played the most important role in the motivation of young people not to start taking ecstasy and is the factor that most sharply distinguished both groups. For the novel ecstasy users, no significant changes occurred over the course of the study in all three factor curves. For two of the factor scores of the persistent non-users, by contrast, there were small, but significant changes over the course of the study. Their fear of the effects of ecstasy diminished slightly and they reported a growing lack of opportunity to take ecstasy. The scores of the non-users on the rationality factor did not change over the course of the study.

Chapter 4: Predicting ecstasy use among young people at risk

In search of predictors of first-time ecstasy use, in the prospective study we applied a multivariate survival analysis of a broad set of baseline predictors. Zinberg's model of drug-set-setting was used as a theoretical framework.

Intention to use ecstasy, low education (both set factors) and current weekly cannabis use (a drug factor) independently increased the hazard rate for first ecstasy use. Intention proved to be the strongest predictor. In contrast, peer group ecstasy use (setting factor) at baseline did not predict ecstasy initiation. However, logistic regression analysis revealed that during the study period the proportion of respondents with ecstasy-using friends increased among novel ecstasy users, and remained stable among persistent non-users.

Chapter 5: The role of peers in the initiation and continuation of ecstasy use

In this chapter we explored the nature and dynamics of peer involvement in ecstasy use. According to the peer influence hypothesis, drug use by friends causes or encourages an individual’s behaviour. Peer selection, by contrast, occurs when an individual’s own substance use, or interest in it, leads them to increasingly associate with peers who are similar to them in attitudes and behaviour. To better understand the processes of peer influence and peer selection, we interviewed 106 recent ecstasy
users, questioning them on the role that friends or peers played in their decisions to start taking ecstasy and to continue taking it. In the initiation of ecstasy use, peer influence emerged as the dominating mechanism; peer selection was uncommon. Most respondents became acquainted with ecstasy within their existing circle of friends. In the continuation of ecstasy use, peer influence and peer selection occurred reciprocally in a dynamic process, although peer influence made a greater relative contribution. Peers are thus seen to figure heavily both in the initiation stage of ecstasy use and in the continuation stage. However, our study indicates that peer involvement at initiation is different from peer involvement in the continued use of ecstasy. Our study confirms that peer influence is a multidimensional process: influence was quite often reciprocal (with respondents both exerting and undergoing influence) and it could have both restraining and encouraging effects on ecstasy use.

Chapter 6: Long-term ecstasy use and the management of work and relationships

The aim of this chapter was to improve understanding of the behavioural aspects of heavy, prolonged ecstasy use, with a particular focus on occupational careers and intimate relationships. We interviewed 29 persons with a mean age of 45, and a lifetime consumption of at least 250 ecstasy pills. They varied widely in terms of work careers and current employment. Career interruptions due to illness or unemployment were rather common. Most of these heavy ecstasy users were not particularly career-minded, but gave priority to their social life instead. Nonetheless, two thirds of the respondents were currently employed, and hence did not differ in this respect from their age-group peers in the Amsterdam general population. The majority of respondents believed that ecstasy did not impair their functioning at work. Respondents employed various strategies to keep their ecstasy use from adversely affecting their functioning, such as working flexible hours and tempering their ecstasy use in busy periods. More than half of respondents had an intimate relationship (\(\geq 1\) year) at the time of the interview, almost all with a partner who also took ecstasy.
General discussion

The social/criminological substudy of the NeXT Study provides a full overview of the different stages in a user’s ecstasy career (not including cessation): from non-use over initiation and continuation to long-term use. Our main focus of interest is the initiation phase. Is the transition from ecstasy naïve to ecstasy user shaped by changes in attitude and peer group? Or do ‘gateway drugs’ such as cannabis merely pave the road to ecstasy use? Can we unravel factors that influence the decision-making phase that precedes the initiation of ecstasy use, or, put in other words, can we identify predictors for first-time ecstasy use? We will address these issues and integrate our findings in the first part of the general discussion. Next, we will elaborate specifically on the role of peers and the consequences of long-term heavy ecstasy use on social functioning. Finally, methodological aspects and implications for drug education will be discussed.

Predicting first time ecstasy use: weighing the role of friends, attitude, intention and other risk factors in a theoretical context

The prediction of future or incipient drug use has been high on the research agenda for decades. The importance of prediction is twofold, as described in chapter 4. First, at a fundamental level, it helps us to better understand the aetiology of substance use, as well as to test existing theories and generate new theoretical insights. Second, it enables the new knowledge to be implemented in evidence-based drug education programmes, thus helping to prevent or delay substance use initiation or to reduce drug-related harm.

In the introduction and consequent chapters, several sociological, criminological and psychological theories have been presented, which can offer frameworks for the understanding of drug use. Social Learning Theory stresses the importance of the social environment, including peers, in the learning process. Other theories highlight individual decision-making processes. According to the Rational Choice Theory, people apply an informal cost-benefit analysis in which they weigh the expected advantages of substance use against their fear of physical, psychological or social harm. The Transtheoretical Model of Change consists of five successive stages (precontemplation, contemplation, decision-making, action and maintenance) and has been applied successfully in the study of substance use initiation. The Theory of Planned Behaviour argues that behaviour, including substance use, can be predicted by intentions to perform that behaviour.

Research has identified several risk factors for substance use initiation, such as parental and peer drug use and positive attitudes towards drugs use, parenting style, personality traits (amongst others sensations seeking, anxiety, and depression), and genetic factors. In addition, prior substance use, early age of onset of tobacco, alcohol and/or cannabis use, availability and positive attitudes towards drug use all raise the probability of future drug use.

The prospective nature of our study provided a unique opportunity to identify predictors of first time ecstasy use among a population of young people at risk. Regression analysis revealed that intention to use, low education and current weekly cannabis use independently increased the hazard of ecstasy use onset. Intention to use ecstasy emerged as the most powerful predictor, supporting the concept of intention as a critical factor in ecstasy initiation. Although we did not explicitly test sociological and psychological theories, our results primarily seem to support the Theory of Planned Behaviour, with its central role for intention in predicting behaviour. Next, intention can be regarded as free choice, reflecting individual decision-making processes. In this context, our results could be interpreted as
indirect support of Rational Choice Theory and the Transtheoretical Model of Change. Our finding that cannabis use is a predictor of first time ecstasy use is consistent with the literature. The association between cannabis use, and notably frequent use, and a higher risk of the future use of other illicit drugs is well known and much debated in the field of substance use research, but no agreement exists on any causal interpretation of that relationship. Fergusson et al. (2006) argue that their findings from a longitudinal study points towards a causal model such as the cannabis gateway hypothesis. In contrast, other researchers, for instance Morral et al. (2002), conclude that associations between regular or heavy cannabis use and increased risk of taking a wider variety of illicit drugs, may just as well derive from a common factor – drug use propensity (people’s individual inclinations to take drugs and their opportunities to do so) – which would boost their likelihood of taking both cannabis and other drugs. In our study, the lifetime prevalence of illicit drugs other than cannabis at baseline was significantly higher for novel ecstasy users in bivariate analysis, but it failed to emerge as a predictor in the regression model.

The role of peers: initiation and continuation

The role of peers is a factor often emphasised in the literature on the aetiology of drug use. Peer substance use and peer attitude towards drug use are regarded as important determinants in explaining substance use. These determinants, in essence, reflect the importance of the social environment in the learning process, as explained by Social Learning Theory. Young people who take drugs are more likely to have drug-taking friends than their counterparts who take no drugs, a phenomenon also referred to as ‘peer similarity’ or ‘peer homophily’. Moreover, substance use by peers has been shown to be a strong predictor of adolescent substance use, as discussed in Chapter 5.

In this thesis, the role of peers was investigated both prospectively and retrospectively. One of the strengths of our approach was to differentiate between initiation and continuation of ecstasy use. The predictive value of peer ecstasy use was investigated in our prospective sample using multivariate survival analysis. Peer group ecstasy use at baseline did not predict ecstasy initiation – a finding in stark contrast with current literature. Probably, ecstasy use among peers did not become a differentiating factor for initiation until a point in time that was closer to their first use of ecstasy. Indeed, logistic regression analysis revealed that during the study period the proportion of respondents with ecstasy-using friends increased among novel ecstasy users, and remained stable among persistent non-users. Further analysis showed a clear distinction between novel ecstasy users and persistent non-users in terms of the numbers of ecstasy-using friends they had by the end of the study. The differences in the peer group dynamics of the two groups as the study progressed suggest that the use of ecstasy by friends plays a part in the initiation of ecstasy.

Our retrospective findings in a sample of ecstasy users confirm this view and, in addition provide detailed information on the nature of peer involvement. Taken together, our findings suggest that first time ecstasy use is preceded by a relatively short transition period in which peer group ecstasy use increases, predominantly by the process of peer influence. Thus, most respondents became acquainted with ecstasy within their existing circle of friends, not by classical direct peer ‘pressure’, but by a process best described as normative – in the sense of norms and values – influence. During the continuation phase, peer influence and peer selection interacted in a dynamic process, though, influence was more prevalent than selection. Quite often peer influence was reciprocal, whereby respondents both exerted and underwent influence. Also, peer influence could have restraining effects on ecstasy use as well as encouraging it. In conclusion, the role of peers in the initiation and continuation of ecstasy use can be described as a
dynamic, multidimensional process, which likely reflects the fact that recreational drug use in general and ecstasy use in particular are pre-eminently social activities. In the context of the Theory of Planned Behaviour, friends’ drug use and attitudes translate to the subjective norm, which shapes behavioural intention.

**Long-term ecstasy use**

The effects of long-term ecstasy use on the management of work and relationships reported in this thesis are quite moderate, even after consumption of on average 900 tablets lifetime. Our findings suggest that it is possible to use ecstasy and live a normal life in society, a process referred to as ‘normalisation’. In the ‘normalisation discourse’, it has been reported that recreational drug use appears to be ‘increasingly integrated into the leisure and consumption landscapes of youth cultures’ (Duff 2005, p. 167). In a qualitative study among US ecstasy users, users viewed their ecstasy use as a recreational activity that did not interfere with everyday functioning in society. They stressed the importance of good grades, employment and good relationships and rejected habitual daily use. They perceive their ecstasy use as recreational, sensible and acceptable (Bahoraa et al. 2009). Our findings indicate that even prolonged heavy ecstasy use does not necessarily lead to economic and/or social isolation.

**Methodological and ethical aspects: strengths and limitations**

Another strength of this thesis lies in the combination of different methodological designs in three samples covering all possible phases of an ecstasy career (except cessation), using both questionnaires and face-to-face interviews – the latter providing a unique outlook on the insiders’ perspective of the ecstasy experience.

Clearly, the most important strength of the NeXT Study is the inclusion of the prospective, longitudinal sample of ecstasy-naives who were thought to have a relatively high probability of future ecstasy use within a period of 1 to 2 years. Previously, a power analysis had indicated that 50 new users would be needed to generate statistically valid results. That succeeded, as 65 of the respondents had taken ecstasy at least once during the course of the study. Our sample was not normative (in its statistical meaning), therefore, it may not even be representative of the population of people who are considering experimenting with ecstasy. We deliberately recruited participants among a population ‘at risk’. Within this population we contacted candidates in a variety of places and through different recruitment strategies, which resulted in a broadly distributed, heterogeneous sample. Moreover, in view of the demands of the study – specific medical acceptance criteria, intensive medical and psychological examinations and two-week abstinence from drugs and one week from alcohol – even random sampling would almost certainly have yielded a selective group in the end. The prospective, longitudinal design allowed for the identification of predictors of first-time ecstasy use and monitoring the time course of peer ecstasy use dynamics and other behavioural aspects. However, that same prospective design raised ethical questions. A crucial ethical dilemma in this study was that we did not want to encourage any respondent to take ecstasy. All respondents had to sign informed consent documents acknowledging that their participation was voluntary, that ecstasy could be harmful and that the researchers did not intend to encourage ecstasy use. When they registered for the study, all respondents also received a detailed educational brochure about the potentially harmful effects of ecstasy. However, giving respondents information about ecstasy, including the potential negative consequences, might have influenced their decision whether or not to take the drug.
In no way did we intend for people to start taking ecstasy during our study who would not have done so otherwise. The best evidence that this did not happen is that more than half of the participants did not end up taking any ecstasy at all.

In our cross-sectional studies of ecstasy users, other limitations arose. While sample size is adequate for the sample of 106 ecstasy users, sample size of the group of older ecstasy users (n=29) is limited. Therefore, the latter must be considered an explorative study. Next, both samples are convenience samples and thus representativeness of the population of ecstasy users can not be claimed. However, Topp et al. (2004) conclude, from comparing a probability and a non-probability sample in terms of demographic variables, patterns of ecstasy use and other drug use characteristics, that purposive sampling of relatively large numbers of ecstasy users may be considered sufficiently representative. Another limitation is that we had to rely on self-report. However, the use of a ‘context-based ecstasy timeline’ in the face-to-face interviews, which was likely to facilitate the recall of their ecstasy use, contributed in a positive way to the validity of our studies. Also, some questions of the questionnaire served as a validation of the answers in the face-to-face interview.

Finally, poly drug use is an important confound in research with recreational ecstasy users. While this fact probably did not have a major influence on our conclusions regarding the role of peers in ecstasy use, in the case of our older, long-term ecstasy users, which proved to be extensive poly drug users, it might have been difficult to attribute (positive or negative) effects on social functioning specifically to ecstasy. Recent research indeed supports the notion that reports of sub-acute effects of ecstasy use on mood and cognitive functioning may have been confounded by chronic poly drug use before use, co-substance use and temporary sleep disturbances after use (Pirona & Morgan 2009).

**Implications for drug policy, prevention and education**

Drug policy encompasses legislation (prohibition versus decriminalisation), drug law enforcement, treatment, drug prevention and education. In this part of the general discussion, we provide a concise overview of the effects of enforcement, prevention and education on the extent of substance use. Undoubtedly, behavioural change is quite a difficult thing to achieve. Nevertheless, we believe that our findings offer valuable insights and we will offer a framework for the implementation of our findings into drug prevention and education.

**Deterrence through drug laws fails**

Prohibition is the cornerstone of global drug policy. The aim is to send a strong message to society: the use of certain drugs (commonly referred to as ‘drugs of abuse’) is detrimental to the health and dignity of the individual and disrupts society. The goal of prohibition and drug enforcement is to reduce drug production and trafficking, penalize retail sellers and deter people from using (certain) psychoactive drugs. Whether this approach is effective, is the essential million-dollar-question. A report on global illicit drugs markets (Reuter & Trautmann 2009) assessed how the global market for drugs developed from 1998 to 2007 and to which extent drug policy has influenced drug problems. The study has found no evidence that the global drug problem, nor the global production and trafficking, were reduced during this time span. Most drug enforcement efforts targeted the retail market, either the seller or the user. As a consequence, most of those arrested and incarcerated are low level dealers. In the European Union, between 2001 and 2006, 17,598 drug arrests considered ecstasy, which is 1.9% of all drug arrests in the EU. However, in general, drug retail prices have declined in Western countries, even in those that increased enforcement against sellers. There are no indications that drugs in general have become more difficult to obtain.
The report concludes that enforcement has many unintended negative consequences: criminal black markets, policy displacement (from health to enforcement), geographic displacement, substance displacement (to less controllable drugs), lack of quality control, and negative perception of the users of illicit drugs.

In addition, research in the cannabis field indicates that drug laws neither deter non-users from using cannabis, nor deter people with a cannabis conviction from subsequent cannabis use (Lenton 2000). More general, from a criminal justice policy perspective, the deterrent influence from legal sanctions is limited (Akers 1994; Inciardi 1999; Paternoster 1989). Indeed, as reported in Chapter 3, ecstasy naives rarely mention illegality as a reason not to take ecstasy.

Unequivocal, drug laws do not have the intended deterrent effects on the use of ecstasy and other substances. Can drug prevention and education influence substance use?

**Prevention programs not very effective**

Generally prevention programs are directed at the prevention or reduction of substance use. As discussed in Chapter 3, meta-analyses have shown that prevention has not yet proven successful at the population level, although some well-designed universal (school-based) ‘competence enhancement programs’ can reduce substance use to some degree. ‘Knowledge only’ or ‘scare tactics’ approaches failed to decrease substance use initiation. Little money is spent on prevention activities. In the Netherlands, estimates of drug control expenditures show that prevention programs account for a very small part (2%) of the total. Drug law enforcement is clearly the dominant expenditure (75% of total) (Bossong et al. 2009).

Crucially, in the drug education field growing importance is assigned to targeted interventions in preference to universal prevention initiatives. Indeed, specific populations require indicated educational and health promotion programmes rather than universal interventions.

Harm reduction approaches - minimising harm associated with drug use - have been accepted in a growing number of countries. From the beginning, harm reduction has been the subject of a heated debate: opponents ventilate concerns on moral grounds that harm reduction ‘is giving the wrong message’ and can be interpreted as condoning drug use. Advocates of harm reduction argue that it is based on the reality of substance (ab)use (Reuter & Trautmann 2009). In the Netherlands, estimates suggest that 220 million Euros were spent in 2003 for harm reduction programs (10% of total drug control expenditures) (Bossong et al. 2009).

**Can intention to use ecstasy be reduced?**

In this thesis, we identified important determinants for the initiation and continuation of ecstasy use, most notably intention to use and the role of peers. One crucial aspect is whether or not these determinants can be effectively targeted by drug education. The findings of our prospective study may prove valuable in preventing or delaying the onset of ecstasy use in young adults at risk.

Intention to use ecstasy, current weekly cannabis use and low education all predicted ecstasy initiation – with intention starring as the most powerful predictor. These findings suggest that prevention efforts should focus on young adults who have strong intentions to take ecstasy, especially if they are regular cannabis smokers. The unpleasant news, however, is that intention – reflecting free will or conscious choice – represents one of the determinants of ecstasy use notoriously difficult to change through drug education. According to the Theory of Planned Behaviour, the concept of intention is shaped by an individual’s attitude, the subjective norm, and the perceived behavioural
control. As friends’ drug use and attitudes – which translate to the subjective norm – can influence intention, this road may be a target for drug education.

The findings presented in this thesis confirm that peer group members frequently influence the initial use of ecstasy. Contrary to popular belief, this influence does not normally result from ‘getting into the wrong crowd’ and from direct peer pressure, as most ecstasy users start using ecstasy within their existing circle of friends. In most cases, some friends were already taking ecstasy, and that aroused or fuelled the respondents’ interest. Furthermore, while respondents acknowledged that friends played a role in ecstasy initiation, they stressed that it was still their own decision. Our findings are supported by a recent Dutch study among participants of the dance scene, where users stated that it is ‘not done to encourage non-using friends to try out ecstasy’, but through their enthusiastic reports they may well have encouraged non-using friends (Peters et al. 2008b). In addition, qualitative literature on smoking initiation equally suggests that peer influence is more likely to be normative in nature, rather than taking the form of direct pressure (Stewart-Knox et al. 2005). Drug educators who target young people at risk of trying psychoactive substances like ecstasy ought to therefore keep in mind that such people feel to make their own individual decisions. They should avoid approaching them as passive individuals who are under heavy pressure from their social surroundings. Drug education with a personalised message targeted at young people with strong intentions who are in a critical transition period with increasing peer ecstasy use, might yield the best results in preventing or, more realistic, postponing first time ecstasy use.

**Friendship networks**

The role of friends roots firmly in the continuation phase of ecstasy use. Indeed, ecstasy use is a social activity, partly due to the substance’s entactogenic properties – creating a sense of connectedness. Ecstasy is used collectively and users discuss several strategies to maximize the high and minimize negative side effects. Friends are considered one of the most important sources of information (Falck et al. 2004; Hansen et al. 2001b; Jacinto et al. 2008; Murphy et al. 2006; Sherlock & Conner 1999; Zarate et al. 2006; Zuckerman et al. 1989), also by our sample of ecstasy users (data not published in this thesis). Our findings from chapter 5 indicate that the peer group not only encourages ecstasy use, but also restrains it. These restraining influences are informal social control mechanisms and can play a role in moderating drug use. Knowledge about ecstasy – whether accurate or otherwise – is distributed fluidly around social networks, thereby friendship networks could play an important role in increasing awareness of safer ecstasy use (Jacinto et al. 2008). Drug education should take these aspects into account and should attempt to reinforce this type of restraining peer-to-peer behaviour, whereby friends inhibit one another from hazardous acts and encourage risk-reducing behaviour. Provided with accurate information, based on the latest scientific research, peers could be effective educators (Jacinto et al. 2008). Peer education provided by young ecstasy users – such as the national peer education project Unity (Bleeker & Jamin 2003; Noijen 2005) – can make a vital contribution to targeted drug education and harm reduction.

**Risks and benefits: ecstasy use in the balance**

Some public health professionals assume that youth engage in substance use because of lack of knowledge (Kelly 2005), but according to Parker et al. (1989) contemporary young recreational drug users are taking calculated risks for pleasure and stress relief by making cost-benefit drug decisions. There is clear evidence of risk awareness in ecstasy users (Duff 2005; Gamma et al. 2005; Hansen et al. 2001a; Kelly 2005; Levy et al. 2005; Murphy et al. 2006; Peters et al. 2008b; Rodgers et al. 2006; Topp et al. 1999; Wibberley & Price 2000; Yacoubian et al. 2004; Yacoubian et al. 2003; Zarate et al. 2006). Nevertheless, users continue to consume the drug. In summary, knowledge about ecstasy’s
health risks has been effectively transferred to users, but this information fails to cause cessation of ecstasy use (Peters et al. 2008b). There appears to be a lack of impact of risk information on drug use; ecstasy users seem to evaluate the personal significance of these risks as low (Gamma et al. 2005). In a qualitative study among ecstasy-using college students, Levy et al. (2005) concluded: ‘they feel as though the stories they hear of death and serious brain damage are not representative of the experiences of most users’. In a qualitative study among Dutch ecstasy users, long-term health damage was not among the major reasons reported for ecstasy cessation. Although well aware of the risks associated with ecstasy use, users seemed not worried about the long-term effects of their own ecstasy use, because almost none of them had experienced serious health problems due to their ecstasy use (Peters et al. 2008b).

Most importantly, in addition to the low personal significance of risks, several studies suggest that many ecstasy users regard the benefits of use as outweighing potential negative effects (Bahoraa et al. 2009; Duff 2008; Hansen et al. 2001a; Hinchliff 2001; Murphy et al. 2006; Parks & Kennedy 2004; Rodgers et al. 2006; Shewan et al. 2000). Most recreational users informally make cost-benefit assessments of their substance use, indicating indirect support for the Rational Choice Theory. The findings of this thesis fit well in this picture. Among our sample of 106 adult recreational ecstasy users, 85% claimed long-term benefits resulted from their ecstasy use, most notably improvement of social relations (49%), while 45% reported long-term negative side effects such as impaired memory (18%) and low mood (8%) (data not published in this thesis). One could question if that balance may shift towards the negative effects after long-term, heavy use. However, in our explorative study among older adult ecstasy users (presented in Chapter 6), likewise the large majority characterised the role of ecstasy in their life as positive, especially on the social level, although they did also experience negative effects (mainly the post-ecstasy depressive mood and fatigue and the subjectively perceived memory problems).

Hence, in drug education activities it is of paramount importance to acknowledge the pleasure and benefits associated with drug use, in stead of focusing on the risks and harms. Insight in how users actually experience pleasures and harms is crucial. Or, in the words of the Canadian researcher Cameron Duff: ‘Drug use ought to be understood as a complex and heterogeneous assemblage of risks, conscious and unconscious choices and decisions, physical and psychical sensations, affects, corporeal processes, structural and contextual forces.’ (Duff 2008, p.385). One approach could be to focus drug education on maximizing the ecstasy experience. In doing so, tools are offered that not only maximize the high, but simultaneously minimize ecstasy related harms. For instance, in order to maximize the ecstasy experience, reducing use frequency is an important step, as consuming ecstasy on a weekly or fortnightly basis leads to tolerance and ‘loss of magic’ and an increase in depressive symptoms afterwards (Tuesday blues) (Jacinto et al. 2008; Parrott 2005). Indeed, several studies indicate that most ecstasy users apply so called ‘harm reduction strategies’ to maximize the ecstasy experience and minimize the negative side effects (Akram & Galt 1999; Allott & Redman 2005; Hansen et al. 2001a; Levy et al. 2005; Measham et al. 2001; Murphy et al. 2006; Panagopoulos & Ricciardelli 2005; Peters et al. 2008b; Rodgers et al. 2006; Shewan et al. 2000; Solowij et al. 1992). According to Peters et al. (2008b) intervening to promote these behaviours could prove to be more beneficial to the health of party visitors than trying to induce cessation, given the difficulty of intervening on most variables determining ecstasy use and the fact that most ecstasy users cease automatically.
Final conclusion

Evidently, drug law enforcement does not have the deterrent effects on the use of ecstasy that are intended by international anti-drugs agreements or national legislation. In addition, prevention programs generally fail to reduce substance use. With regard to drug use, Dutch policy can be characterised as harm reduction oriented. The findings presented in this thesis support a harm reduction approach.

Drug education targeted at party drug users should translate sound scientific findings into easy to grasp harm reduction strategies. A holistic educational approach covering life style, substance use, friends and behavioural aspects (such as sleep and nutrition) may yield the best results in promoting safer ecstasy use. Since ecstasy users are generally poly drug users, focus on drug interactions is necessary. Furthermore, a positive tone of voice and respect for a dance/ecstasy life-style are vital (Decorte et al. 2003). As substance use behaviour and knowledge travel through friend networks in a dynamic way, social networks and peer education are cornerstones in the educational process.