Pill Testing — Ecstasy & Prevention

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A SCIENTIFIC EVALUATION IN THREE EUROPEAN CITIES

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INTRODUCTION

Ecstasy is the most common 'party drug' or 'dance drug' in the European Union. Pill-testing is one of the methods applied to reduce the risks related to the use of ecstasy. Pill-testing has been the subject of both scientific and political debate, and the question whether testing encourages the use of ecstasy is one of the major issues in this discussion.

In this report we present the findings of an empirical study conducted in three European cities (Amsterdam, Hanover and Vienna). All three cities offer ecstasy users facilities for pill-testing. Earlier studies addressing the question whether pill-testing influences the behaviour of ecstasy users did so on the basis of the hypothetical situation that this opportunity was available. Few studies were able to test what users in effect do when actually offered this opportunity. For this reason our study focuses not only on the stated intentions of ecstasy users, but in particular on their actual behaviour in relation to pill-testing.

In this introductory chapter we will start with a general overview of the current situation regarding ecstasy use in the EU. We will then summarize what is currently known about pill-testing, both technically and with regard to the possible influence of pill-testing on the behaviour of (potential) ecstasy users. We conclude with an outline of the report.

Ecstasy as a party drug

A vast majority of European citizens has never tried ecstasy.[1] According to the latest general population survey conducted in Germany, in 2000, of those aged 18 to 59 1.5% in former West Germany and 2.0% in former East Germany had at some time tried the drug.[2] In the Netherlands, the figure for 2000/2001 was 2.9% of the population aged 12 years and over.[3] In a survey conducted in Upper Austria in 2000, the

1 EMCDDA (2002)

2 Kraus & Augustin (2001)

3 Abraham, Kaal & Cohen (2002)

lifetime prevalence of ecstasy use among the general population aged 15 and over was 4.0%.[4]

Of those who try ecstasy, most do not continue to use this substance for an extended period of time. For example, only 0.3% of the West German, 0.8% of the East German, 0.6% of the Upper Austrian, and 0.5% of the Dutch sample reported to have taken ecstasy during the previous 30 days.

Overall, ecstasy use is not widespread among younger teenagers. Surveys among students aged 15 to 16 years, conducted in thirty European countries, show that only a small percentage has ever tried ecstasy.[5] This outcome may be ascribed to the fact that the first use of ecstasy generally takes place – if at all – at a later age than 15-16 years. Dutch researchers for example found that among the general population in the Netherlands 22.4 years is the mean age of first ecstasy use.[6]

Prevalence rates are higher among young adults. In the Netherlands, the highest proportion of ecstasy users was found among the group aged 20 to 24 (13.6%). In former West Germany the highest percentage was found among respondents aged 21 to 24 (5.7%), and in former East Germany among those aged 25 to 29 (5.8%).

Surveys among specific groups of youth and young adults generally report higher prevalence rates. These figures, however, are to a large extent dependent on the population under survey. For example, a field study conducted in nine European cities showed that 34.4% of respondents interviewed in nightlife settings had at some time used ecstasy, and that 15.9% had taken the drug in the previous 30 days.[7] In another European study, conducted in seven cities, figures for the lifetime and last month prevalence of ecstasy use were considerably higher (mean lifetime: 53%; mean last month: 29%).[8] However, lifetime and last month figures for each city showed a considerable gap: 37.5% and 12.1% respectively for Vienna; 44.6% and 22.6% respectively for Berlin; 83.4% and 57.1% respectively for Amsterdam.[9]

These results for Amsterdam exceed those of all other field studies conducted in Amsterdam or elsewhere in the Netherlands. According to other, and probably more representative field surveys in Amsterdam, in 1998 65.6% of 'trendy' clubbers and ravers had ever tried ecstasy, against 33.7% of young cafe visitors in 2000. [10] [11]

In conclusion, figures on the use of ecstasy among young people very much depend on the population under survey. Between surveys conducted in nightlife settings in particular, significant variations are found in the extent of ecstasy use. As a conse-

4 Haas et al. (2001)
5 Hibell et al. (2000)
6 Abraham, Kaal & Cohen (2002)
7 Calafat et al. (1999)
8 Simon (2002)
9 Tossman, Boldt & Tensil (2001)
10 Korf et al. (1999)
11 Korf, Nabben & Benschop (2001)

quence, general conclusions about the extent of ecstasy use in nightlife are tentative at best. In fact, even about the extent of ecstasy use among a specific group such as clubbers and ravers, general statements are far from easy to make.
First of all, no uniform definition exists of this population. In addition, selecting comparable groups for a cross-national study is not an easy task. Although the music played in clubs and at raves shows strong similarities throughout Europe, there are some substantial variations, and these variations in some cases are labelled quite differently from one country to the next. For example, 'techno' is a commonly used term for what in the Netherlands is generally called 'house', while in the latter country 'techno' is used to refer to a specific type of 'house'. Similar types of dance music are moreover played at a variety of parties, ranging from relatively small-scale festivals with a few hundred visitors to large-scale dance events visited by over a 100.000 people. Lastly, similar parties can draw a varied public. While some small parties are only open to well-to-do people dressed in expensive designer clothes, others aim at the alternative, politically involved anti-globalist scene.

Certain general conclusions can nevertheless be drawn. Ecstasy appears to be predominantly taken during late adolescence and early adulthood. Like most illicit drugs, ecstasy is used more commonly by men than women; within the same setting, however, the use among both genders is rather similar. In addition, ecstasy appears to be a 'white' drug; its use is less common among ethnic minority groups. This may be explained by the electronic music dominating the so-called 'club and rave scene'; this scene does not appear to attract minority groups, that in general tend to prefer other musical styles.
Another general finding is that combined drug use is common. Alcohol and tobacco are very common in the dance scene, as in any kind of nightlife setting. The use of cannabis is also widespread. Moreover, ecstasy is only one of the stimulants commonly used in the dance scene. Substances like amphetamines (speed) and/or cocaine are also used, either in combination with, or as an alternative to ecstasy.
On the other hand, no survey among clubbers and ravers, regardless of the target population, has ever found that all participants use ecstasy, or that all people at the setting under study are currently under the influence of ecstasy. This clearly indicates that participation in the 'dance scene' does not invariably lead to the use of ecstasy.

Pill-testing

According to Schroers, 'pill-testing' serves three functions: prevention, safeguarding public health and drug monitoring.[12] Partly because of these various aims, pill-testing

[12] Schroers (2002)

is also referred to as drug checking, ecstasy monitoring, drug testing, on-site testing, substance identification, and in-place drug test service.

Technically, pill-testing stands for a variety of methods to detect the content of synthetic drugs, ecstasy in particular. In an overview of the situation in the EU, Kriener et al. mentions the following methods:[13]

- **Chromatography.** Using this method, a mixture of compounds is separated into its individual components. A detector produces a series of signals (peaks), called a chromatogram. Each peak generally represents a discrete chemical compound or a mixture of 'identical' compounds. The techniques used are: High Performance Liquid Chromatography (HPLC), Thin Layer Chromatography (TLC), Gas Chromatography (GC), and Gas Chromatography – Mass Spectrometry (CS-MS). Each of these techniques has its specific advantages and limitations.
- **Pill identification.** Strictly speaking, this method does not involve a chemical analytical procedure. In general, the pill under investigation is weighed and its diameter and width are measured. These data, together with branding, score and colour, are then held against listings of previously analysed pills with known content and data on quantity of content. In most cases a test of the pill by marquis reagents or quick tests is also included, making the results more reliable.
- **Marquis test** or colour reaction test. This test is done by scraping a small quantity of powder of a pill onto a plate. A small drop of the testing-kit liquid is then dripped onto the powder, as a result of which a chemical reaction occurs between the liquid and certain of the chemicals commonly found in ecstasy pills. This reaction will – generally within 10-15 seconds – cause the liquid to turn a variety of colours, depending on the content of the powder. The kit identifies the presence of ecstasy-like substances, but it does not differentiate between them, nor determine the quantity of these substances in the pill. Certain other substances can also be detected, but the pill may still contain a wide variety of other chemicals, safe or dangerous, that do not result in any colour change.
- **Immunological tests**. These tests are based on the reaction of a (more or less) specific antibody with a substance (drug) and the visualisation of this reaction. In most cases, commercially available immunotest-systems for drug testing in urine are used.

The evaluation of these pill-testing methods is summarised in the following scheme.

[13] Kriener et al. (2001)

Evaluation of pill-testing methods (Kriener et al.)

Method	Reliability of results	Number of identification substances	Professional prerequisites	Costs per instrument in euro	Time for one analysis	Suitable for on-site testing
Chromatography						
HPLC	High	Medium-high	Medium-high	20.000-40.000	Medium-quick	Yes
GC	Medium	Medium	High	10.000-30.000	Medium-quick	No
TLC	Medium	Low	Medium	1.000-5.000	Medium	Yes
GC + MS	Very high	Very high	Very high	30.000-120.000	Medium-quick	No
LC + MS	High	High	High	30-000-120.000	Quick	?
Pill identification	Very low		Low	0	Quick	Yes
Marquis test	Low	< 10	Low	< 1	Quick	Yes
Pill identification + Marquis	Low	?	Low	< 1	Quick	Yes
Immunotests (urine)	Very low	?	Low	< 1-5	Quick	No

From a toxicological perspective, clearly only the chromatographic methods can guarantee safe and reliable test results. However, these techniques generate substantial feasibility problems, as will become clear in the following chapter. For feasibility reasons, the pill identification and Marquis tests are applied as more practical alternatives.

This preference has been criticized. Winstock et al. argues that pill-testing provides an artificial 'shine of safety' at best, and that other, simpler harm reduction mechanisms are likely to be more effective.[14] This study moreover states that there is no evidence for the assumption that the knowledge made available to users through testing will influence their drug use or lead to behavioural change. The authors base these conclusions on a survey among clubbers in the United Kingdom, in which respondents were asked how they would respond to the results of pill-testing. In other words, respondents were confronted with a theoretical situation and were then asked, in theory, how they thought they would respond. Consequently, the researchers measured intended behaviour rather than actual behaviour.

In a less theoretical setting, Van de Wijngaart et al., in a site survey among ravers in the Netherlands found that the presence of testing facilities was statistically unrelated to respondents' consumption of ecstasy.[15] According to Winstock et al., this would suggest that test results scarcely contribute to reducing the subsequent use of ecstasy. A major problem here seems to be that the weak correlation between the extent of ecstasy use and the availability of prevention facilities ('Safe House Campaign'), including pill-testing, is falsely interpreted by the British authors as a low impact of pill-testing. In fact, Van de Wijngaart et al. reports that of the respondents in their survey that participated in pill-testing, a vast majority takes the pill when it contains what they expect (usually MDMA), but do not do so when it contains something else (mostly

[14] Winstock, Wollf & Ramsey (2001)

[15] Van de Wijngaart et al. (1997)

amphetamines, at that time). Nevertheless, 12% reported to take the pill regardless of the test result. In a smaller, local study in the Dutch city of Haarlem, it was found that all respondents whose pill contained what they expected (usually MDMA), reported to take that pill; a vast majority of the respondents whose pill did not contain what they expected, decided to not take the pill, at least unless more precise laboratory results would be available.[16] Consequently, it would appear that in practice ecstasy users respond more positively to pill-testing then is suggested by studies based on the theoretical availability of such a service.

Structure of the report

Chapter 2 provides a short overview of the local situation with regard to ecstasy in the three cities (Amsterdam, Hanover and Vienna) that participated in the study. In addition the similarities and differences between the pill-testing programs in the three cities will be discussed. In Chapter 3 we present the research questions and the associated hypotheses, followed by a discussion of the research set-up as well as some practicalities of the study. Chapter 4 contains an overview of the general characteristics of the three groups of party visitors included in our study: testers, non-testers and non-users. This chapter also includes a discussion on the comparability of these three groups.
In the subsequent chapters we present the findings with regard to our hypotheses. Chapter 5 focuses on the extension of prevention through pill-testing; Chapter 6 on the acceptance of prevention through pill-testing. Chapter 7 addresses the question whether pill-testing contributes to more, and more accurate knowledge of ecstasy. The core question to be answered in Chapter 8 is whether pill-testing encourages the use of ecstasy. In Chapter 9 we discuss to what extent pill-testing prevents or postpones the first use of ecstasy.
The subsequent two chapters focus on the added value of pill-testing for monitoring the drug market (Chapter 10) and the potential implications of our research findings for primary prevention (Chapter 11).
A summary of the main results, finally, is given in Chapter 12.

[16] Koeter (1997)

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THE THREE PARTICIPATING CITIES

Pill-testing arrangements for ecstasy have existed for several years now in Amsterdam, Hanover and Vienna. They are run by the local drug prevention and counselling agencies and their working methods differ in many ways. We will now describe in more detail the three agencies that offer pill-testing services (Jellinek Prevention in Amsterdam, Drobs in Hanover, ChEck iT! in Vienna). Our overview focuses first on their organisational status within the overall addiction care and prevention system and on their organisational aims. We then examine in detail how the various testing procedures operate and what facilities and services are currently available in each project. We briefly clarify the legal parameters under which the testing is permitted, and we describe the local and national market conditions for the substances targeted for testing.

Amsterdam: Jellinek Prevention

Organisational context

The Prevention Department of the Jellinek Institute is part of the Amsterdam-based Jellinek Foundation, the largest Dutch agency for the treatment of dependence disorders (alcohol, drugs and gambling). The Jellinek Foundation offers a broad range of ambulatory and residential treatment programmes. The pill-testing service provided by Jellinek Prevention is part of the Dutch Drug Information Monitoring System (DIMS), which is operated nationwide by the Netherlands Institute of Mental Health and Addiction (Trimbos-instituut) in Utrecht. The system is officially authorised to analyse pills delivered for testing by drug users. It offers on-the-spot testing ('quick testing') at 12 different locations in the Netherlands. At ten other locations, drug samples can be delivered to be sent off to a central laboratory for testing. Amsterdam offers both possibilities.

Aims

The principal stated aim of the testing services is to provide 'safer drug use' education as a strategy to minimise the risks for people who take so-called party drugs or dance drugs such as ecstasy. In addition, the test results provide evidence to trigger drug warning campaigns whenever dangerous substances are detected, and they also help to monitor the market more generally. The clients who make use of the Jellinek testing service are party drug users:

- who have heard about the testing opportunities through the Unity peer prevention project. These clients are mostly young people aged 18 to 27 who attend large raves and are fans of techno or hard house music.
- who have heard of the testing service through CD shops, cannabis coffee shops or smart shops. They are between 18 and 30 years of age and listen predominantly to trance, techno, hard house and other variants of house music.
- who contact Jellinek directly by telephone.
- who have discovered the Jellinek service either through the website of the nationwide DIMS project (www.drugsinfo.nl/testen) or through the Jellinek website.
- who have learned of the testing through other clients or by hearsay.

Testing procedures

Jellinek Prevention offers two different testing procedures: the quick test and the laboratory test. Only pills can be tested with a quick test. It has two components: a reagent known as Marquis and a list of results from pills analysed in the laboratory in the past three months. A test is made by shaving off a bit of the pill and sprinkling it with Marquis reagent. If the tested pill appears on the lab list and the Marquis results match those in the list, the client is told the outcome straightaway. If the pill is not found on the list or if the Marquis results conflict with the lab results, the pill is sent on to the lab for safety reasons. Samples of all other drugs submitted to the Jellinek testing venue in any other form, including powders, capsules and liquids, are always forwarded to the lab. Clients can phone Jellinek a week later for the results. They are then told what active ingredients their drug sample contained, in what strengths (in milligrams or percentages) and what implications the test results have. Chemical precursors are not tested. If a precursor is detected in a sample, the client receives a report of 'unidentified substance'.

Clients are allowed to test no more than 3 pills or 3 powders or 3 liquids at any one time. Test seekers arriving with more than these amounts are assumed to be drug dealers, and no testing is available to them. The anonymity of clients is assured. They are charged €2.50 per sample, which also covers any necessary lab testing.

The amounts of substances needed for laboratory analysis are as follows: 1 whole tablet, 0.2 grams of powder, or a full vial of liquid. The following substances can be qualitatively detected: MDMA (as well as analogue drugs such as MDEA, MDA, 2-CB, MBDB, DOB, 2CT-2), MTA, various amphetamines, GHB, caffeine, cannabis (1-month wait for lab results), heroine, cocaine, LSD (4- to 6-week wait) and anabolic steroids. Testing for other substances is also being planned. Many of the detectable substances (MDMA, MDEA, MDA, caffeine, amphetamine, cocaine, LSD, GHB, cannabis and heroin) can also be quantified. Tablets are quantitatively assessed in milligrams, and powders in percentages.

Facilities and services

The Jellinek Prevention testing venue is open to drug users once a week, from 15.30 to 19.30 hours on Thursdays, for the quick testing of drugs. Most drugs brought in are pills. Clients can phone for results of lab testing a week later, on Fridays from 15 to 17 hours. On-site testing at parties is no longer being performed in the Netherlands. It is argued that the available mobile testing procedures no longer yield enough reliable results to give to clients on the spot.

As noted, testing is available exclusively to drug users. The service is not intended for other people like drug dealers, parents or drug workers. Parents may only bring in drug samples for testing if their children accompany them to the testing venue. In such cases, prevention workers first consult with both the parents and the children before deciding whether to perform the tests.

Legal parameters

The DIMS is funded by the Dutch public health ministry (VWS). Each of the associated organisations that offer testing services has signed a contract with the DIMS, which also authorises certified testers to handle scheduled substances for testing purposes. Certification entails the successful completion of a special training course.

Market conditions

According to the DIMS analyses, the percentage of ecstasy tablets containing MDMA as their principal active ingredient rose sharply from 34% to 92% between 1997 and 2001, while the percentage of tablets containing amphetamine dropped from 32% to 2%. The MDMA content of ecstasy pills averages 83 mg nationwide in 2001. A total of 3549 ecstasy pills were tested that year through the DIMS. The proportion of pills containing other psychoactive substances was a mere 1%, compared to 9% in 1997. These substances included 2-CB (11 pills detected in 2001), DOB (5 pills), ketamine

(1), 4-MTA (1) and PMA/PMMA (8). One pill found with a dangerously high PMA content touched off a Dutch nationwide warning campaign in 2001.[17]

The figures recorded by Jellinek Prevention for Amsterdam are generally higher than the DIMS data obtained for the whole of the Netherlands.[18] In 2001, 94% of the tested pills contained MDMA (compared to 97% the previous year). Average MDMA content per pill rose to 89 mg (from 76 mg the previous year), with freak values ranging from 8 mg up to 193 mg. Although the average MDMA content declined from 107 mg in 1994 to 66 mg in 1998, it has gradually been rising since then.

Hanover: Youth and Drugs Counselling Centre (Drobs)

Organisational context

The Hanover Youth and Drugs Counselling Centre (Jugend- und Drogenberatungszentrum Hannover, or Drobs) forms an integral part of the not-for-profit Association for Social Therapy and Social Education (Gesellschaft für Sozialtherapie und Pädagogik GmbH Hannover, or STEP-GmbH). STEP was founded in the early 1970s. Initially it had a strong focus on inpatient and aftercare services, but its work changed radically when it merged with Drobs in 1994 and made the counselling centre into its core activity. The counselling centre now offers services in the fields of prevention, ambulatory counselling and therapy, medical and psychosocial outpatient care to methadone maintenance clients, and forensic social work. The services were expanded in 1997 to include a drug consumption facility. Integration with Drobs has created a counselling and treatment alliance offering a broad range of low- and higher-threshold care and support.

Aims

The pill identification project operated by the Hanover Drobs enables it to reach drug users who have never been in touch with or sought contact with drug care agencies before. This could be a first step towards additional, more focused care provision. The specific aims of the pill identification service are as follows:

- minimisation of health risks by delivering a full range of educational information and advice about safer drug use;
- encouraging self-reflection about drug-taking behaviour, with special attention to the individual mind sets and social settings linked to drug use (set and setting);
- establishing contacts with drug users and giving them information about services in the existing drug care system that may be relevant to their needs;

[17] NDM (2002)

[18] Korf, Nabben & Benschop (2002)

- counselling, guidance, education, and referral to appropriately focused forms of care, if needed.

Testing procedures

The Hanover Drobs pursues many different channels to get and stay in touch with partygoers. As well as providing advice, counselling, publications, workshops, web pages, and on-site activities at techno parties, it also offers testing services to identify ecstasy pills. Drug users can bring their pills either to the on-site Drobs Infomobile at large dance parties or directly to the Drobs itself (Mondays to Fridays from 9 to 17 hours) The Marquis test (otherwise known as quick test or easy test), performed in conjunction with pill identification lists, enables a relatively precise identification of pills. Should a pill not appear on the list, however, it cannot be tested any further at the present time, because no regional laboratory is available to perform the analysis. Clients are charged €1.50 for the test, and they receive information about the pill's ingredients and potency. According to the Drobs website, the information is 90% reliable, but staff members report that current market conditions make such a quota no longer attainable. The clients bear the risks for the gap in reliability. Drug users may also obtain additional information or receive advice or counselling from Drobs.

Facilities and services

The prevention work of the Hanover Drobs encompasses a broad array of primary and secondary prevention services aiming at many different target groups. Most activities are youth-oriented, and they range from drugs education in schools, action days at youth centres, drugs training for youth workers, further education projects for apprentices and trainees, and workplace addiction prevention efforts, all the way to trashcan drumming workshops, DJ workshops, and information days in the Drobs Infomobile.

As early as 1992, the increasing consumption of ecstasy by young people led the Hanover Drobs to launch targeted educational, counselling and care initiatives for young party drug users whose drug-taking had reached critical to harmful levels. The services were aimed at the techno scene in particular. Because this youth culture exhibited a strong affinity to synthetic drugs from the beginning, but also showed low problem awareness and an unaccepting attitude towards the 'classical' drug prevention and care system, Drobs designed prevention initiatives more in tune with the lifestyle there:

- on-site prevention work in the party scene using special information materials and activities;
- gradual implementation of a comprehensive range of ambulatory advice, counselling and care services for clients from the techno scene.

Legal parameters

Drobs has negotiated an arrangement with the Hanover Department of Public Prosecutions that enables it to carry out drug testing without violating the German Narcotics Act. During the testing process, the pill does not leave the client's hands, and the pill shavings are destroyed by the chemical analysis. The Drobs staff member thus avoids coming into possession of illicit drugs.

Market conditions

In 2001, more than 800 variants of pill logos were encountered in the German ecstasy market.[19] In the previous year, the average ecstasy tablet contained 64 mg, but fluctuations were detected from 1 mg to 316 mg MDMA per tablet. Some 98% of the single-entity drugs analysed by the German Federal Criminal Office (BKA) contained MDMA.[20] The Hanover Drobs uses special warning lists to inform the public about particularly hazardous types of ecstasy tablets. The list dating from October 2002 contained 16 pill types. The active ingredients most commonly warned about are MDA, PMA and MTA.

Vienna: ChEck iT!

Organisational context

The ChEck iT! project is part of Vienna Social Projects (Verein Wiener Sozialprojekte, or VWS), an organisation founded in 1990 to seek new ways of providing drugs counselling and care and to respond more flexibly to newly emerging problems. ChEck iT! is operated jointly by VWS, the Vienna General Hospital (AKH) and the Vienna Social Fund (FSW). It provides information and counselling to the users of synthetic drugs such as ecstasy. It started work in April 1997.

Aims

ChEck iT! is a research-based pilot project set up to gather systematic data. Its primary target group consists of people who take party drugs. It also targets potential users who are attracted to such drugs but have never taken them. A characteristic common to most current and potential users of synthetic drugs is that they are not reached by the more conventional drug counselling agencies.

By documenting pill analyses and investigating the patterns and motives of drug use, ChEck iT! gathers data to enable the early recognition of new trends in drug content and drug use. The data facilitates the swift, well-informed and pragmatic improvement

[19] Bundeskriminalamt (2002)

[20] Bundeskriminalamt (2001)

of the services to prevent addiction and curb drug use. The research is led by Professor Rainer Schmid of Vienna University's Institute of Medical and Chemical Laboratory Diagnostics, located at Vienna General Hospital (AKH).

The general aim of ChEck iT! is to avert problematic trends in the use of psychoactive substances and to minimise short-term and longer-term health damage. Its activities are based on secondary prevention and risk reduction strategies. A more specific aim is to get in touch with the target group by offering on-site services in the party scene, which are responsive to the needs of the people there. By combining outreach work with chemical drug testing, the project tries to reach as many potential users of illicit synthetic drugs as possible, providing them with information and advice to help them avoid risks. Other specific aims are to improve the knowledge of synthetic drug users about the effects and hazards of such substances, and to inform them about the legal and health risks of drug use by providing objective, factual information specifically designed for the party scene.

Testing procedures

ChEck iT! has been offering testing opportunities for synthetic drugs since 1997. The testing is done with a liquid chromatograph, which delivers both qualitative analysis (which substances) and quantitative analysis (what amounts). Pill-testing is performed exclusively on-site at large parties. The test is based on a separation system known as high-pressure liquid chromatography (HPLC). It requires about one percent of the tested tablet. The analysis system also yields quantitative data on the amounts of specific ingredients. Testing is free of charge. While clients wait for their results, they can converse with ChEck iT! staff members or fill in a questionnaire. The test results are posted on the wall, but without the corresponding pill logo, so that only the person who submitted the pill for testing can connect the result to a particular type of pill.

Facilities and services

The ChEck iT! multidisciplinary team is made up as follows: 6 social workers (10 hours each per week), 4 psychologists (10 hours each), 7 research chemists (15 hours each) and 3 trainees. All disciplines are represented at the on-site pill-testing sessions. The services available there include the notification of test results to the target group clients, the distribution of drugs education materials, verbal advice and information, crisis intervention, and the dispensing of free drinking water, fruit and condoms. Some additional statistics will give an impression of the activities pursued by ChEck iT! in 2001:

- six on-site pill-testing sessions were held (3 in or near Vienna, 3 elsewhere in Austria);

- an average of 62 tablets were tested per session;
- contact was made with 225 persons per session on average;
- their average age was 19, and 70% were male;
- about half were employed, a third were in secondary school, 10% were in higher education and 5% were unemployed;
- some 300 people visited the ChEck iT! website daily;
- from 30 to 40 people per month requested advice via the Internet.

Legal parameters

The ChEck iT! project is funded by the City of Vienna (through the Vienna Social Fund) and by the Austrian Federal Ministry for Social Security and Generations. It forms an official part of Vienna's municipal drugs policy. The legal basis for the on-site pill-testing derives from official statements by the Ministries of Justice and Social Affairs and Health authorising pill-testing for research purposes – provided that ChEck iT! staff do not touch the illicit substances. According to Austrian law, once a person has gained 'power of disposal' over an illicit substance, they are not allowed to return it to the giver. For the on-site testing sessions, agreements have been made with local police authorities not to undertake any police activities in and around the ChEck iT! tent.

Market conditions

The average MDMA content of the ecstasy pills (N=302) analysed in the year 2000 was 52 mg (compared to 65 mg in 1999). Most pills tested in both years were in the 40-50 mg range. A wide diversity of stamps (logos) on ecstasy pills, as well as a high 'turnover' in the types of stamps, were observed in 2000 and in the preceding years. Statistically speaking, every fourth tablet in 1999 and every fifth tablet in 2000 sported a new, different logo. The vast inconsistencies in the types of ecstasy pills available and the volatile dynamic of the market were also reflected in the short time span during which particular logos were encountered. In 1999 and 2000, just four logos turned up at more than two raves in a row, and the 'Mitsubishi' logo was the only one to be recorded and analysed by ChEck iT! in both years.[21]

Summary

A number of similarities and differences have emerged between the three local pill-testing services. Although these need to be taken into account in the comparison, none of the distinctions affect the overall comparability of the projects:

[21] Verein Wiener Sozialprojekte (2001)

- All agencies have similar strategies – secondary prevention and risk minimisation form the underlying conceptual basis of the pill-testing activities.
- All agencies focus on the same primary target groups – young, harder-to-reach users of party drugs such as ecstasy.
- Differences were seen between the testing methods used locally – Hanover applies quick tests only (supported by pill identification lists), Vienna exclusively applies laboratory analysis, and Amsterdam offers both quick testing (supported by lists) and lab analysis.
- Differences in terms of testing locations were also evident – Vienna performs on-site testing only, Amsterdam tests only in the prevention agency, and Hanover offers testing both on-site and in the agency.
- Small charges are made for pill-testing in Amsterdam and Hanover, whilst in Vienna it is free of charge.
- Lab analysis in the three European cities reveals that the market conditions are not uniform – the average MDMA content was highest in the Netherlands (83 mg) and in Amsterdam (89 mg) and lowest in Vienna (52 mg). The average content for Germany, applied here to the Hanover market, was somewhere in-between (about 65 mg per tablet).

3

RESEARCH QUESTIONS AND METHODOLOGY

The purpose of our study was to empirically assess the impact of pill-testing services on the drug-taking behaviour and the risk awareness of ecstasy users. This chapter begins by formulating our research questions and the hypotheses that derive from them. We then describe our research design, methodology, data collection and statistical analysis.

Research topics and hypotheses

The research questions we investigated were as follow:

- Does the utilisation of pill-testing services lead to changes in patterns of drug use (heightened or reduced risks) amongst adolescents and young adults?
- What are the pros and cons of the different testing practices in the three participating cities?
- What implications do the findings have for future efforts in drug prevention, counselling and care?

We formulated eight research hypotheses deriving from these questions. The first four relate to secondary prevention, and the second four to primary prevention.

From the standpoint of **secondary** prevention, the provision of pill-testing services gives rise to the following hypotheses:

1. Pill-testing services enable drug workers to contact and communicate with drug users who were previously out of reach.
2. Health warnings about dangerous substances are received with more credibility and acceptance when delivered in the context of pill-testing services.
3. Pill-testing services result in better-informed drug users and increasingly health-conscious behaviour.
4. Pill-testing services facilitate the monitoring and analysis of markets for synthetic drugs.

Pill-testing services can enhance **primary** prevention efforts, in line with the following hypotheses:

1. Pill-testing services neither stimulate the use of ecstasy nor extend the circle of ecstasy users.
2. Pill-testing services lead potential ecstasy users to postpone or abstain from an initial use of the drug.
3. Pill-testing services serve to demystify synthetic drugs.
4. Pill-testing services help to identify issues arising in secondary prevention which can be particularly valuable for improving primary prevention efforts.

Research design

The key thrust of our research design was to question partygoers in the three cities. We also conducted interviews with experts. The prime target group of the pill-testing services – and the population targeted by this study – is what we will refer to as partygoers. It includes both ecstasy users (current, former, heavy, problematic, etcetera) and non-users. The subpopulation of ecstasy users can be further divided into testers and non-testers. Three subgroups of partygoers were thus distinguished in our research design:

- Testers were partygoers who had taken ecstasy at least once in the past 12 months and who had utilised a pill-testing service at least once in their lives.
- Non-testers were partygoers who had taken ecstasy at least once in the past 12 months but who had never used a pill-testing service.
- Non-users were partygoers who had never taken any ecstasy in their lives.

The table below summarises the research methods and subgroups used in testing each hypothesis.

Research design

Hypothesis	Method	Respondents
Extending the reach of prevention	questionnaire	testers (retrospective self-reports) testers vs. non-testers
Acceptance of prevention messages	questionnaire	testers, non-testers, non-users
Better-informed population	questionnaire	testers (retrospective self-reports) testers vs. non-testers
Market monitoring	expert interviews	prevention workers, police experts, other experts
No stimulation of drug use	questionnaire	non-users vs. users, and testers vs. non-testers + non-users
Postponement or abstinence	questionnaire	non-users, and testers vs. non-testers
Demystification	questionnaire expert interviews	testers vs. non-testers prevention workers, other experts
Improved primary prevention	expert interviews	prevention workers, other experts

Questionnaires and interviews

The expert interviews were guided by a thematic checklist. The central focus was to explore and evaluate the pros and cons of the locally or nationally operated pill-testing projects from an expert point of view. We examined the potentials, limitations and risks of the projects, with an additional underlying emphasis on whether such services form a viable means of monitoring the ecstasy market. Three experts were interviewed in person in each city, recruited from a specific field of practice: local drug policy coordination, local police, and national coordinating bodies for drug policy or drug prevention.

Three questionnaires were developed, one for each group of partygoers. The first drafts of the questionnaires were discussed in detail with prevention workers in all three cities, and then pre-tested and refined in a trial run in Amsterdam. The revised versions were again examined in full with the prevention workers before being finalised. All three questionnaires were similarly structured, but some questions were put to only one or two subgroups.

- All questionnaires began with several questions about party attendance and partying behaviour, including alcohol and drug consumption at dance parties.
- All respondents were questioned about ecstasy. Testers and non-testers were asked further questions, mainly about their use of ecstasy; non-users of ecstasy were asked to give their reasons for not having taken it.
- Testers were then questioned about their testing behaviour, and non-testers mainly about why they had not (yet) used a pill-testing service.
- The next set of questions, posed to all respondents, concerned where they got their information about ecstasy and how reliable they thought these information sources are. Several questions then followed to gauge their knowledge of ecstasy.
- All three subgroups were then asked about their use of licit and illicit substances and the age at which they had first used them ('age of initiation').
- A series of sociodemographic questions (e.g. age, gender, ethnicity) then followed for all respondents.
- All questionnaires ended with a series of sensation-seeking items from a personality test designed by Zuckerman.

The questionnaires were produced in Dutch (for Amsterdam) and German versions. The German version for Hanover differed slightly from the Viennese version in both language and content (e.g. in questions about educational attainment).

One central focus in our study is on whether the use of ecstasy is associated with, or influenced by, the activities of pill-testing services. We could not, however, rule out in

advance that differences in ecstasy consumption between testers and non-testers would be partly, or primarily, explainable in terms of background characteristics such as gender, or personality characteristics such as sensation seeking.

We specifically included questions about sensation seeking chiefly to ascertain whether differences in testing behaviour (testers vs. non-testers) or in ecstasy use (users vs. non-users) might be more appropriately interpreted in terms of personality traits, rather than as outcomes causally linked to pill-testing services. The American psychologist Marvin Zuckerman is an internationally recognised expert on sensation seeking. The questionnaire he developed (the Zuckerman-Kuhlman Personality Questionnaire, or ZKPQ) has been validated, as have translations into other languages such as Dutch. A problem we faced was that Zuckerman's full test was far too long to be included in our study, and several psychologists had suggested that nothing short of the full test should be administered. In consultation with Zuckerman himself, however, it was agreed that the use of a subscale would be entirely warranted. The items we included in our questionnaire thus corresponded to the subscale suggested by Zuckerman (the ZKPQ Impulsive Sensation Seeking scale, or ImpSS).[22]

This procedure had two drawbacks. The first was a language problem. Several items from the American subscale had not been included in the validated Dutch version; although we translated them carefully, we had no chance to validate them. For the German and Austrian questionnaires we had no other alternative than to use a carefully translated but non-validated version of the scale. A second, related problem was that, given the lack of demonstrated validity for the three countries we studied, we had no choice but to use American students as a comparison group. Although the normal values obtained for the United States might well be inapplicable to Germany, Austria or the Netherlands, we are still confident that the sensation-seeking items from the Zuckerman inventory are suitable for statistically comparing our three groups of partygoers.

Data collection

The questionnaire data was collected in all three cities during the same three-month period extending from March to early July 2002. In Hanover and Vienna, all questionnaires were completed at raves, but a minor proportion of the Amsterdam questionnaires were completed in the offices of the Jellinek Prevention pill-testing service. To ensure the comparability of the results, we agreed to visit raves attended by more than 1000 partygoers.

[22] Zuckerman et al. (1993)

In Amsterdam, the questionnaire administration was completed after two large raves (25000 and 5000 attendance). The music genres at both parties could be described as mainstream techno to hardcore techno. In support of the Jellinek staff, additional fieldworkers were deployed who had been specially trained for the task. A total of 10 workers were on duty at each rave. Partygoers completed their questionnaires in the chill-out area at the raves. The average time of completion was 20 minutes, consistent with our estimate. In Hanover, workers from the Drobs visited a total of 4 raves to gather the required data. One of the parties lasted more than two days. The Hanover parties were rather smaller in scale than those in the other cities (1000-2000 attendance). The researchers made use of the Drobs Infomobile, a large double-decker bus, parked just outside the entrance to the rave. The bus served both for pill-testing and for the completion of questionnaires in the chill-out area. The Drobs workers were likewise assisted by 4 to 6 additional fieldworkers. In Vienna, three commercial raves were visited (5000 attendance each). All ChEck iT! fieldworkers first received instruction at an introductory evening. Respondents were recruited from the queue in front of the tent where the testing services were located. Completion of the questionnaires took longer than expected (30-45 minutes on average).

The expert interviews averaged 90 minutes in duration. Interview teams were composed of two persons as a rule, one of whom conducted the interview according to the checklist, while the other took notes that were later compiled into a transcript.

Statistics

A total of 792 respondents completed questionnaires. After the data had been cleaned, 702 respondents remained.[23] They constituted a convenience sample of partygoers, in which the respondents were evenly distributed over the three groups (testers, non-testers and non-users) and the three cities (Amsterdam, Hanover and Vienna).

The first step of the analysis was to seek differences between testers and non-testers. We began by applying a full range of bivariate analyses to testers and non-testers only, and then to the entire sample (non-users included). If a significant overall difference was apparent between groups, but none had emerged between testers and non-testers, then we took that to imply a difference between the ecstasy users (testers and non-testers) and the non-users. We next assessed whether observed differences between groups were 'real', or whether they were attributable to back-

[23] A total of 90 questionnaires were omitted because of missing answers (more than 20% of mandatory questions skipped) or because the respondent did not meet the inclusion criteria (e.g. last-year ecstasy use for testers and non-testers, or no lifetime use for non-users).

ground characteristics; or whether any unseen differences between groups might have been obscured by differences in background characteristics. To these ends, we performed regression analyses in which age, personality, gender, ethnicity, education and city of study were included as independent variables. Finally, we studied the influence of testing frequency within the subgroup of testers. Because testing frequency was correlated with age, we conducted partial correlations to control for age.

Data entry and statistical analysis were performed with the SPSS statistical package.[24] Bivariate analyses were based on Student's t, analysis of variance or chi-square tests, or Fisher's exact test when small frequencies resulted in small or empty cells in cross-tabulations. The multivariate analyses consisted of linear, ordinal or logistic regression and partial correlations. Observed differences were considered 'real' only if they had less than a 5% likelihood of being attributable to chance ($p < .05$). All figures and significance levels from the statistical analyses are presented in the tables included in this report.

[24] © SPSS Inc. 2001

4

RESPONDENTS AND TESTING

Between March and July 2002, a total of 792 respondents filled out a questionnaire. After cleaning the data, 702 respondents remained.[25] This convenience sample consists of respondents evenly distributed over the three cities in which the research took place, as well as over the three groups (testers, non-testers and non-users).
In this chapter we will first report on several general characteristics of the respondents. Secondly, we present data on impulsive sensation seeking. Thirdly, we discuss the use of licit and illicit drugs, including age of first-time use, after which the three groups included in this study are compared. Then we provide an overview of the respondents' testing behaviour, including stated reasons for and against using the test service. Finally we summarize and discuss the main findings.

Demographics

Male respondents (62.6%) outnumber female respondents (37.4%). Their ages range from 14 to 43; the mean age is around 22 years. Almost one fifth comes from a foreign ethnic background, but a large majority of the respondents has the nationality of the country in which they were interviewed.
Almost half of the sample still lives with their parents or caretakers; about one quarter lives alone. Of the other respondents, most live with a partner, either with or without children.

Education, employment, and income

Most respondents list secondary level education as their highest completed education. Of the sample, about half are students and more than half are employed for at least twenty hours a week. In total 10.2% is neither employed nor a student; 34.2% combines (part-time) employment and studies. Most respondents (83.0%) have a monthly income of less than €1500,=.

[25] A total of 90 questionnaires were omitted due to lacking answers (more than 20% of the obligatory questions were skipped) and/or because the respondent did not meet the inclusion criteria (e.g. ecstasy use in the previous year for testers and non-testers, and no use at any time for non-users).

Impulsive sensation seeking

To investigate a personality trait referred to as 'impulsive sensation seeking', we included 19 questions taken from the Zuckerman-Kuhlman Personality Questionnaire (ZKPQ) in our survey. The items dealing with impulsivity describe a lack of planning and a tendency to act impulsively, without thinking. The sensation seeking items describe a general need for thrills and excitement, a preference for unpredictable situations and friends, and a need for change and novelty.[26] Together these questions form an impulsive sensation seeking (ImpSS) scale. Several studies suggest a link between sensation seeking and drug use.[27]

Men showed a mean score of 10.5 points on the ImpSS scale; women had a mean score of 10.1 points. These results approximate those of an American reference group consisting of 2969 college students at the university of Delaware. On average, the American male students score slightly higher: 11.0 points. The female students score lower: 9.7 points. Both scores in our research group are near the 50th percentile of the reference group, i.e. about 50% of the male college students scored over 10.5 points and about 50% scored less. As a group, then, our respondents' score on sensation seeking is not especially high. Further on in this chapter we will look at differences in sensation seeking tendencies between ecstasy users and non-users.

Drug use

Regarding drug use we determined lifetime prevalence, or use at any one time; last year prevalence or recent use; and last month prevalence or current use.

As a result of our inclusion criteria, two thirds of the respondents have used ecstasy during the previous year (testers and non-testers) and one third has never used ecstasy (non-users).

The use of other drugs, both licit and illicit, is fairly common among the respondents. Almost all respondents have drunk alcohol before and most respondents are current drinkers. Again, a vast majority has at some point smoked tobacco and most respondents are current smokers. Cannabis use is also fairly common; almost two thirds of the respondents are current users.

Stimulants in general appear to be rather popular among respondents. Over half of the sample has at one time used amphetamines and about one quarter is a current user. Almost half of the sample has used cocaine before and about one quarter is a current user. Approximately one third of the respondents has previously used herbal ecstasy and about one out of every ten is a current user.

[26] Zuckerman & Kuhlman (unpublished)

[27] Calafat et al. (1998)

Regarding psychedelic drugs, about half of the sample has tried magic mushrooms and about one quarter LSD. Current use, however, proved relatively low, particularly in the case of LSD.
The use of anaesthetic drugs (GHB and ketamin) and valium is not very common amongst respondents. The same holds for heroin and crack cocaine. Poppers on the other hand have been used by over one-third of respondents, and about one out of every ten is a current user.
In sum, respondents are fairly experienced users, and ecstasy is only one of several psychotropic substances they are currently using. A comparison with current drug use in two samples taken from other studies is set out in the table below. Compared to the Amsterdam sample of clubbers and ravers, drug use is somewhat high – especially considering the respondents of the earlier Amsterdam survey are a few years older.[28] Compared to the UK sample of dance music enthusiasts, however, drug use is rather low.[29] In comparison with the general population, of course, drug use in our sample is high (see Chapter 1).

Current drug use in three samples

	Partygoers 2002 Amsterdam-Hanover-Vienna mean age: 22 years	**Clubbers and ravers 1998** Amsterdam mean age: 26 years	**Dance music scene 2001** UK mean age: 24 years
cannabis	63%	52%	73%
ecstasy	52%	41%	86%
cocaine	22%	24%	46%
amphetamines	29%	13%	40%
LSD	4%	1%	10%

An overview of the age of onset shows a distinct sequence: Most respondents first start with alcohol and tobacco, followed by cannabis, and then other drugs. Again, marked similarities between the three cities can be observed. Taking the median age of onset – the age at which 50% of the users took a certain substance for the first time – the sequence for the most commonly used substances is as follows:

- 14 years alcohol and tobacco
- 15 years cannabis
- 17 years ecstasy, amphetamines, LSD, poppers
- 18 years cocaine, magic mushrooms, herbal ecstasy
- 19 years GHB

[28] Korf et al. (1999)
[29] Winstock, Griffiths & Stewart (2001)

Party behaviour

In general, respondents go out regularly. About half of the respondents goes out to clubs, parties and cafes at least once a week. They started going to parties around the age of 17. In the previous year they went to 5 large-scale parties (median), to 10 small-scale parties, and to an equal number of clubs.

Three cities in comparison

Similarities between the respondents from the three cities predominate, but there are also some distinct differences. On average, Vienna respondents are slightly younger (mean age 19.8) than those in Hanover (22.7) and Amsterdam (22.8).
The Amsterdam respondents score slightly higher on the impulsive sensation seeking scale.
In comparison, the Hanover respondents show a lower level of education and are less often currently students, while for Amsterdam respondents employment and income figures are higher.
Regarding drug use, amphetamines and LSD appear more popular in Hanover and Vienna than in Amsterdam, while the use of herbal ecstasy and GHB is more common in Amsterdam than in the other two cities. Prevalence of ketamin, crack cocaine and heroin use is slightly higher in Vienna than in Amsterdam or Hanover.
In addition, the Vienna respondents are not only slightly younger than the respondents from Hanover and Amsterdam, but they also seem to have started using most substances somewhat earlier than their counterparts. Regarding their drug use respondents from Hanover differ in certain respects from either Amsterdam or Vienna, but there is no characteristic aspect of drug use in which Hanover differs from both Amsterdam and Vienna.
Finally, Hanover respondents most often frequented small-scale parties as well as clubs.

Distinctive features of the three cities

Amsterdam	▪ Higher scores on impulsive sensation seeking. ▪ Higher rate of employment and income. ▪ Less amphetamines and LSD. More herbal ecstasy and GHB.
Hanover	▪ Lower level of education. ▪ Lower percentage of students. ▪ More often frequenting small-scale parties and clubs.
Vienna	▪ Younger respondents. ▪ Slightly higher use of ketamin, crack cocaine and heroin. ▪ Earlier onset of substance use.

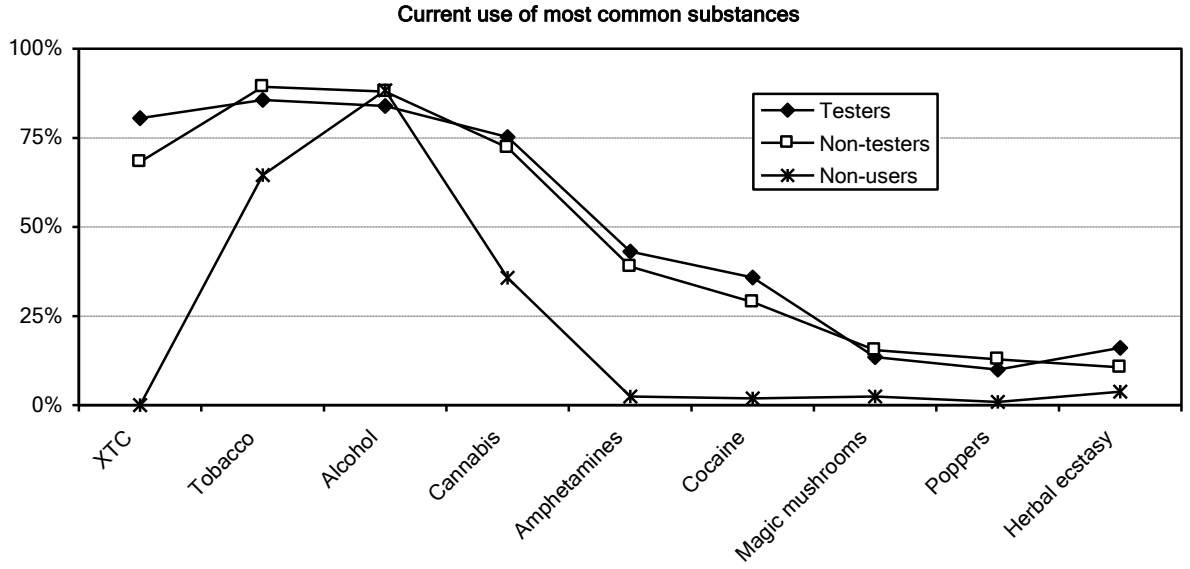
These differences have no immediate consequences for our research set-up. Firstly, our focus is primarily on the comparison between three groups of partygoers (testers,

non-testers and non-users), not between cities. Secondly, differences in background characteristics between the three cities will be accounted for in the regression analysis discussed in the following chapters.

Three groups in comparison

Testers and non-testers show strong similarities in their general characteristics. The main difference is that testers are more often from a foreign ethnic background than non-testers, bearing in mind that a large majority in both groups is from a native ethnic background. Regarding their drug use, more testers than non-testers are current users of ecstasy; in addition, a slightly higher number of testers has at one time used cocaine.

Non-users differ from both testers and non-testers on most general characteristics and also generally show lower levels of substance use. Non-users are more often female, have a somewhat higher level of education (mostly higher secondary education), are more often unemployed, have a lower monthly income and show a lower level of impulsive sensation seeking. Non-users further differ from testers, but not from non-testers, in that they more often are from a native ethnic background. However, non-users are of the same age as testers and non-testers, share similar living situations, and are equally often students. Aside from the fact that non-users have never taken ecstasy (an inclusion criterion), they have also less often at any time used any of the substances included in our questionnaire, with the exception of alcohol. Moreover, current use of most substances other than tobacco is significantly lower among non-users.



Regarding the age of first use there is scarcely any difference between the three groups. At most, it would appear that non-users started taking alcohol and cannabis a few months later than both testers and non-testers.

Surprisingly, non-users seem to have gone go out slightly more often in the previous month than testers and non-testers. Although they less often went to both large-scale and small-scale parties during the previous year, on average they still went to a small-scale party once every month.

Distinctive differences between groups

Testers versus non-testers
▪ Testers are more often from a foreign ethnic background. ▪ Testers are more often current ecstasy users. ▪ Testers have slightly more often at some time used cocaine.
Non-users versus testers and non-testers
▪ Non-users are more often female. ▪ Non-users have a somewhat higher level of education (mostly higher secondary education). ▪ Non-users are more often unemployed. ▪ Non-users have a lower monthly income. ▪ Non-users show lower levels of impulsive sensation seeking. ▪ Non-users more often currently go out at least once a week. ▪ Non-users have never used ecstasy. ▪ Non-users have less often used any of the substances (excl. alcohol). ▪ Non-users less often currently use any of the substances (excl. alcohol).

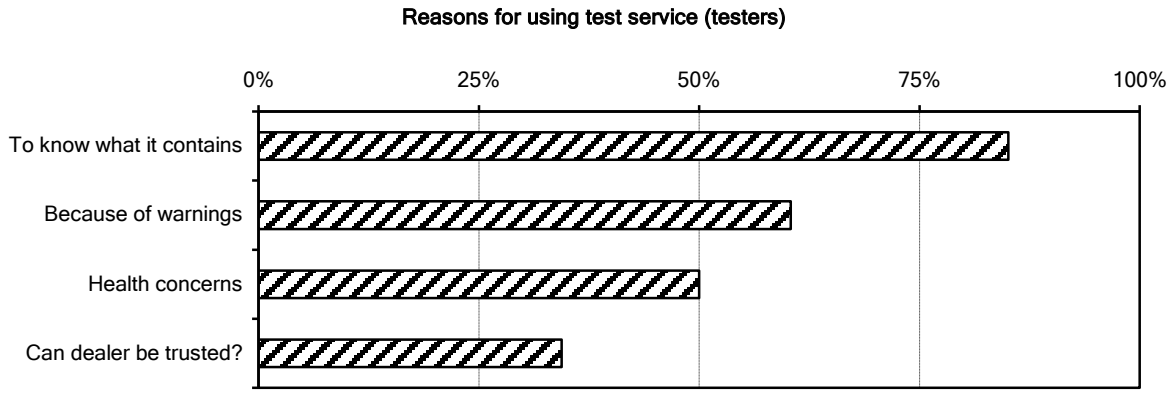
Testing behaviour

Over one third of the testers had their pills tested for the first time when they participated in our study. Most others seldom or sometimes have their pills tested at a test service, while about one-fifth does so often or always. Among Hanover and Vienna testers, the proportion of first-timers (52.3% and 42.3% respectively) is much higher than among Amsterdam testers (17.9%). This is probably due to the fact that although most respondents were recruited at a party, in Amsterdam there was no on-site testing facility. Further analysis of background characteristics shows that first-time testers and more experienced testers differ in age only: on average, more experienced testers (22.7 years) are older than first-timers (21.3 years) by more than a year. Testing frequency is correlated with the time elapsed since first testing (i.e. current age minus age of first testing).[30] The frequency of testing is an important measure of the extent and intensity of contact with prevention.
Testing is more common in the social circles of testers than non-testers. Among testers, about one quarter has no friends who have their pills tested; this was the case for more than half of the non-testers.

[30] Pearson correlation coefficient 0.2 (p = 0.004)

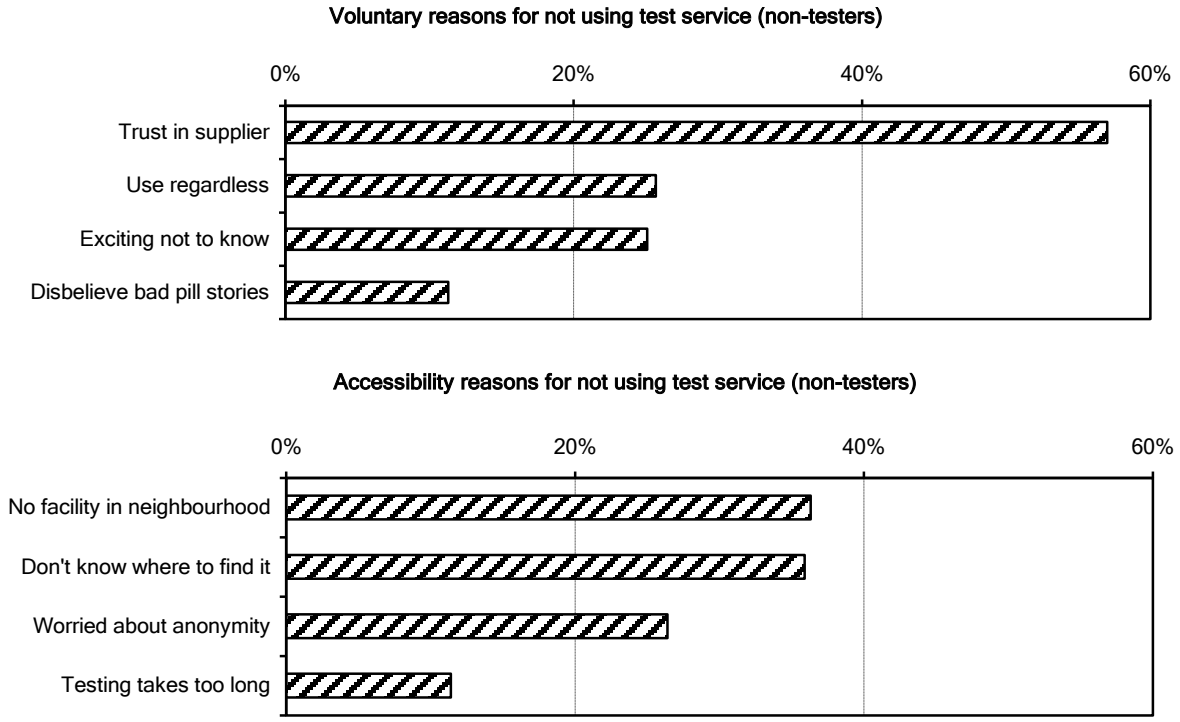
Apart from the test services at the research sites, testers (mainly those from Amsterdam) have used test services from other institutions or at parties to test their pills. Some have also had their pills tested through friends at a test service, did 'self tests' (e.g. EZ test, a commercially sold at home Marquis test), and/or let a friend or dealer test their pills. The latter alternatives were also practised by part of the non-testers.
When asked about alternative test methods – in cases where pill-testing is not available – both testers and non-testers fairly often report that they would simply take the pill or ask a friend or a dealer about the quality. Some testers report they will not use ecstasy when it cannot be tested. About half of both groups reports that sometimes they use a little to assess the effect. About one quarter of the testers says they sometimes look up the pill's logo in flyers or on the Internet; this alternative was used by almost twice as many testers as non-testers.

Why do testers make use of the test service? The reason stated most often is that they want to know what the pill contains. Secondly, testing is prompted by warnings about dangerous pills. Health concerns form a third motivation, and lastly a minority says that they make use of the test service because they want to know whether they can trust their dealer.



Why do non-testers <u>not</u> make use of the test service? These reasons can be roughly divided into two clusters: accessibility and voluntary reasons.
The most common voluntary reason not to make use of the test service is that the respondent trusts the person he or she buys their ecstasy from. This reason is given by over half of the non-testers. One quarter says they would use ecstasy anyway, regardless of the test result, and another quarter reports they find it exciting not knowing exactly what effect the pill will have on them. Finally, one out of every ten non-testers says that they refrain from using the test service because they do not believe the stories about bad pills.

Regarding accessibility, one third of the non-testers does not test because there is no testing facility in their neighbourhood. Another third says they do not know where to find the test service, and finally one quarter reports to be worried about their anonymity at the test service.
In addition to these two clusters a mixed cluster can be distinguished that seems mostly linked to accessibility, but may also have certain voluntary elements. Firstly, almost half of the non-testers says they have not made use of a test service because they have not come around to it yet. Secondly, two reasons are each reported by one out of every six non-testers: no faith in the test, and a dislike for prevention workers and similar officials. Lastly, about one out of every six non-testers says they have not made use of the test service because friends already tested the ecstasy there.



Summary and discussion

The 702 respondents that make up the final sample of partygoers are mainly men from a native ethnic background and nationality, aged 22 on average. Most have completed secondary education and are employed and/or students. Levels of impulsive sensation seeking among the total research group are comparable to those within a reference group of American university students. In general, respondents can be characterized as socially active. A majority of the respondents currently uses alcohol, tobacco and/or cannabis. The use of other drugs is fairly common as well. Compared to a sample of clubbers and ravers from an earlier Amsterdam survey, the rate of

substance use is high in our sample (while our sample on average is a few years younger). Compared to a sample of UK dance music enthusiasts, however, substance use in our sample is much lower.

There are remarkably few differences between respondents from the three cities. Respondents from Vienna are a few years younger than those from Hanover or Amsterdam. Herbal ecstasy and GHB is used more often in the Amsterdam sample; the use of ketamin, crack cocaine and heroin is slightly more common in the Vienna sample. The average level of education is lower in Hanover, while employment and income figures are higher in Amsterdam.

Where general characteristics, substance use and party behaviour are concerned, testers and non-testers show more similarities than differences, although current use of ecstasy is much higher among testers. More distinct differences can be found between non-users and users (both testers and non-testers). Non-users are more often female, have a somewhat higher level of education, are more often unemployed, have a lower monthly income, and went out more often during the previous month. Non-users also show lower levels of impulsive sensation seeking. This is in line with findings from other studies, in which non-users show a lower level of sensation seeking and in which recreational use of ecstasy is associated with elevated levels of impulsivity.[31] [32] Non-users of course have never used ecstasy, but in addition the use (at any time or currently) of other substances – except alcohol – is also markedly lower among non-users, compared to testers and non-testers.

Over one third of the testers was a first-time tester when they participated in our study. Especially in the case of Hanover and Vienna, first-time testers make up a large part of the sample. This could bias the results of a comparison between testers and non-testers. In truth, several testers in this study were non-testers the day before. For this reason we will take differences in testing frequencies into account in the following chapters.
Besides the test service at the research sites, testers also make use of test facilities from other institutions and at parties. Both testers and non-testers test ecstasy themselves or have it tested by a friend or dealer. When pill-testing is not available, asking a friend or dealer about the quality of the pill is the first alternative. Simply taking the pill, or taking a little to assess the effect, is also a common alternative. On the other hand, some of the testers say they will not use ecstasy unless it can be tested. This is of course only a small group: they form a small part of the group of testers, who again form a small part of the ecstasy users surveyed. The question is whether this is out-

[31] Calafat et al. (1998)
[32] Morgan (1998)

weighed by the secondary prevention qualities of pill-testing, which will be the subject of the following chapters.

The most common reason to use the test service is curiosity about the pill contents, followed by warnings about dangerous pills and health concerns. The most common reason not to use the test service is the user's trust in the ecstasy supplier; more than half of the non-testers stated this as their reason. Other important 'voluntary' reasons for not making use of the test service are that non-testers would take ecstasy anyway, regardless of the test result, and that they find it exciting not knowing what to expect. A number of reasons are linked to the accessibility of the test service; one third of the non-testers says they do not use the test service because there is no facility in their neighbourhood or because they do not know where to find it. Finally, almost half of the non-testers reports they simply have not come around to testing yet.

Concluding, it would seem that testers and non-testers form a fairly similar population that is clearly different from the population of non-using partygoers. The fact that many testers visited the test service for the first time when they participated in the study could partly account for these similarities. In investigating the differences between the three groups in the following chapters, we will take into account possible underlying effects of differences in background characteristics. In addition, we will consider the impact of testing frequency as a measure of contact with prevention.

5

EXTENDING THE REACH OF PREVENTION

In this chapter we will investigate to what extent pill-testing services reach young people whom traditional methods do not reach. First we discuss the sources from which respondents obtain their information about ecstasy. Then we describe the extent of their contacts with prevention and drug care services.

Hypothesis

Pill-testing services enable drug workers to contact and communicate with drug users who were previously out of reach.

Sources of information about ecstasy

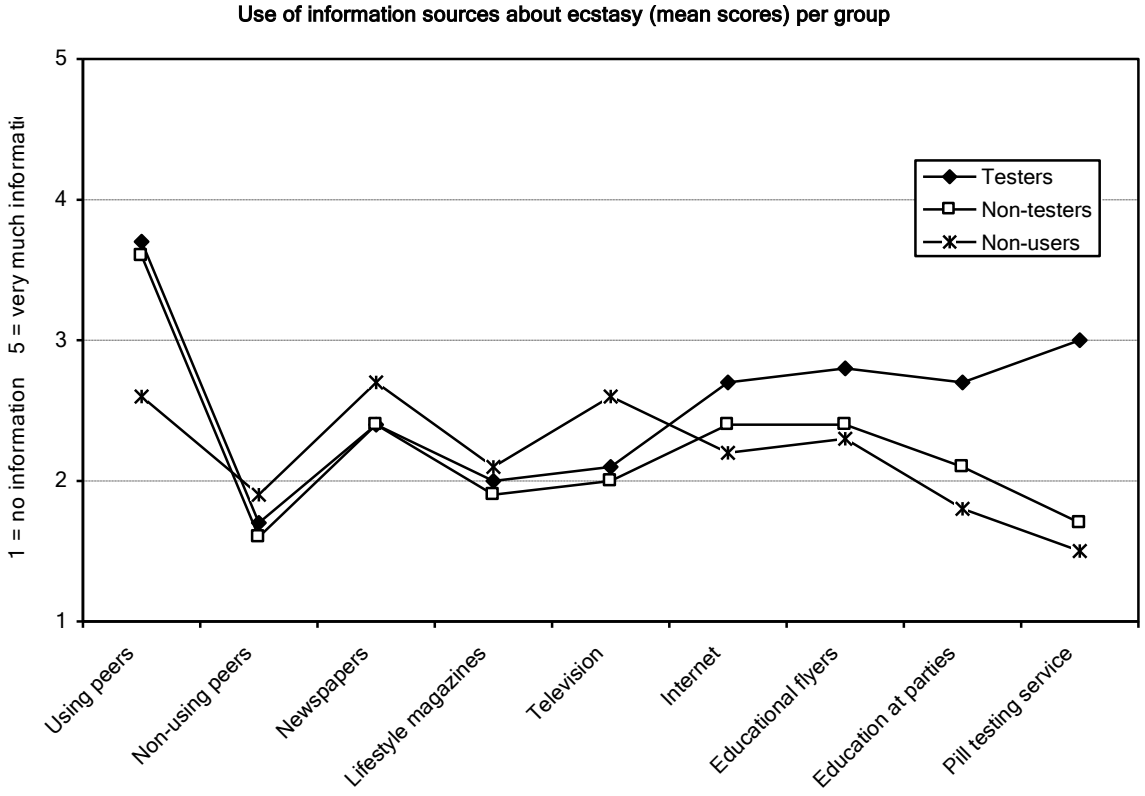
All respondents were asked where they obtain their information about ecstasy. Given nine types of sources, they were requested to indicate the importance of each source in obtaining information on a five point scale (1 = no information; 5 = very much information).
Overall, partners and friends (peers) appear to be the most important source of information about ecstasy for all three groups. This only holds for peers who use ecstasy, however; non-using peers are the least important source of information about ecstasy. On average:

- Testers get most information from peers (partners and friends) who use ecstasy, followed by pill-testing services. The least important source of information for testers are peers who do not use ecstasy.
- Non-testers also get most information from peers who use ecstasy, and least information from non-using peers.
- Non-users obtain most of their information about ecstasy from newspapers, television, and peers who use ecstasy.

Not surprisingly, testers perceive pill-testing services as more important sources of information about ecstasy than do non-testers.

- Testers also report to obtain more information about ecstasy than non-testers through education at parties and from educational flyers.
- Non-users are more than both other groups informed about ecstasy through the mass media (newspapers and television).
- Non-users obtain their information to a lesser extent from most other sources, most markedly from ecstasy using peers.

A similar picture emerges when looking at the percentage of respondents who obtain much or very much information about ecstasy from each individual source. Nearly two thirds of the testers and non-testers obtain (very) much information from ecstasy using friends. Although using peers are a relatively important source of information for non-users as well, only one third gets (very) much information from using friends.



So far, it can be concluded that among users pill-testing does not replace other sources of information. On the contrary, it would seem that pill-testing services increase the likelihood of being informed about ecstasy through other educational strategies such as flyers and education at parties.

In addition, there are strong indications that pill-testing by itself has added value when it comes to educating users about ecstasy. Pill-testing is more than just one of several sources testers obtain information from. Within the group of testers, respond-

ents get more information about ecstasy from pill-testing relative to the level of information they get from other sources, except using peers.

Regression analysis

Using regression analysis we investigated whether the differences between the three groups in terms of making use of information sources are actual differences, or whether they can be attributed to differences in background characteristics.
The analysis shows that age, ethnic background, level of education and sensation seeking behaviour are of negligible influence on the level of information respondents obtain from the various sources. For women, however, the mass media are more important as a source of information than for men. Differences also exist between the three cities included in our study. In comparison with the two other cities, in Vienna more use is made of information about ecstasy from education at parties and pill-testing services. The level of information through educational flyers is also higher in Vienna than in Hanover. In Hanover, the use of information sources is in general lower than in both other cities.

After correcting for the influence of these background characteristics, we find that:

- Testers make more use of education at parties and educational flyers than non-testers. Non-testers obtain more information about ecstasy from education at parties than non-users. Consequently, testers get more information about ecstasy from education at parties than both other groups.
- Non-testers do not get more information through educational flyers than non-users. Consequently, it can be concluded that education at parties in particular is stimulated through pill-testing.
- Testers and non-testers do not differ with regard to the role that ecstasy using and non-using peers play as source of information. Non-users get far less information about ecstasy from using peers, and more information about ecstasy from non-using peers and mass media. Apparently even within the same setting (parties), users are more strongly oriented towards other users, and non-users are more strongly orientated towards non-using peers.

Testing frequency

As discussed in the previous chapter, the number of first-timers among the testers is relatively high. It would of course be difficult to assess any effects of prevention through pill-testing on the basis of a group that has had no previous contact with test services. The effect of an intervention after all depends partly on the extent and intensity of contact. Potential differences between testers and non-testers could be

clouded by the fact that many testers have not yet had the time to incorporate the message. A simple way to investigate this is to look for correlations between the use of information sources and the frequency of testing. Since first-time testers are younger than more experienced testers, correlations must be controlled for age.
Analysis shows that frequency of testing is negatively correlated with getting information from using peers, and positively correlated with getting information from pill-testing services, educational flyers and the Internet. In other words: the higher the frequency with, and the longer the period in which users have their ecstasy tested, the larger the extent to which they are informed through pill-testing as well as educational flyers, superseding using peers as source of information.

Contact with drug prevention and drug care

Over half of the testers reports they would not contact the drug prevention department in their city if not for pill-testing services. Clearly then, pill-testing does extend the reach of prevention among users. And although pill-testing is not an absolute prerequisite for reaching ecstasy users through prevention, it would seem to lower the threshold for drug prevention services.
It seems probable that increasing costs can raise the threshold for pill-testing. Two thirds of the testers say that they would no longer make use of the service if pill-testing services were to charge €5 per test.
Less than one out of every five testers reports to have contacted drug care services for reasons other than the pill-testing service. A similar proportion holds for non-testers. For non-users this ratio is lower, but since non-users less often take drugs – less ecstasy as well as less other substances (cf. Chapter 4) – this is not surprising. These findings suggest that pill-testing not only extends the reach of drug prevention, but significantly extends the scope of drug care as well. Eight out of every ten testers in this study would not be reached if none other than traditional drug care services were available.

Summary and discussion

Overall, peers play the most important role in obtaining information about ecstasy. While all respondents get much information about ecstasy from partners and friends who use ecstasy, they get little information from peers who do not use this drug. Not surprisingly, non-users get far less information about ecstasy from using peers. Apparently even within the same setting (parties), users are more strongly oriented towards other users, and non-users are more strongly orientated towards non-using peers. These findings support the notion that peer education has strong potential for

primary prevention among non-users and for secondary prevention (risk reduction) among ecstasy users.

The mass media (television, newspapers) do not play an important role in informing partygoers about ecstasy. The same holds for lifestyle magazines. Especially those who use ecstasy refrain from using the mass media as a source of information. It seems that the mass media might support non-users in staying away from ecstasy, assuming of course that these sources have sufficient credibility among non-users. This will be dealt with in the following chapter.

Pill-testing is an addition to various sources of information available to youth. Moreover, pill-testing increases the likelihood of being informed about ecstasy through other educational strategies such as flyers and education at parties. These empirical findings support the hypothesis that pill-testing widens the net of prevention. Besides being an additional source of information, for testers pill-testing is more important than most other sources, and it becomes even more important as the frequency of pill-testing increases. For experienced testers, pill-testing and educational flyers become increasingly important as a source of information, while using peers become less important.

Pill-testing extends the reach of drug prevention and lowers the threshold for contacting prevention. Moreover, pill-testing programmes reach ecstasy users who are not reached by the traditional drug care system. Many of the testing ecstasy users would not have been reached if none other than traditional drug prevention and care services had been available.

6

ACCEPTANCE OF PREVENTION

Pill-testing would seem to widen the net of drug prevention and education. However, a wider reach does not automatically mean that prevention is also more effective. That is why we will here explore the quality of pill-testing and other information sources as perceived by both users and non-users. We first report on the perceived credibility of the information sources discussed in the previous chapter. Then we construct four quality types of information sources, ranked by their importance and credibility. Next we investigate existing attitudes towards information about ecstasy. Finally we present the results of the personal evaluation of pill-testing by testers.

Hypothesis

Health warnings about dangerous substances are received with more credibility and acceptance when delivered in the context of pill-testing services.

Credibility of information sources

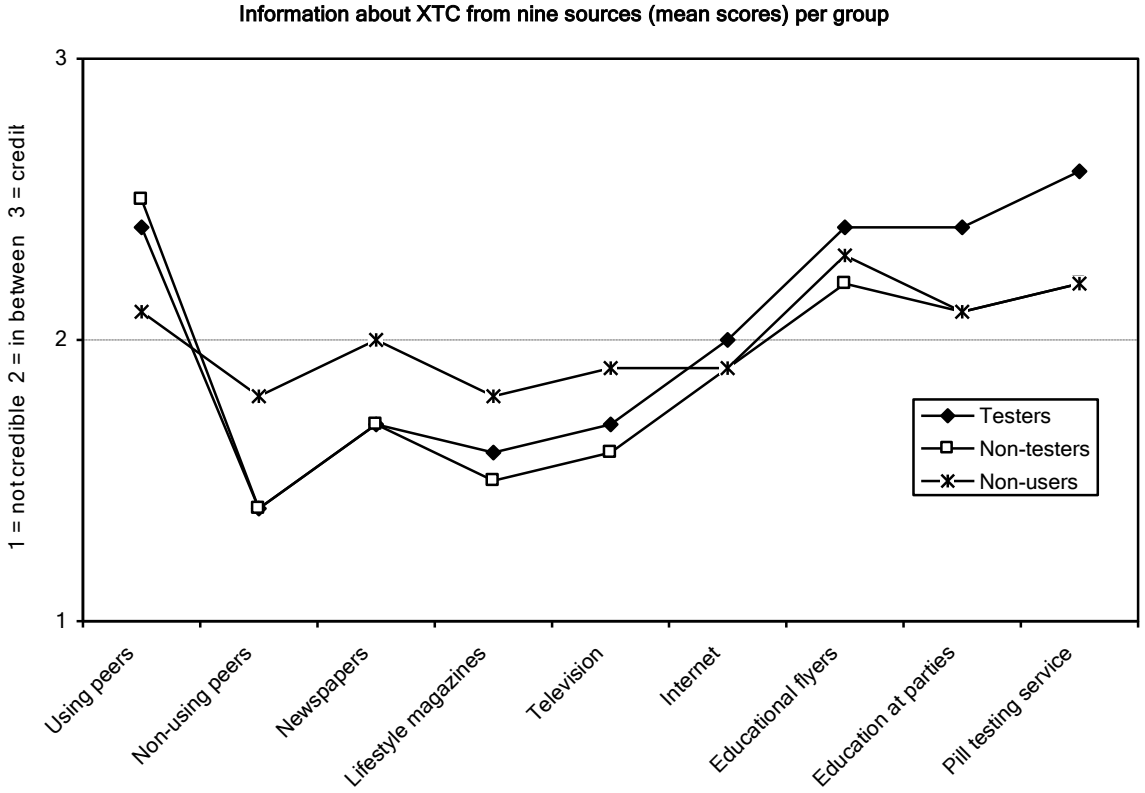
To what extent do clubbers and ravers trust the information about ecstasy they obtain from the nine sources described in the previous chapter? To find an answer to this question, all respondents were asked to evaluate the nine sources of information according to a three point scale (1 = not credible; 2 = in between; 3 = credible).
For all three groups, non-using peers are the least credible source of information about ecstasy. Generally, the perceived credibility of information about ecstasy from television, newspapers and lifestyle magazines is also relatively low. On average:

- Testers find the information from pill-testing services most credible.
- Among non-testers ecstasy using peers have the highest credibility.
- Among non-users educational flyers have the highest credibility.

In comparison, testers attach greater credibility to information about ecstasy from pill-testing services than do non-testers and non-users. On average, however, non-testers and non-users are also fairly positive about the credibility of pill-testing as a source of information about ecstasy.

- Testers evaluate the credibility of education at parties and educational flyers more favourably than non-testers and non-users.
- Non-users are more positive than testers and non-testers about the credibility of information about ecstasy from non-using peers, the mass media (television and newspapers), and lifestyle magazines.
- Non-users are less positive regarding the credibility of information about ecstasy from using peers than testers and non-testers.

A similar picture emerges when looking at the percentage of respondents who find the information about ecstasy credible. Pill-testing is perceived as a credible source of information by two thirds of the testers, almost half of the non-testers and more than a third of the non-users.



So far, it can be concluded that pill-testing is widely accepted when it comes to the credibility of information about ecstasy. Notably, this holds for both users and non-users. In addition, pill-testing services have added value when it comes to credibility.

- Within the group of testers, pill-testing is perceived as more credible than all other sources of information about ecstasy, including ecstasy using peers.
- Among non-testers the credibility of pill-testing is considered higher than most other sources of information about ecstasy (except peers who use the drug).
- Among non-users the credibility of pill-testing is considered higher than most other sources of information about ecstasy.

While the previous chapter showed that testers attach more importance to using peers than to pill-testing as a source of information on ecstasy, we now see that – when it comes to the credibility of that information – pill-testing supersedes friends who use ecstasy.

Regression analysis

Using regression analysis we investigated whether the differences between the three groups in terms of the credibility of information sources are actual differences, or whether they can be attributed to differences in background characteristics.
This analysis shows that age, ethnic background and level of education are of negligible influence on the perceived credibility of information respondents obtain from the various sources. Sensation seekers seem to find most sources less credible, especially the mass media, but the difference is minimal. Women are more positive about the credibility of most sources than men, but no gender difference was found with regard to the credibility of peers (both users and non-users).
Again, differences can also be distinguished between the three cities included in our study. Respondents in Hanover attach higher credibility to peers who use ecstasy, but less credibility to the information about ecstasy from newspapers, educational flyers and education at parties. Respondents from Amsterdam on the other hand are more positive, relatively speaking, about the credibility of information about ecstasy from lifestyle magazines, television, and educational flyers.

After correcting for these background characteristics, we find that:

- Testers are more positive about the credibility of pill-testing services, education at parties, educational flyers and the Internet than non-testers and non-users.
- Users (testers and non-testers) are more positive about the credibility of ecstasy using peers than non-users.
- Non-users are more positive about the credibility of non-using peers, television, newspapers, and lifestyle magazines than users.

Quality types of information sources

When reach (importance) and credibility of the nine sources of information are combined, the research findings can be categorised into four quality types.[33] For all three groups of respondents, peers who use ecstasy can be defined as sources of information about ecstasy with a wide reach as well as high credibility. Educational flyers,

[33] Important = mean score ≥ 2.5. Credible = mean score >2.0.

education at parties, and pill-testing can only be defined as high reach for testers, but are credible for all three groups of respondents. Lastly, non-using peers as well as lifestyle magazines can be defined as unimportant and not credible when it comes to information about ecstasy.

Four quality types of information sources about ecstasy

Quality type	Testers	Non-testers	Non-users
Important and credible	Using peers Educational flyers Education at parties Pill-testing	Using peers	Using peers
Unimportant, but credible		Educational flyers Education at parties Pill-testing	Educational flyers Education at parties Pill-testing
Important, not credible	Internet		 Newspapers Television
Unimportant, not credible	Non-using peers Lifestyle magazines Newspapers Television	Non-using peers Lifestyle magazines Newspapers Television Internet	Non-using peers Lifestyle magazines Internet

Attitudes towards information sources

In order to investigate the attitudes towards information sources, respondents were requested to report to what extent they agreed or disagreed with six statements on a five point scale (1 = fully disagree, 5 = fully agree).

About half of the respondents from all three groups (fully) agrees that they have all the information they need about ecstasy. This seems to indicate that among users as well as non-users an information gap still exists.

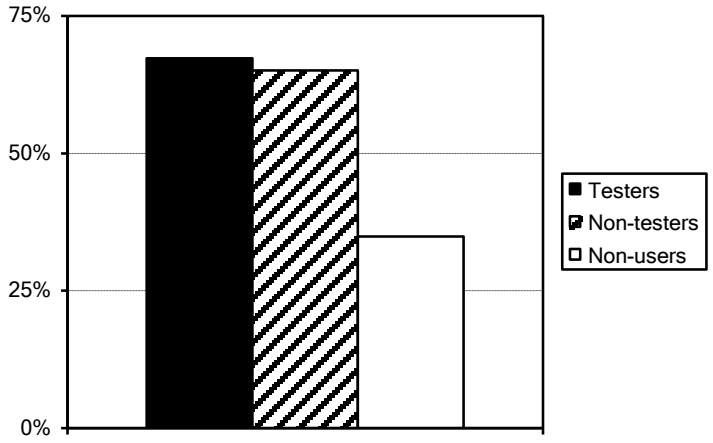
Two out of every three testers and non-testers (fully) agree that ‘testing ecstasy gives you objective information’. Non-users are less positive on this score: only one third of this group agrees with this statement.

In line with findings presented earlier on in this chapter, many testers and non-testers (fully) agree that ‘the best information about ecstasy comes from people who have used it’. Non-testers (fully) agree with this statement slightly more often than testers.

The critical attitude towards the mass media is reflected in the finding that about half of both testers and non-testers agrees or fully agrees that ‘newspapers and TV programmes always exaggerate the negative sides of ecstasy’. This critical attitude does not mean that they are not receptive to warnings. Only a small minority of both testers and non-testers agrees that ‘people telling you not to use ecstasy just want to spoil your fun’.

Although users generally have a positive attitude towards information from peers who have used ecstasy, only slightly over one quarter of both testers and non-testers agrees that 'my friends tell me everything I need to know about ecstasy'.

"Testing XTC gives you objective information", percentage that agrees or fully agrees per group



Overall, there are more similarities than differences between testers and non-testers with regard to their attitudes towards information and information sources about ecstasy. Non-testers are slightly more positive about information from other users, and slightly more negative about the statement that 'people telling you not to use ecstasy just want to spoil your fun'.

In comparison with users (both testers and non-testers), non-users less often agree that:

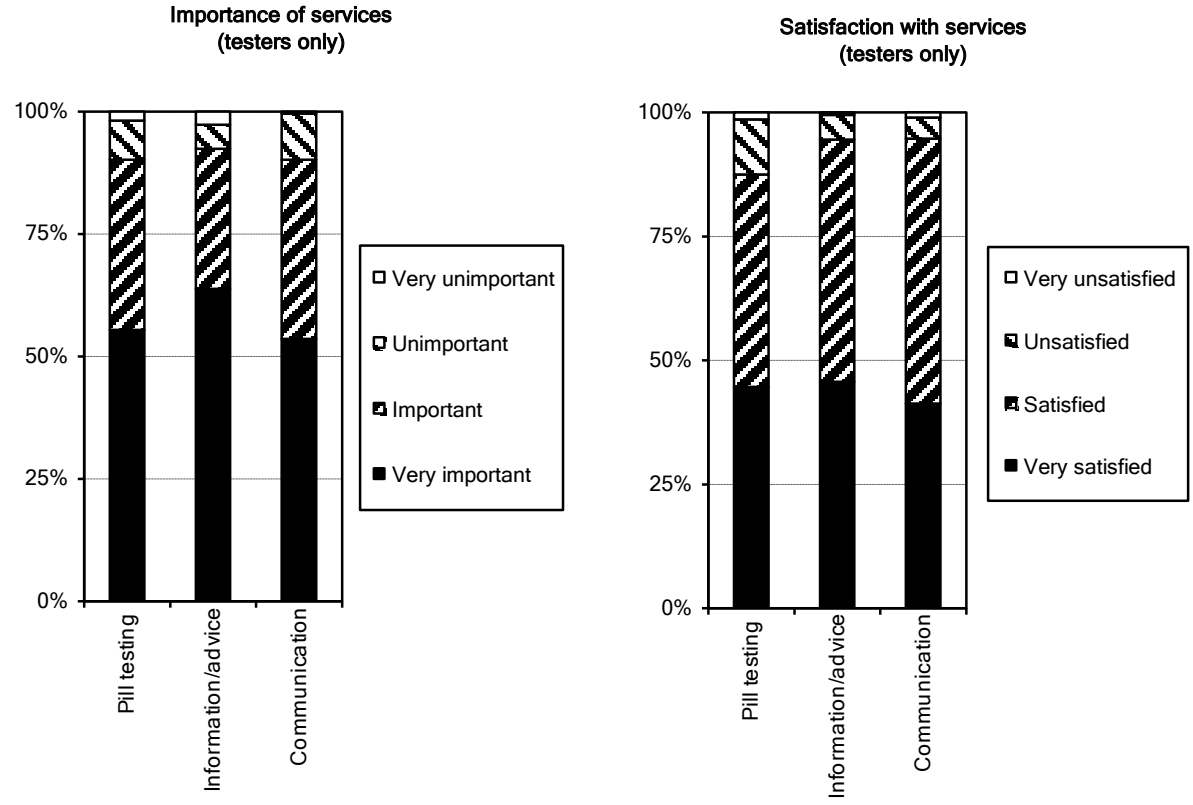
- their friends tell them everything they need to know about ecstasy
- the best information comes from people who use ecstasy
- people telling you not to use ecstasy just want to spoil your fun
- the mass media exaggerate the negative sides of ecstasy
- pill-testing gives you objective information.

Personal evaluation of pill-testing services

Testers were asked six specific questions relating to the personal evaluation of pill-testing. Three questions measured the importance of the service and three similar questions addressed the satisfaction with the service. A four point scale was used for all questions.

A vast majority of testers finds the pill-testing service important to very important. The same holds for the information and advice provided by the service, and for the personal communication.

Again, a vast majority of testers is satisfied to very satisfied with the pill-testing service, the information and advice provided by the service, and the personal communication.[34]



Testing frequency

As before (cf. Chapter 5), we investigated whether first-time testers and more experienced testers differ in their acceptance of prevention.

Experience with testing was shown to have a negative influence on the credibility of using peers: the higher the testing frequency, the less credible using peers are to the testers. In contrast, educational flyers and education at parties gain credibility as testing frequency increases.

Frequent testers evaluate the test service more positively. The higher the testing frequency, the more important the test service is considered to be and the more satisfied the testers are.

Summary and discussion

Pill-testing has a relatively high level of credibility among all three groups included in our study.

[34] Personal communication where applicable.

A vast majority of testers evaluate pill-testing itself, the information and advice they obtain from this service and the personal communication with the pill-testing staff as important, often even as very important. Again, a vast majority of testers is satisfied with the quality of these three elements of pill-testing. Pill-testing services are evaluated as very positive by most testers; the more often they test, moreover, the more positive their attitudes about pill-testing become.

Although non-users less often think that the information provided by pill-testing is objective, they still evaluate pill-testing as relatively credible. The latter finding is important from the perspective of a more general acceptance of this service. Clearly, pill-testing services are not only appreciated by ecstasy users, but also by partygoers who refrain from using ecstasy.

When combining the importance or reach of information sources with the perceived credibility, peers who take ecstasy can be qualified as both important and credible sources of information for all three groups. Conversely, non-using peers can be qualified as unimportant and not credible sources of information about ecstasy for all three groups. These findings support the conclusion drawn in the previous chapter that peer education by ecstasy users has strong potential for primary prevention among non-users and for secondary prevention (risk reduction) among ecstasy users.

Educational flyers and education at parties can be classified as important and credible sources of information for testers, and as unimportant but credible sources of information for non-testers and non-users. Notably, the credibility of these sources increases with more frequent pill-testing. The finding that these sources are equally credible, but less important for non-testers and non-users than for testers reinforces the finding in the previous chapter that pill-testing widens the net for prevention through educational flyers and education at parties.

The mass media (television, newspapers, lifestyle magazines) and the Internet have relatively low credibility. In addition, the mass media and lifestyle magazines are seen as unimportant sources of information about ecstasy among testers and non-testers. This clearly implies that these sources are less adequate means for secondary prevention. In the previous chapter it was concluded that mass media could play a role in primary prevention. The finding that television and newspapers have low credibility among non-users, however, seriously questions this conclusion. It seems unlikely, in fact, that such media can support non-users in staying away from ecstasy.

Although many respondents report that they have all the information they need about ecstasy, is was shown that there are also respondents who still feel a need for more information. Pill-testing could prove useful in closing this information gap, since the

higher the frequency with which users test their pills, the more they feel that they have all the information they need. The question whether testing indeed increases actual knowledge of ecstasy is dealt with in the following chapter.

7

KNOWLEDGE AND PARTY BEHAVIOUR

In previous chapters we concluded that pill-testing is an effective method to extend the reach of prevention activities and that those activities are perceived to give reliable information. Partygoers become better informed about ecstasy, not only through pill-testing itself, but also through education at parties and educational flyers. Accessibility of reliable information is prerequisite for making rational choices in ecstasy use. In this chapter we will address the question whether pill-testing contributes to increased and more accurate knowledge about ecstasy and to health awareness. We will also study whether this can lead to behavioural change towards safer or more responsible conduct at parties.

Hypothesis

Pill-testing services result in better-informed drug users and increasingly health-conscious behaviour, and serve to demystify synthetic drugs.

Factual knowledge

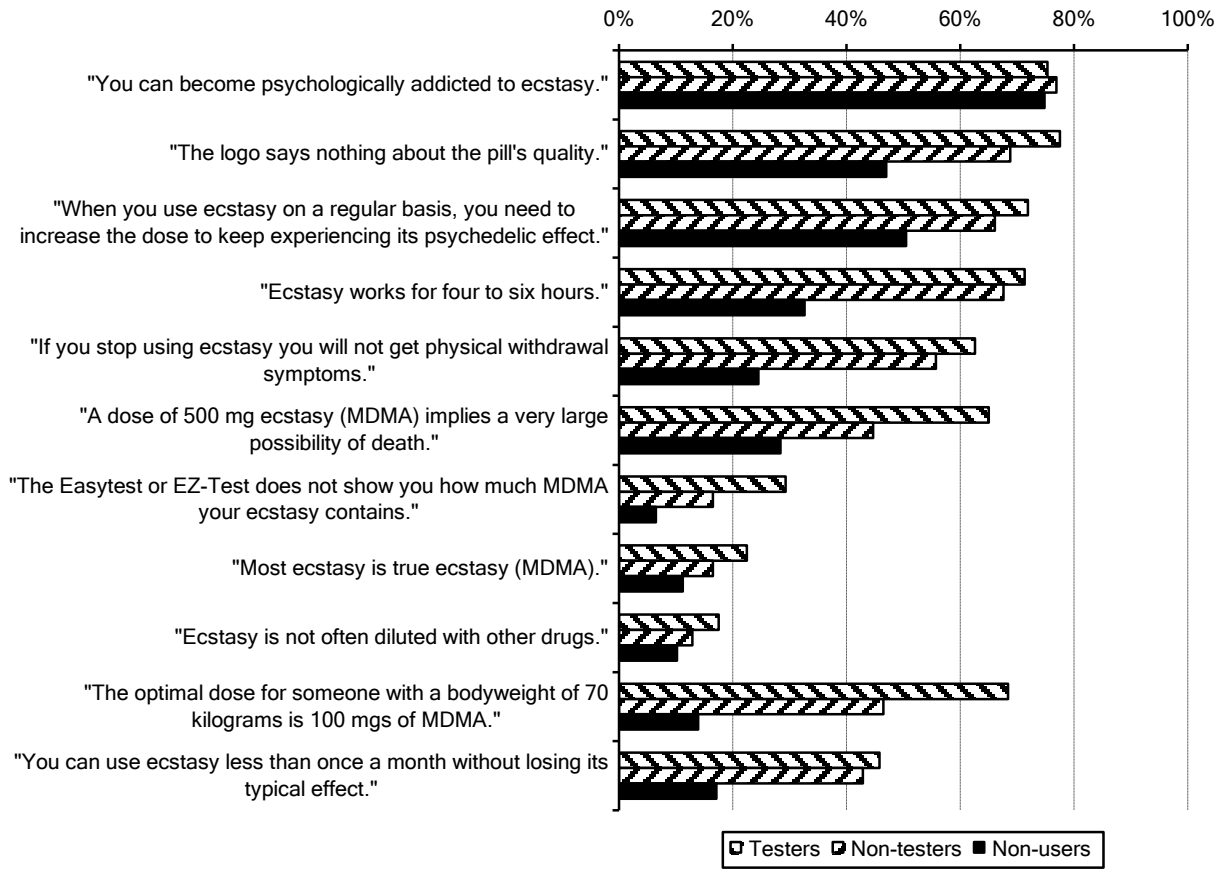
Respondents were asked to indicate whether nine 'facts' (or 'myths') about ecstasy were true or false. Another two questions were asked about the optimal dosage and the frequency of use. Respondents had the option to answer "don't know" to all knowledge questions.
All clubbers and ravers (both users and non-users) seem very much aware of the risk of psychological dependence on ecstasy, but non-users generally are far less knowledgeable about ecstasy than testers and non-testers. More than half of the non-users answered with "don't know" to most questions.

The majority of both testers and non-testers knows that the pills' logo says nothing about the quality of the ecstasy, that tolerance to the psychedelic effect of ecstasy can occur, that the effect of ecstasy lasts for several hours, and that usually physical withdrawal symptoms do no not occur. These facts are (slightly) better known among testers than among non-testers. A more marked, significant difference between test-

ers and non-testers lies in the awareness of the risks of a high dosage (500 mg) of ecstasy. Over half of the non-testers does not know that this dosage could prove fatal; about one tenth thinks it is not fatal. An additional question about dosage showed that slightly more than half of the non-testers could not say what the optimal dosage (less risky, but still effective) of MDMA is. In contrast, two thirds of the testers know that a maximum of 100 mgs per 70 kilograms of bodyweight is the optimal dosage.

Knowledge of the limitations of the EZ test (a commercially sold at home Marquis test) is not very widespread among testers, and less among non-testers. About four out of every ten testers and non-testers believe the myth that an EZ test can be used to measure the quantity of substances in ecstasy pills.

Correct answers to knowledge questions on ecstasy*



Some questions were changed for the purpose of this graphical presentation*

Finally, the majority of testers and non-testers thinks that most ecstasy pills do not contain 'true' ecstasy (MDMA) and are diluted with other drugs. In fact, as reported in Chapter 2, in recent years around 90% of the ecstasy pills in Austria, Germany and the Netherlands contains mainly MDMA; dilution is not common.[35] Although the belief

[35] The proportion of 'true' ecstasy pills (MDMA) was smaller in previous years: e.g. some five years ago, only one third of the ecstasy in Vienna and the Netherlands contained MDMA.

that diluted ecstasy predominates the market is factually incorrect, it does lead to caution among consumers. For this reason the questions relating to the ecstasy market were not included in a composite score on knowledge.

Knowledge scores

We computed three distinct knowledge scores:

- a score of correct answers, reflecting the level of knowledge of ecstasy;
- a score of incorrect answers, reflecting belief in myths about ecstasy;
- a score of "don't knows", reflecting the lack of knowledge of ecstasy.

Out of nine questions on the knowledge of ecstasy, testers answered an average of 5.7 questions correctly. Non-testers had a lower score: 4.9 correct answers. No difference was found in the score of incorrect answers between testers and non-testers, but non-testers failed to answer a slightly higher number of questions. On average, non-users did not know the answer to half of the questions. The average number of correct answers given by non-users (3.0) especially is lower than among testers and non-testers.

These findings seem to support the hypothesis that pill-testing fosters knowledge of ecstasy among partygoers. Testers score markedly higher with regard to the knowledge of the optimal MDMA dosage and the risks of high dosages. Some persistent myths remain, however (e.g. the quantifying features of the EZ test) that pill-testing does not appear to rectify.

Party behaviour

Most partygoers visit parties or raves with a friend or a group of friends. Those who use ecstasy stay at a party for eight hours (median); one out of every ten always goes to afterparties afterwards. Non-users do not stay as long (six hours median) and less often visit afterparties.

A vast majority of partygoers dances for at least half the time spent at a party; over ten per cent dances all night. They do rest ('chill out') in the course of the party, but most of them take no more than three or four breaks. Non-users seem to take fewer breaks than ecstasy users, but that may be due to the fact that the time spent at parties by non-users is a few hours shorter.

During the night most partygoers drink water, soda or fruit juice and/or alcohol. Testers and non-testers drink more water, soda or juice than non-users. One out of ten respondents drinks an average of three glasses of sports drinks (e.g. Isostar). Energy drinks (e.g. Red Bull) are consumed more by non-users and non-testers than by test-

ers. It is not common to have something to eat during a party: a third of the non-users, only a fifth of the non-testers and not even a sixth of the testers eats anything while at a party.

In line with the findings regarding substance use in general – as discussed in Chapter 4 – substance use at parties is much higher among users than non-users. Next to ecstasy, cannabis is a commonly used substance.

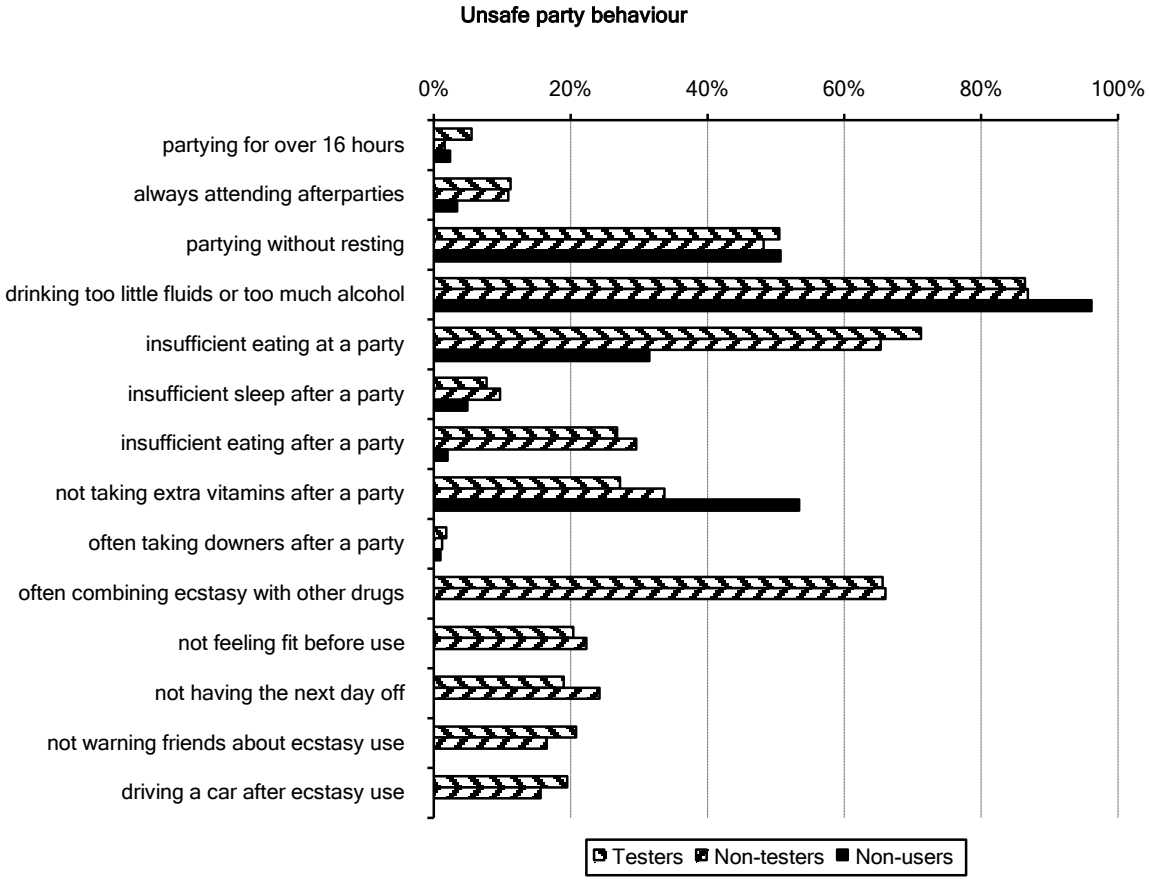
Most ecstasy users prepared for their latest ecstasy use to minimise risks: they felt fit, had the next day off, let friends know they were taking ecstasy and did not drive home themselves. More than half refrained from drinking alcohol during their latest ecstasy use. On the other hand, two thirds of the testers and more than half of the non-testers did take other drugs besides ecstasy.

About half of the ecstasy users has at one time become unwell in the course of a party. Although this has happened less to non-users, a third of them have also become unwell. All three groups pointed to the hot, crowded or stuffy environment as the main reason for becoming unwell. For non-users an excess of alcohol was the second most important reason; users suggested a combination of having had too little to eat or drink and taking too much ecstasy or other drugs as secondary reason. The use of ecstasy of presumably poor quality caused non-testers to become unwell more often than testers (41.6% and 28.9% respectively).

Following a party, respondents on average get eight hours of sleep. The great majority of respondents have no need for sleeping pills or sedatives. Non-users follow their usual eating pattern after the party, while users eat less than usual or hardly anything after a party as a result of ecstasy use. To compensate for this, users do eat extra fruit or take vitamins after the party; this holds to a larger extent for testers than for non-testers.

Unsafe behaviour scores

Few differences in party behaviour were found between testers and non-testers. However, our comparison has so far concentrated on several small aspects of party conduct, and it proves difficult to differentiate between ‘better’ and ‘worse’ behaviour taking all these aspects into account. To get an overview of party behaviour and to enable us to make a comparison between the groups, we defined fourteen instances of ‘unsafe party behaviour’ and constructed a composite score of unsafe behaviour.



Clearly, drinking too little fluids or too much alcohol is common for ecstasy users. The proportion of non-users exhibiting this behaviour is even larger (96.1%). A study among any other group of young people in a similar setting would probably render the same results. Both users and non-users also dance for long stretches without resting. Typical for ecstasy users, when compared to non-using partygoers, is the tendency to eat insufficiently during and following a party. In addition, ecstasy users often combine ecstasy with other drugs. In first analysis, then, testers and non-testers both exhibit the same tendency for unsafe party behaviour. There is no difference in the composite unsafe behaviour score between testers and non-testers.

Regression analysis

As before, we investigated to what extent differences in knowledge and behaviour between the three groups could be attributed to differences in background characteristics.

Age, impulsive sensation seeking, gender and ethnic background were shown to be of negligible influence on the knowledge of ecstasy and party behaviour. Neither did we find any differences between the three cities studied. What we did find, for the first

time, is a distinct effect of education. The higher the respondents' level of education, the higher their score of correct answers to the questions on ecstasy.

After correcting for the influence of background characteristics, we find that:

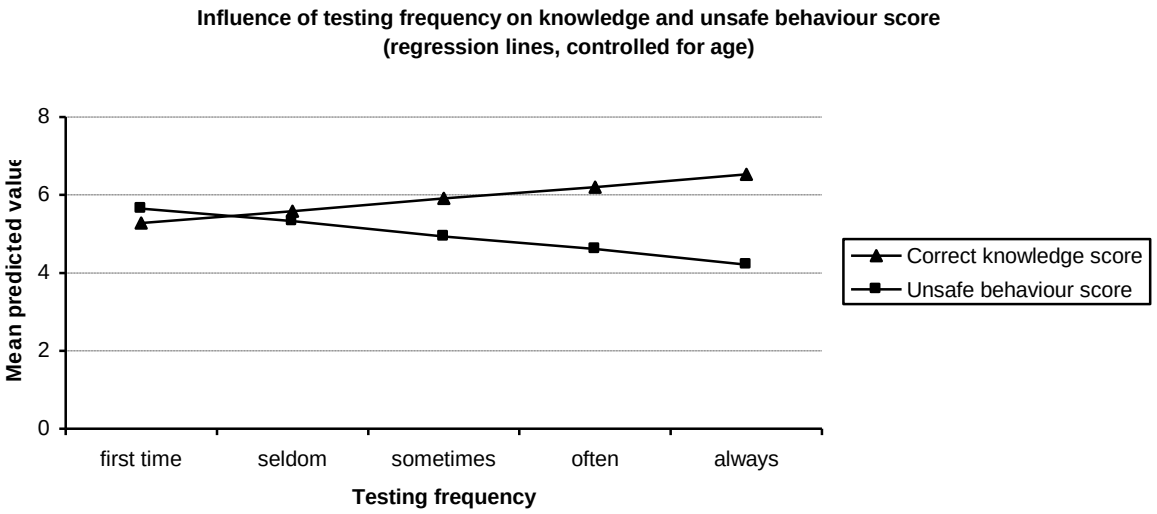
- Testers have more, and more accurate knowledge of ecstasy and the risks involved with its use.
- Non-testers are less knowledgeable about ecstasy than testers, but more than non-users.
- Testers and non-testers in equal measure show 'incorrect' knowledge (belief in myths).
- Testers and non-testers show unsafe party behaviour to a slightly larger extent than non-users.
- No immediate differences were found in party conduct between testers and non-testers.

Testing frequency

Although pill-testing appears to lead to more, and more accurate knowledge of the risks of ecstasy use, so far this seems not to have resulted in safer behaviour at parties. This apparent ineffectiveness of improved knowledge may very well be explained by the divergence in testing frequency within the group of testers. It usually takes some time for prevention messages to initiate behavioural change: first-time testers can scarcely be expected to already show changed behaviour.

Testing frequency is positively correlated with the score of correct answers, and negatively correlated with the score of incorrect answers. The higher the frequency with which, and the longer the period in which ecstasy users have their pills tested, the more substantial their knowledge of the substance. In addition, the level of 'incorrect' knowledge decreases. Pill-testing, then, would seem to help diminish the belief in a number of dangerous myths about ecstasy.

Testing frequency is also negatively correlated with unsafe party behaviour. More frequent testing leads to safer, more responsible conduct at parties. This additional analysis suggests that pill-testing not only improves knowledge, but improves behaviour as well.



Summary and discussion

Partygoers that do not use ecstasy know little about the specific risks and effects of this drug. Users in general prove more knowledgeable about ecstasy. A proportion of users is nevertheless still uninformed about the subject, or gives credence to certain popular myths.

The awareness that the logo on ecstasy pills does not provide any information about the contents of the pill appears to have gained a firm enough foothold, especially among testers. Pill-testing is particularly of influence to the level of knowledge of dosages and its effects. Most non-testers prove unaware of the likelihood of fatal emergencies when using a dose of 500 mgs MDMA. And most of them cannot say which dose is effective at minimal risk.

Not many ecstasy users know that an EZ test provides no information about the MDMA-content of pills. Although pill-testing has increased awareness of the limitations of the EZ test, there are still many users who believe the myth that the test can quantify the pills' content. Another incorrect assumption held by many ecstasy users is that diluted pills predominate on the ecstasy market. In fact, most pills currently on the market contain true ecstasy (MDMA).

Knowledge of ecstasy depends partly on the level of education. All in all, testers are more knowledgeable about ecstasy than non-testers. The level of knowledge moreover increases with the frequency of testing, while at the same time the credence given to myths about ecstasy decreases.

Improved knowledge does not necessarily lead to a change towards safer and more responsible conduct at parties. Most testers still take too little fluids or drink too much alcohol at parties, and dance all night without taking enough rest. The same holds for non-testers, however, and even more so for non-users. Ecstasy users do not eat much during and after a rave, but they compensate for this by taking extra fruit or vitamins the following day.

Getting physically unwell at a party is not something that solely happens to those partygoers who use ecstasy. The hot and crowded atmosphere has its effects on non-using visitors as well. Getting unwell due to poor quality ecstasy seems to occur more often among non-testers than among testers. However, any conclusions based on self-reported causes like these are tentative at most; getting sick is easily attributed to a poor quality pill.

Initial analysis did not show any difference in party behaviour between testers and non-testers. However, further analysis showed that behavioural change depends on the frequency of testing. The more often ecstasy users have their pills tested, the safer their behaviour at parties. In other words, pill-testing is an effective instrument in secondary prevention.

8

ECSTASY CONSUMPTION

A common criticism holds that pill-testing encourages the use of ecstasy. In the information ecstasy users obtain through pill-testing, however, the emphasis is always on the risks involved in ecstasy use and potential consequences of taking dangerous pills; pills are never simply given a 'stamp of approval'. Considering these messages, the assumption that pill-testing leads to increased ecstasy use does not seem all too probable. A decrease in risky or problematic use would in fact seem a more likely result. In this chapter we will take a look at similarities and differences in the nature and extent of ecstasy use between those users who test their ecstasy and those who do not. The direct impact of test results on ecstasy consumption is also discussed. As a result, this chapter focuses solely on ecstasy users (testers and non-testers).

Hypothesis

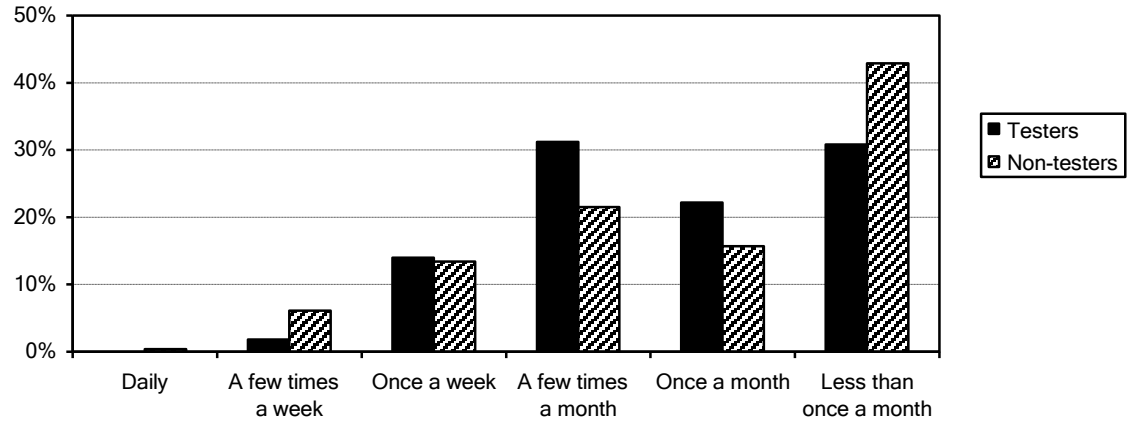
Pill-testing services neither stimulate the use of ecstasy nor extend the circle of ecstasy users.

Ecstasy consumption pattern

For both testers and non-testers, ecstasy consumption on average began around the age of 17. Following first-time ecstasy use, it either decreased, increased or remained stable. In actual practice, for the majority of testers and non-testers their ecstasy use has been irregular, or initially increased to a certain peak, followed by a decrease towards a certain constant level (consolidation). No difference is found between testers and non-testers regarding their 'career' in ecstasy use. On the larger scale of 'ecstasy careers', pill-testing does not seem to have much impact over the years. Most testers themselves do not think that their ecstasy use has changed as a result of pill-testing. Some testers however do think that testing has influenced their ecstasy use: 14.9% says their ecstasy use has decreased since testing; 6.8% says their use has increased.

Only a small number of respondents currently uses ecstasy on a daily basis; in all other cases the frequency of use varies from a couple of times a week to less than once a month. Non-testers more often than testers are infrequent users (less than once a month). On the other hand, non-testers more often than testers are frequent users as well (at least once a week). Both testers and non-testers take an average of three ecstasy pills a night. As with frequency of use, the amount used varies considerably between individuals. The number of pills taken in one night presumably depends on the duration of the party and personal characteristics and preferences as well as on the amount of MDMA that the ecstasy pills contain.

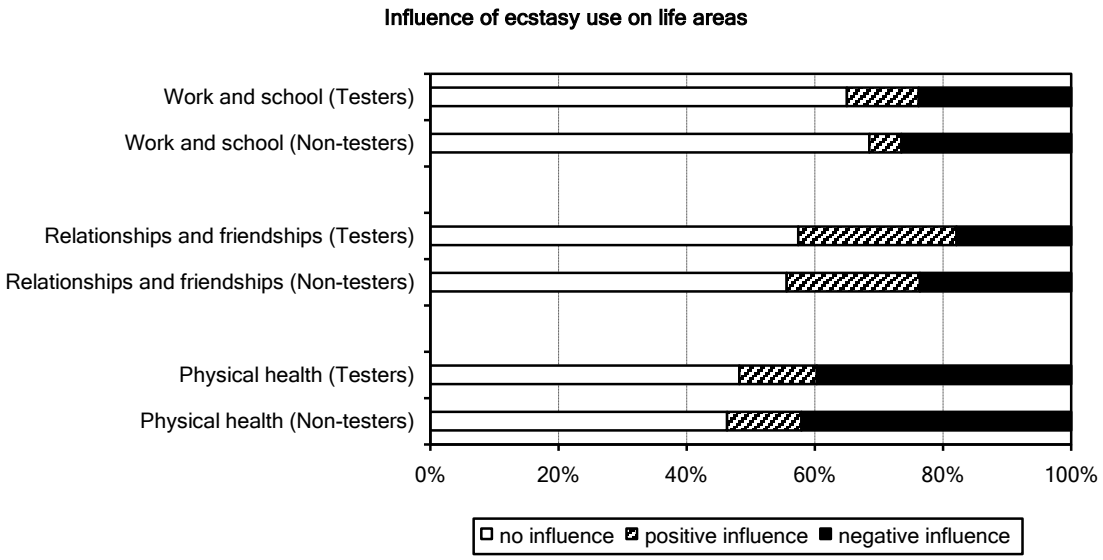
Frequency of ecstasy use - testers and non-testers



Problems related to ecstasy consumption

Both testers and non-testers were asked whether their ecstasy use was of influence on their performance at school or at work, on their relationships and friendships, and on their physical health. Most ecstasy users stated that ecstasy use had had no occupational or social influence. Almost 50% says that ecstasy use had not been of influence on their physical health. In cases where ecstasy use was said to be of influence, it more often negatively influenced physical health and more often positively influenced relationships and friendships. Testers more often than non-testers think that ecstasy has positively influenced their performance at work or at school, but the absolute difference is marginal.[36] All in all, a (small) majority of testers (50.9%) and non-testers (56.6%) reported at least one adversely affected area (negatively influenced by ecstasy use).

[36] The perceived positive effect presumably not resulting from being under the influence of ecstasy, but based on a general self-estimation of the school or work situation.



Regression analysis

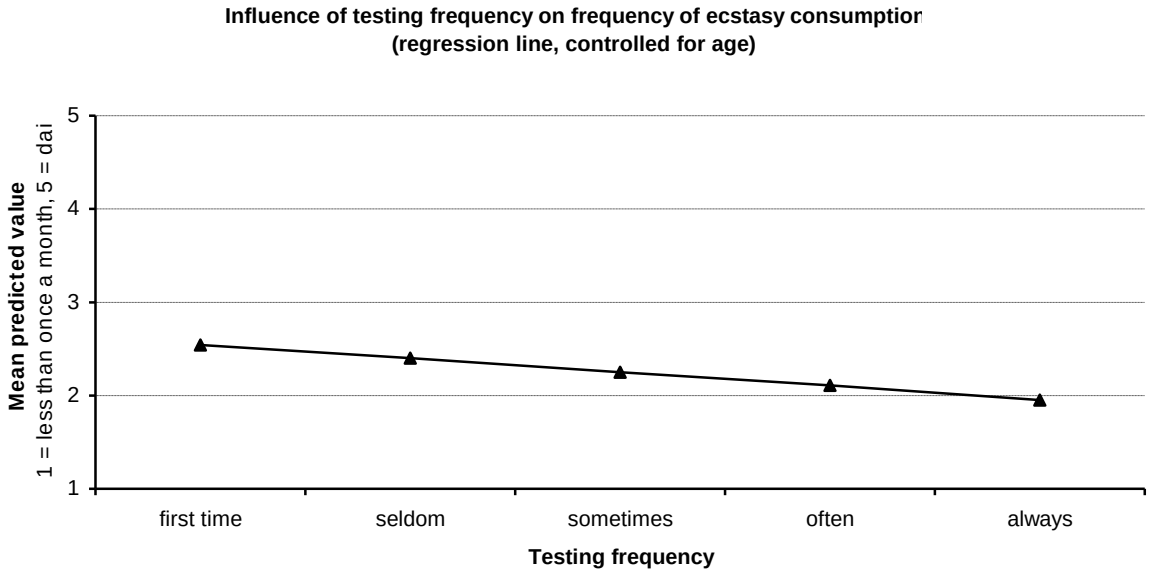
Thus far only two significant differences were found between testers and non-testers regarding their ecstasy use: a difference in frequency of use (although the direction of that difference is unclear) and a difference in the perceived positive influence of use on the performance at school and at work (although this concerns a difference of only a few percentages). In regression analysis we studied the influence of background characteristics on the differences and similarities found.

Regarding the number of pills usually taken in one night, gender as well as city studied proved to be of influence. Men consume more pills than women. This is most probably due to differences in bodyweight between male users (mean: 74.3 kilograms) and female users (mean: 58.4 kilograms). We also found that Dutch ecstasy users take a lower number of pills than German and Austrian users. This difference can probably be ascribed to the differences between the ecstasy markets in the three countries involved. In Amsterdam, an ecstasy pill on average contains about 89 mgs of MDMA, while in Hanover and Vienna an average pill contains 64 mgs and 52 mgs respectively. Consequently, for a similar effect less Dutch than German or Austrian pills suffice.

After correction for background characteristics, analysis shows that there is no difference between testers and non-testers in the usual number of pills consumed or the number of adversely affected areas. There is, however, a difference in frequency of use: testers are more frequent users of ecstasy than non-testers.

Testing frequency

Why has pill-testing not led to a change in ecstasy consumption, while the message conveyed through testing is one of caution and moderation? This could be due to the fact that many testers have only recently started testing their ecstasy. The consumption patterns we measured for a large part concern behaviour prior to pill-testing. When we take a closer look at the group of testers, we find that testing frequency (corrected for age) is negatively correlated with frequency of use. The more often they test their pills, the less frequent they use ecstasy. The number of pills consumed and the number of adversely affected areas are not correlated with testing frequency.



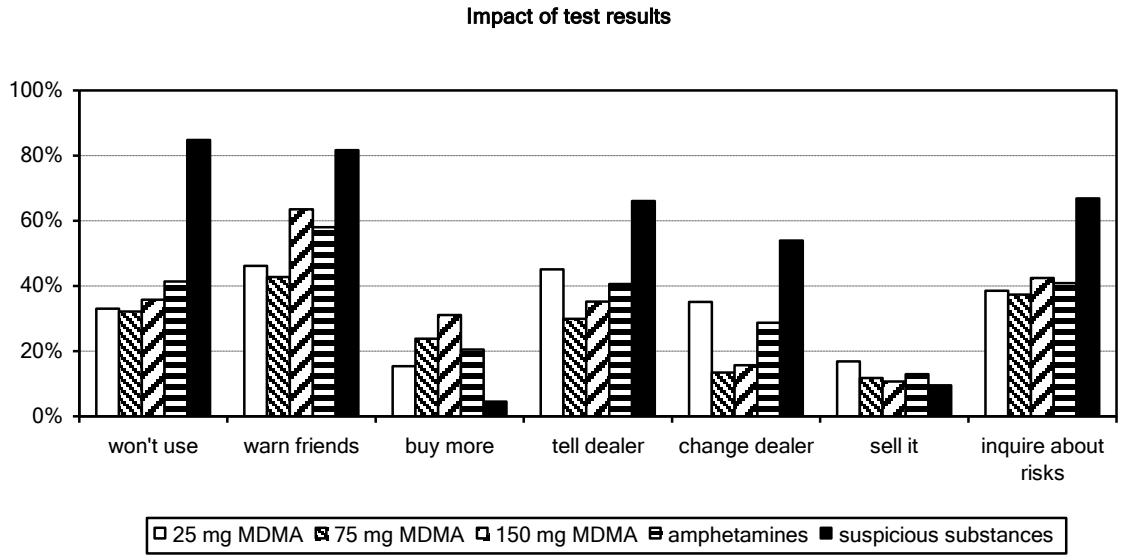
Direct impact of testing

Pill-testing does not appear to have a profound impact on users' career of ecstasy consumption. That is not to say, however, that the results of the pill-test have no effect on ecstasy use. We presented the testers with five possible test results and asked what their reaction would be:

- the pill contains 25 mgs of MDMA
- the pill contains 75 mgs of MDMA
- the pill contains 150 mgs of MDMA
- the pill (also) contains amphetamines
- the pill (also) contains suspicious substances.

Not surprisingly, the latter test result generated the most outspoken behaviour. Most testers say they will not use the pill, they would warn friends, they would tell the dealer and/or go to another dealer, and they would inquire about potential risks. The re-

maining four possibilities give various results, but almost irrespective of the test result many testers inquire about potential risks of taking the substance.



To get an overview of testers' responses to test results, we compared them to the response to a result of 75 mgs of MDMA (an 'average' dose).

Test result: 25 mgs of MDMA (compared to 75 mg)

When the test shows that their pill contains a low dose of MDMA, testers stated they would use more pills. They would not buy more, but they would tell their dealer and/or go to another dealer; some would even sell the substance.

Test result: 150 mgs of MDMA (compared to 75 mg)

When the test shows that their pill contains a high dose of MDMA, testers stated they would buy more pills (probably because of a better price-quality ratio). However, they will use fewer pills and also warn their friends.

Test result: amphetamines (compared to 75 mg)

When the test shows that their pill (also) contains amphetamines, testers stated they would either not use the substance or take fewer pills. They would also warn their friends, and they would tell their dealer and/or go to another dealer.

Test result: suspicious substances (compared to 75 mg)

When the test shows that their pill contains suspicious substances, testers stated they would not use the substance, or take fewer pills. They would not buy more, but they would warn their friends and tell their dealer and/or go to another dealer. They would also inquire about potential risks.

Summary and discussion

Testers and non-testers show similar careers in ecstasy use. Some testers state that their consumption has decreased through pill-testing. Most testers by far say that pill-testing has not influenced their ecstasy use. The question of course is what ecstasy users mean by increasing or decreasing consumption. Is this a change in the number of pills they take, a change in the strength of the pills they take, or a change in the frequency of ecstasy use?
We found that pill-testing does not influence the negative impact of ecstasy use on the respondents' life and the number of pills they use. The latter is mainly determined by gender, bodyweight and the amount of MDMA in ecstasy pills. However, we did find that testers are more frequent users. Because more than a third of the testers had their pills tested for the first time, the consumption patterns we measured for a large part concern behaviour prior to pill-testing. The causality of this relationship between pill-testing and frequency of use is therefore questionable. On the other hand, the frequency of ecstasy use decreases with an increasing frequency of pill-testing. So to some extent, pill-testing can be said to cause a positive change in ecstasy use.

It seems plausible so far that pill-testing does not encourage ecstasy use. On the other hand, it does not really discourage ecstasy use either, at least not in the sense that pill-testing will quickly lead to a profound decrease in ecstasy use. Nevertheless, the message of caution and responsible use spread through pill-testing is not entirely lost to testers. Even if the number of pills taken in one night does not decrease, with a gradually decreasing frequency of use, there will be less chance of developing tolerance and the total ecstasy intake will decrease.

Although pill-testing is of small (though increasing) influence in the larger timeframe of the users' careers, within the smaller timeframe of a party test results do have an impact on ecstasy use. Testers refrain from using pills that, according to the test result, contain amphetamines or suspicious substances. Moreover, they adjust the number of pills they use according to the reported MDMA dosage: the higher the amount of MDMA in a pill, the fewer pills they take. This is in line with findings in the previous chapter, where we reported that testers are fairly aware of ecstasy dosages and their effects.

Almost irrespective of the test result, many testers inquire about potential risks of the substance. When the test shows that pills contain amphetamines, suspicious substances or a high dose of MDMA, testers will warn their friends. This route of dissemination of information about possibly dangerous pills is a hidden strength of pill-testing. Users obtain a great deal of information about ecstasy through peers. Indi-

rectly, then, warnings are spread through more than the conventional channels such as folders or flyers.

Finally, dealers are affected by pill-testing. Dealers are called to account for ‘bad’ pills (containing amphetamines or suspicious substances) or poor quality pills (containing low dosages), and testers consequently look for another source.

In conclusion, pill-testing does not cause a direct and profound change in the careers of ecstasy users; neither does it seem to increase ecstasy consumption. It has to be realized that pill-testing is only one of many factors playing a role in the lives and behaviour of ecstasy users. However, two secondary preventive goals of pill-testing are achieved: ecstasy consumption is adjusted according to the test results, and with more frequent testing frequency of ecstasy use decreases.

9

ONSET OF ECSTASY USE

In the previous chapter we found it plausible that pill-testing does not encourage the use of ecstasy. In this chapter we will investigate the potential influence of pill-testing on the initiation of ecstasy use. Can pill-testing help postpone or prevent onset of use? Or may pill-testing inadvertently lead to an earlier onset of ecstasy use? To answer these questions, we will first look at first use of ecstasy, and at first pill-testing among testers. Then we look at ecstasy use within the social networks of testers, non-testers and non-users. Finally, reasons to use or not to use ecstasy are explored.

Hypothesis

Pill-testing services lead potential ecstasy users to postpone or abstain from an initial use of the drug.

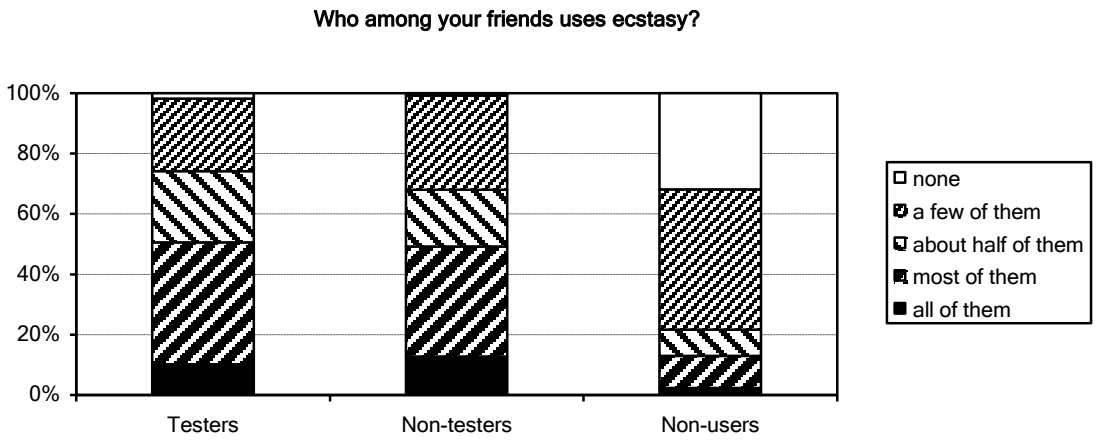
Chronology of use and testing

As reported in the previous chapter, both testers and non-testers started using ecstasy around the age of 17. No difference in age of onset was found between the two groups. Testers first participated in pill-testing programmes about two years after first use (median age: 19 years). A vast majority of testers had already used (untested) ecstasy before they first made use of a pill-testing facility. Only 8.8% of the testers had not used ecstasy prior to testing; of this group, most stated they would not have refrained from taking ecstasy for the first time if pill-testing had not been available at the time.
Onset of ecstasy use, then, generally precedes pill-testing by a couple of years. This means pill-testing programmes cannot be of direct influence on initiation of use.

Ecstasy use in social networks

Ecstasy is generally used in the company of others: more than 80% of both testers and non-testers never uses ecstasy when they are alone. Not surprisingly, as a con-

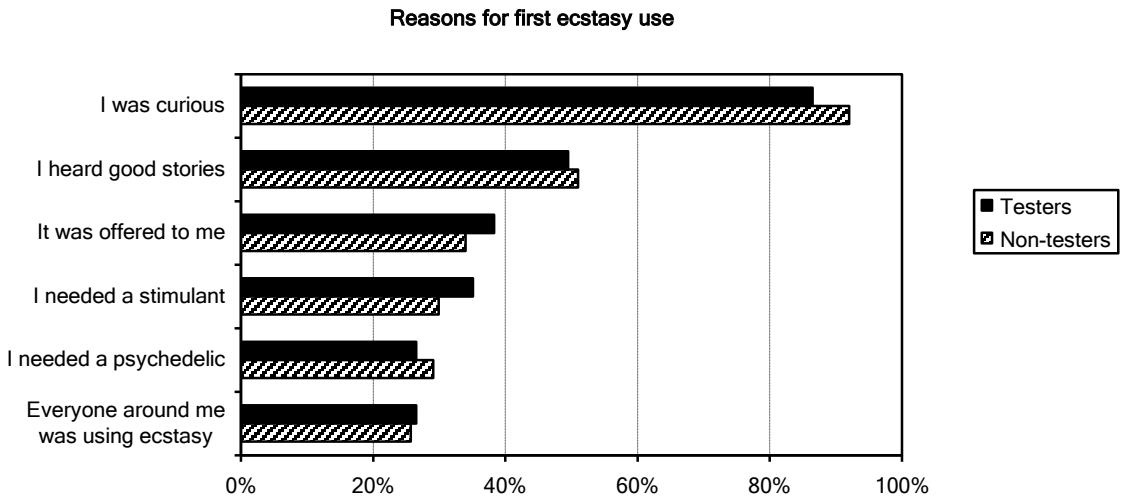
sequence ecstasy use is common in the social networks of ecstasy users. Only 1.8% of the testers and 0.8% of the non-testers have no other ecstasy users among their friends. Conversely, within the social networks of non-users ecstasy use is fairly uncommon. In general, non-users at most have a few ecstasy-using friends.



As was already concluded in previous chapters, there seems to be a divergence within the social world of partygoers. Those who use ecstasy and those who do not to a great extent form separate networks: non-users are strongly orientated towards other non-users, whereas users are strongly orientated towards other users.

Reasons for first use

Asked about the reasons why they first started using ecstasy, both testers and non-testers state largely similar reasons. By far the most important motivation for initiation of use is curiosity, followed by positive reports about the substance. Although peer influence ("Everyone around me was using ecstasy") plays a role in first ecstasy use as well, this appears to be the least important motivation.



Regression analysis

In a regression analysis we studied the influence of background characteristics on onset of ecstasy use and on the reasons for first use among testers and non-testers.
Age of onset is influenced by gender and ethnic background: male users and users of native ethnic background start using ecstasy at a younger age. Current age is also negatively correlated with age of onset of ecstasy use. This may imply that partygoers start using ecstasy at an increasingly younger age. However, a similarly plausible explanation is that older ecstasy users did not have access to ecstasy when they were younger (either because it did not exist yet, or because it was too expensive) and therefore started using ecstasy at a later age.
After correction for influences of background characteristics, it was found that non-testers had started using ecstasy at a somewhat older age than testers. No differences were found between testers and non-testers regarding reasons to start using ecstasy.
Ecstasy use within social networks was also analysed in a regression analysis. This showed that, taking background characteristics into account, there is no difference in ecstasy use among friends between testers and non-testers. There is however a very marked difference between users (testers and non-testers) and non-users. The odds of having ecstasy-using friends are ten times higher for users than for non-using partygoers.

Reasons for non-use

Non-users were asked to score a list of 23 possible reasons for not using ecstasy, largely based on a study by Fountain et al.[37] These reasons can be grouped into eight categories.

Personal preferences

The two most common reasons not to use ecstasy are a lack of interest in the effects, and motivations based on principle or ideology. Two thirds to three quarters of non-users refrain from using ecstasy because of personal preferences or convictions. Additionally, almost one third prefers another substance to ecstasy.

"I don't need a stimulant."	74.4%
"Out of principle/ideology."	71.2%
"I don't need a psychedelic."	68.2%
"I use another substance."	30.4%

[37] Fountain et al. (1999)

Fear of harm

A second important category of reasons for not using ecstasy is the fear of harmful consequences. Fear of physical harm especially is a strong motivation not to use ecstasy.

"I think it's harmful to my body."	63.6%
"I think it's damaging to the brain."	61.9%
"I think it's psychologically harmful."	59.5%
"I'm afraid I'd only feel worse after."	43.7%
"I'm afraid of becoming addicted."	39.3%

Unknown effects

Thirdly, uncertainty about and unfamiliarity with the effects of ecstasy are reasons for non-use. Not knowing what a pill contains and what effects to expect keeps respondents from using ecstasy.

"You never know what you take."	66.5%
"I don't know what ecstasy will do to me."	44.1%

Negative reports

Reasons for not using ecstasy can also be grounded in unpleasant experiences in the social environment or in reports about unpleasant effects of ecstasy. This can partly contribute to the fear of the effects of ecstasy.

"I've seen what ecstasy does to others."	54.2%
"Because of negative reports in the media."	35.8%
"I heard bad stories from friends/acquaintances."	28.0%
"Someone I know was hospitalised because of ecstasy use."	19.5%

Pill-testing

Interestingly, pill-testing also generates reasons for non-users to refrain from using ecstasy. Compared to other motivations, however, pill-testing only plays a relatively small role.

"Because the pill-test often reveals dangerous substances."	27.9%
"Because of the warning flyers."	23.3%

'Involuntary' reasons

Generally unimportant are 'involuntary' reasons such as financial considerations and physical conditions (e.g. medication, allergy, heart condition).

"It's too expensive."	30.7%
"On medical grounds."	17.3%

Peer influence

The influence of peers on refraining from ecstasy use seems relatively small within the social world of non-users. This is in line with the finding that peer influence is of limited importance in the initiation of ecstasy use.

"No one around me uses ecstasy."	30.7%

Opportunity and availability

Finally, some non-users simply have not had the opportunity to use ecstasy yet, or have not used ecstasy because it was not available to them. These may be more or less temporary justifications for not using ecstasy. It would appear that some non-users are waiting for the right moment to start using. The question is when – if ever – the moment will be right and what makes that moment right.

"I haven't come around to it yet."	23.6%
"It has never been offered to me."	20.0%
"I don't know how to get it."	16.4%

In conclusion, personal preferences and fears are the main reasons for not using ecstasy, although pill-testing also plays a role in refraining from use.

Summary and discussion

Regression analysis showed that testers have started using ecstasy at a somewhat younger age than non-testers. However, this does not necessarily indicate that pill-testing is of influence in initiation of use. In fact, pill-testing is generally taken up a couple of years after first use of ecstasy. Pill-testing can therefore have no direct influence on the onset of use.

The most important reasons for first use of ecstasy are curiosity and hearing 'good stories'. Personal preferences, fear of harmful consequences and reservations concerning the effects of ecstasy are the most important reasons not to start using ecstasy. Although pill-testing programmes only play a relatively small role in the decision not to use ecstasy, pill-tests revealing dangerous substances and the distribution of warning flyers do keep a group of non-users from starting to use the substance.

Ecstasy users and those who refrain from using ecstasy form more or less separate social worlds within the same party setting. This is indicated by the high number of ecstasy-using friends within the social networks of users and the lack of ecstasy-using friends in the networks of non-users. Earlier (cf. Chapter 5) users and non-users were found to be strongly orientated towards their 'own' circles when it came to information about ecstasy. Non-users moreover differ from users with regard to several characteristics, including the use of other drugs, gender and personality (cf.

Chapter 4). These findings all point to the existence of two distinct groups of partygoers, even within the same setting of the parties we studied:

- Young people with a lower level of sensation seeking – expressed among other things in a lack of interest in the effects of ecstasy and in the fear that keeps them from using – who make a conscious choice not to use ecstasy or many other drugs, and who predominantly socialise with other non-users.
- Young people, mainly men, with a higher level of sensation seeking – expressed in curiosity about and interest in the effects of ecstasy – who also use other drugs besides ecstasy, and who predominantly socialise with other ecstasy users.

Contrary to what might be expected, despite the apparently strong coherence within both groups of partygoers peer influence, according to the respondents, only plays a limited role in both the initiation of and the abstinence from ecstasy use. Of course the question remains whether the group determines behaviour or whether behaviour determines group membership. This is one of the complex issues of causality in the area of peer influence. Do people choose friends who match their personality and behaviour, indicating a selection effect? Or is the reverse the case and is behaviour determined by peers, indicating an influencing effect? In all probability it is a reciprocal process, in which selection of and influence by peers alternate and reinforce each other.[38]

Many complex factors can be of influence in the initiation of use: informal networks, setting, opportunity, predisposition, peer influence, life events, etcetera. Although there seems to be a distinct group of partygoers with similar personalities who consciously decide not to use ecstasy, this decision and even group membership is not necessarily final. Some non-users appear to be waiting for the right opportunity to start using ecstasy. Fears and reservations concerning the effects of ecstasy might diminish when knowledge of ecstasy indirectly increases through pill-testing, but they might also be reinforced through pill-testing. To fully understand the dynamics of preferences, decisions, group memberships and the influence of pill-testing on these processes, a thorough, long-term longitudinal study would be required. Nevertheless, by applying a cross-sectional design our survey data indicate that so far pill-testing programmes have prevented onset of use for part of the non-users in our study. Taking into account that users and non-users do not differ in age, this means that if and when some non-users do start using ecstasy in the future, pill-testing will probably have postponed the age of onset.

[38] Elliott & Menard (1996)

10

MONITORING THE MARKET

Do pill-testing services facilitate the monitoring and analysis of synthetic drug markets? We addressed this question by asking the respondents in our quantitative questionnaire survey where they obtained their ecstasy and by interviewing experts in the three cities for the qualitative part of our study. This chapter first reports on these two bodies of data separately, and then concludes by summarising and discussing them together.

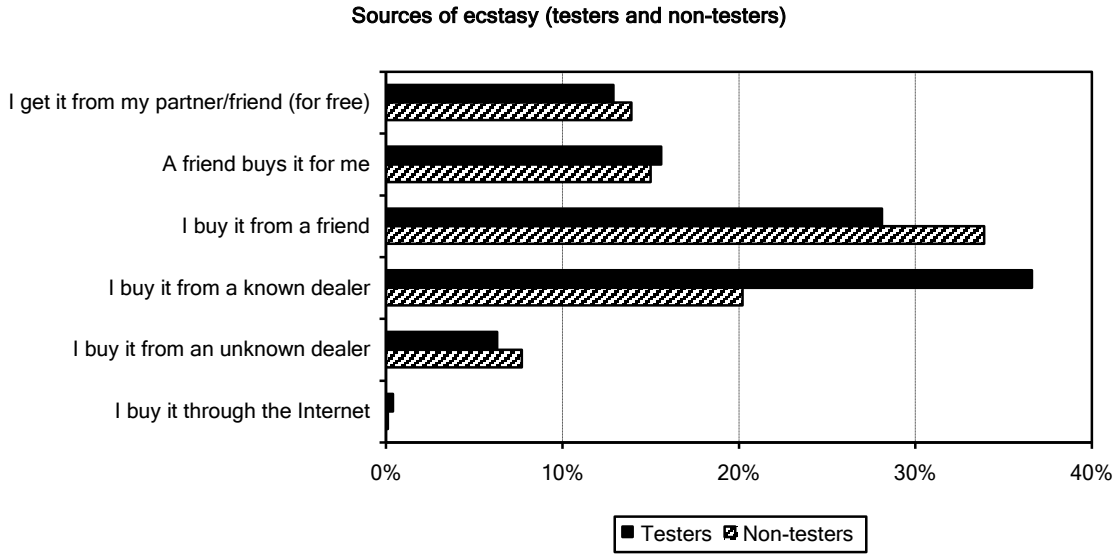
Hypothesis

Pill-testing services enable the monitoring and analysis of synthetic drug markets.

Survey results: obtaining ecstasy

In our questionnaire survey, users were asked how and where they usually got their ecstasy. The majority of both testers and non-testers bought their ecstasy at home or in someone else's home. About 10% had the ecstasy delivered to their homes. A third of the users bought the drug at large dance parties. Wherever it was obtained, the source was often a friend or a known dealer, and more than one tenth of the ecstasy users received their ecstasy at no cost from a partner or friend.

The survey data thus indicate that the ecstasy market is largely hidden from watchful eyes. Trade usually takes place within networks of partners, friends and acquaintances and inside homes. This makes it hard to intercept ecstasy pills in the traditional ways and to gain insights into the kinds of pills currently circulating in the market. One can seriously question whether pills confiscated by the police at dance parties – and even more so the ones seized on the streets – provide a full or representative picture of the ecstasy available in the retail market. It would therefore stand to reason that pill-testing services could enhance the capability of market monitoring and analysis, with respect to both the demand side represented by ecstasy users and the supply side represented by the pills circulating in the market.



Qualitative interviews with experts

A central focus of our expert interviews was to explore and evaluate the pros and cons of each nationally or locally operated pill-testing initiative from an expert point of view. We examined the potentials, limitations and risks of the projects, with an additional underlying emphasis on whether such services constitute a viable means of monitoring the ecstasy market. Three experts were personally interviewed with respect to each city, each recruited from a specific field of practice: coordinating tasks in local drug or health services, local police, and national-level specialised coordinating bodies for drug policy or drug prevention. To adequately represent each of the local contexts, we first report the interviews for each of the participating cities. All the interviewed professionals were approached first and foremost in their role as experts, rather than as representatives of their institutions or agencies. Transcripts were made of all interviews, and these served as the basis for the assessments given below.

Dutch experts (Amsterdam)

National-level policy coordination

As a staff member of a specialised institution operating nationwide in the Netherlands, we interviewed Hannah Bouma of the Netherlands Institute of Mental Health and Addiction (Trimbos-instituut) in Utrecht. She works for the Dutch national Drug Information Monitoring System (DIMS). Bouma justified pill-testing on three main grounds. (1) She regarded the procedure as a service to ecstasy users which effectively leads them to adopt more risk-conscious behaviour. As evidence for that she pointed to the empirically demonstrated higher uptake of testing services after warnings that poor-quality or dangerous pills are on the market. (2) She also viewed pill-

testing as an effective opportunity for contact between the professional counselling and care system and the ecstasy users. Such contacts then opened more efficient channels for a swift, targeted dissemination of important information and necessary warnings to ecstasy users as a group. (3) In addition, pill-testing formed a viable instrument for monitoring and influencing drug markets. This was demonstrated in the Netherlands when the hazardous substance PMA vanished from the Dutch drugs market within the short space of 3 to 4 weeks after warnings had been issued. Ms Bouma saw two drawbacks to pill-testing: the results provided no absolute certainty, and the tested pills also carried risks that could not be overcome by having them tested. Potential for improvement of the DIMS procedure lay both in the methods being applied and in the reagent used in testing. Both these possibilities are being explored in an evaluation.

Local-level policy coordination

Theo Sluijs heads the mobile team of the Amsterdam Municipal Health Service (Gemeentelijke Geneeskundige & Gezondheidsdienst, or GG&GD). He is in charge of monitoring and authorisation for large dance parties and of the medical staff on duty there. He reported that he opposed pill-testing at dance parties. He argued that the chosen point in time was too late, the method inadequate, and the results second-rate, because the users have already planned to take their drugs independently of the test results. He further believed that testing capacity was too limited and that dealers might make improper use of testing. He argued that pill-testing was not necessary for monitoring markets and that it had no effect on drug markets. Market monitoring would be more effectively ensured by analysing data and symptoms reported by drug victims. He urged shorter channels of contact between the DIMS and the casualty services.

Police

Hans Copray is regional coordinator of the Amsterdam police for the catering industry and synthetic drugs. He was more negative than positive towards pill-testing services. A positive consideration was the promotion of public health. His main criticisms were (1) that the test results generated a false feeling of safety about taking the drugs; (2) that testing might lower the threshold for the first use of ecstasy; (3) that a conflicting message was conveyed by frisking for drugs at party entrances and then offering ecstasy testing services inside; and (4) that drug dealers and manufacturers could exploit the testing services. He was convinced that testing had little impact on the drugs market. His suggestions for improvement were to consider better locations for pill-testing and to adopt cruder classifications (such as omitting the specifications in milligrams) when reporting test results to clients.

Austrian experts (Vienna)

National-level policy coordination

Dr Sabine Haas works for the Austrian Health Institute (Österreichisches Bundesinstitut für Gesundheitswesen, or ÖBIG), the national focal point for the European Monitoring Centre on Drugs and Drug Addiction (EMCDDA) in Lisbon. She emphasised that pill-testing by Vienna's ChEck iT! project had been expressly conceived as including a scientifically based early-warning component. The principal aim was to gain access to difficult-to-reach target groups. In addition, it tried to keep myths and rumours from developing amongst party drug users. Benefits she saw in pill-testing were its on-site services and its analysis of the substances actually being consumed. A disadvantage was the limited frequency of the services and the limited availability of ChEck iT!

Despite this, she still believed that pill-testing could be a source of quality control, which would put pressure on the drug market. She saw no real effects on the demand side of the market. She regarded as absurd any suggestion that the demand for drugs would be boosted by the provision and uptake of testing services. If anything, she would expect a negative impact on demand. She believed the target group for pill-testing was growing, and that it now also included older adults. She saw an expansion of the ecstasy subculture towards mainstream youth culture. A next step in pill-testing might be to initiate a stationary testing service, which in any case should be coupled to opportunities for counselling. Her ideal would be a combination of on-site and stationary pill-testing.

Local-level policy coordination

Peter Hacker is drugs coordinator for the City of Vienna and member of the management staff of the Vienna Social Fund (FSW). He recalled that one of the underlying motives for introducing pill-testing in Vienna was to gain more insights into the drugs market, with the primary emphasis on MDMA. Adulterants and contaminants were not topics of discussion at the time. He regarded the infrequent on-site presence of ChEck iT! (6 to 7 testing sessions per year) as insufficient for a steady monitoring of the ecstasy market. He reported that regular exchanges of information and data with the police department took place, and that cooperation with them went smoothly, although they were obviously more interested in pure substances than in adulterants. Mr Hacker believed that on-site pill-testing had now served its purpose, and reported that stationary testing services were now under consideration which would also be equipped to test all other substances.

He did not believe that pill-testing influenced the ecstasy market. To him the primary purpose was to foster conscious consumers who critically reflected on their drug-

using behaviour. He attributed the success of the Viennese pill-testing services to the special infotainment approach adopted in the city. Infotainment meant combining scientifically reliable information with a contemporary presentation – a 'cool' strategy (i.e. one accepted by the target group) like the approach that ChEck iT! had successfully implemented.

Police

Christian Doneis works for the Vienna Police Advisory Service (Kriminalpolizeilicher Beratungsdienst, or KBD). His remit is addiction prevention, with a special emphasis on schools. Although he believed pill-testing to be ineffective as a police instrument to analyse drug markets, the data gathered by ChEck iT! was nonetheless useful to the police. The advantage of ChEck iT! was its ability to swiftly obtain up-to-date information. He reported that the Vienna law enforcement authorities had had no part in the creation of ChEck iT!, and that pill-testing operated in a grey area from a legal point of view. The acceptance by the police had therefore been highly significant. He further argued that the ChEck iT! project was not present on-site often enough. He believed the quality control inherent in pill-testing held potential for influencing the drugs market by (1) drawing ecstasy users out of the illegal sphere, and thus reducing the influence on them exercised by the illicit drugs market; and by (2) implementing stationary testing services to ensure greater purity in the quality of ecstasy. In his view, the most logical step would be to legalise the whole realm of illicit drugs. Doing away with the punitive consequences for those involved would allow more attention to be given to the social, physical and psychological effects of drug use.

German experts (Hanover)

National-level policy coordination

Dr Guido Nöcker heads the Addiction Prevention Unit (illicit drugs) at the Federal Centre for Health Education (Bundeszentrale für gesundheitliche Aufklärung, or BZgA) in Cologne. Like the other interviewees, he expressed here solely his personal opinion as an expert. He supported pill-testing as a monitoring instrument to gain an overall view of the ecstasy substances currently circulating in the market. He also approved of pill-testing because it provided a place and an opportunity to get in touch with party drug users – the kind of low-threshold point of access that every type of social work needs in order to meet and communicate with its target group. Though it was not fully clear to him how such contacts could be continued after the first encounter, the pill-testing at least provided a marketing setting where professionals could inform the target group about their services, making themselves visible and recognisable as a source of help in the event of future problems. What he did wonder, though, was whether such successfully laid contacts with this secondary prevention

target group were similarly perceived by the members of the group themselves. He actually had fundamental misgivings about the whole secondary prevention approach – are you actually reaching the right people, isn't it just a stab in the dark? For in contrast to secondary prevention efforts, primary prevention measures were of benefit to everyone in society. His criticism of pill-testing was based on the following arguments in particular: (1) Testing creates the impression of giving a seal of quality to the tested pills, but any such claim would be false. (2) He feared that pills yielding 'bad' test results would simply be passed on or sold to unknowing third parties. (3) The potential for drug dealers to take advantage of testing to secure a mark of quality for their pills was another decisive point of criticism.

As for the testing procedure applied in Hanover and elsewhere – pill identification using the Marquis reagent in conjunction with pill identification lists – Nöcker argued that a serious decline in the rate of identification would call the whole procedure into question. The consequence would then be to abandon pill-testing altogether or to switch to a lab-based analysis procedure. Since the latter would entail considerably more effort and expenditure, and given the limited financial resources, a cost-benefit analysis would be required.

In sum, then, Dr Nöcker was ambivalent about pill-testing. On the positive side, he believed it offered favourable opportunities for monitoring the market and for gaining access to the target group, in order to introduce innovations and to evaluate secondary prevention measures. On the negative side, he was critical about the pseudo-safety suggested by the testing, about the potential misuse of testing services by drug dealers, and about the yet-unanswered question of how to further pursue counselling and prevention work after first contacting the clientele.

Local-level policy coordination

Alfred Lessing is drugs coordinator for the City of Hanover. The testing services in Hanover (using quick tests in conjunction with pill lists) had been introduced through the Drobs drug counselling centre, following a Dutch example. The background was as follows: (1) The consideration of highest priority was that testing would enable Drobs to get into touch with ecstasy users and to help or refer them further if they had problems or care needs. (2) No 'safety certifications' were to be issued for pills, even if they were free of adulterants and had a high MDMA purity level (condition imposed by the Department of Public Prosecutions). (3) No illicit substances were to be handled by Drobs workers during the test, so as not to violate the German Narcotics Act. Mr Lessing reported that these principles still applied today and were followed during the testing procedure. No complaints or charges had been made since the testing service became available. Changing market conditions, however, had since led to complications in the procedure. It was now virtually impossible to oversee all the

available pill types and all the imitations of identical appearance. As a matter of principle, Mr Lessing warned that the drug counselling and care services must not allow themselves to be drawn into the service of the drug users. He did feel that services would still be needed in future that were in tune with the lifestyles of synthetic drug users. He was sceptical about short-term feedback from testing, because the market was changing too quickly to warrant long-term insights and conclusions. He did support long-term market monitoring by experts, because it could keep the state of knowledge about drugs and drug users up-to-date. The analysis institutes he thought most qualified for this were the Hanover Medical School (first choice) or private laboratories. Funding such efforts could pose problems.

Police

We held a joint interview with Rainer Zitzke of the Lower Saxony State Criminal Office and Birger Meine of the Hanover Police Department. They reported that the going rate for an ecstasy tablet in dance clubs was around €5, and that the wholesale price in larger quantities was €1.45 each. An estimated 10% to 15% of the ecstasy users dealt in ecstasy themselves, financing their own drug needs from the profits. Dealers one level higher in the hierarchy used the trade in ecstasy to defray their living expenses. The officers remarked that ecstasy users often made use of the Drobs testing service to find out what substances were in their newly obtained pills. They ask, 'Is this one okay?'. The officers underlined that ecstasy can be classified as a neurotoxic agent.

The Drobs Infomobile with its integrated pill-testing service was to be regarded as a drug prevention initiative, and therefore the police were to steer clear of such activities. However, testing services could also easily create the impression that substances had been legalised, while in fact they were still prohibited. The officers saw this as a real danger. Furthermore, the users could lose their sense of wrongdoing, and that would exacerbate the tendency to see ecstasy as a legal substance.

Although market monitoring was based on drugs confiscated by the police, laboratory analyses were not always ordered. Due to state government cost-saving considerations, the police sometimes just took the possessors' word for what the confiscated pills contained. The officers considered it worthwhile to exchange information with the Drobs about insights into the market. They believed the quality of ecstasy tablets had an identifiable impact on the drug-taking behaviour of ecstasy users. Pills that produced 'bad' or 'insufficient' highs were now hardly available at all on the market, or they were priced far under the normal rate. In conjunction with the other prevention services offered by the Drobs the pill-testing services are to be understood as drug prevention. But the provision of testing was also believed to lower the barriers to taking or trying out illicit drugs (in this case ecstasy), to play down the health hazards of

drugs, to suggest to users that an illegal substance was now legal, to substantially undermine an already weak sense of wrongdoing, and to suggest a 'quasi-legalisation' of ecstasy. For these reasons, the Lower Saxony Criminal Office was inclined to a critical stance towards pill-testing. The Office itself undertook primary prevention strategies aiming at abstinence from drugs (as was also required by law).

Expert views compared

As the data summarised in the table below makes clear, the different cities did not present a uniform picture (vertical assessment) in the expert opinions expressed there about pill-testing and its role in market monitoring and analysis. The experts in Vienna unanimously approved of the pill-testing initiatives as such, those in Amsterdam were divided (approximately equal measures of approval and criticism), and those in Hanover voiced the most scepticism (more criticism than approval). A different picture arose when the initiatives were assessed specifically for their utility in market monitoring and analysis, with the Germans tending more to believe it worked, while the Austrians and Dutch were inclined to doubt it.

No uniform outcome emerges, either, if we compare the expert views in the different cities at the level of professional responsibilities (horizontal assessment), though the opinions were clearly less disparate. The strongest support for pill-testing was found among the national-level professionals. Local-level professionals were somewhat less positive, and the police were most critical. Clearer consensuses emerged within these levels in terms of the potentials of market monitoring through pill-testing – it received firm support from the national-level experts and firm rejection from the police, whilst the local-level experts were slightly inclined towards rejection.

Fields of expertise	Netherlands Amsterdam	Germany Hanover	Austria Vienna
National-level drug or health policy coordination			
pill-testing	approval	ambivalence	approval
market monitoring and analysis	yes	yes	yes
Local-level drug or health professionals with coordinating tasks			
pill-testing	at parties: no other venue: yes	approval under certain conditions	approval
market monitoring and analysis	no	yes	no
Police			
pill-testing	mostly negative	mostly critical	approval
market monitoring and analysis	no	no	no

Discussion and summary

The data from our quantitative survey have shown that users of ecstasy largely obtain the drug in private and domestic settings. Given the proportion of trade that takes place in the private sphere, little or no monitoring of the ecstasy market is possible. This has led some people to argue that pill-testing services in public venues could enable professionals to procure information about market conditions, and thus to better understand and monitor the market for synthetic drugs. To assess this hypothesis, we carried out qualitative interviews with experts in the three participating cities. Viewed within the three cities, experts in Hanover and Amsterdam were largely ambivalent about pill-testing, with more positive standpoints in Vienna. Viewed within fields of expertise, the drug or health professionals working at national or local levels were predominantly positive towards testing, while police experts tended to be critical.

Most experts were inclined to scepticism about pill-testing as an instrument for the continuous monitoring and analysis of drug markets. An obvious factor influencing this verdict seemed to be the current regional confinement and infrequent provision of testing by most of the individual local projects studied here. Effective market monitoring and analysis through pill-testing will certainly not be possible on a broader scale until the necessary conditions have been put in place – continuous availability of testing facilities, adequate frequency and capacity of services, an interregional or even broader scope, and the availability of laboratory analysis. Otherwise, pill-testing can do little more than monitor and analyse market segments.

11

INSIGHTS FOR PRIMARY PREVENTION

For this study we formulated hypotheses relating both to the secondary prevention and to the primary prevention of synthetic drug use. In terms of primary prevention, Chapter 8 has indicated that pill-testing services do not form an inducement to drug use and are unlikely to lead to higher numbers of ecstasy users. Chapter 9 has concluded that pill-testing does not influence undecided individuals to go ahead and try ecstasy, and that it may even delay their first use of the drug. As for any drug-mystifying effect that pill-testing might have, the empirical evidence in Chapter 7 has indicated that ecstasy users who have their drugs tested are much less likely to believe in drug myths than non-testing users or non-users.

What wider-ranging conceptual insights for strategies of primary prevention can we gain from our investigation of this secondary prevention approach? In addressing this question below, we shall undertake a fundamental critical analysis of the prevailing separation between primary and secondary prevention.

Hypothesis

Pill-testing helps to identify issues arising in secondary prevention that can be particularly valuable for improving primary prevention.

Primary and secondary prevention: definitions

The practice of differentiating between primary and secondary prevention can be traced back to a distinction made by the World Health Organization (WHO) in its professional task description for clinical psychologists. The distinction was intended to strengthen and optimise prevention work. The classical definition of primary prevention given in that context was, 'Primary prevention seeks to improve the quality of life, to reform social institutions and to help the community tolerate greater diversity of adjustment'.[39] This definition was to be universally applicable in the health sector,

[39] WHO (1973)

and it made no concrete reference to addiction or drug prevention work. In addiction prevention, a primary prevention strategy is generally understood to be aimed at discouraging people from taking any addictive substances at all. It targets the diverse types of people who have not yet used a licit or illicit addictive substance. The cardinal idea behind primary prevention interventions is to avert people's initiation into the use of the substances before any risk factors or pathological symptoms emerge. Because initiation into the use of psychoactive substances occurs in most people during their youth, primary prevention measures normally focus on children and adolescents. The objective is to completely deter youngsters who are still abstinent from trying addictive substances in the first place, or at least to delay that step as long as possible. The catchphrase of primary prevention is 'Don't take drugs'.[40] As experts on prevention critically point out, however, prevention measures carrying an abstinence message are received with great scepticism by young people who already have some experience with drugs.[41] Such messages can even work counterproductively, because young experimenters may then start questioning the credibility of all abstinence-based drug prevention efforts, which come across to them as rather far-fetched.[42]

To differentiate secondary prevention from primary prevention, the WHO chose to place a different emphasis in its original definition: 'Secondary prevention is concerned with active case finding, with helping individuals and families to reduce the impact of stress, and with anticipating the problems of vulnerable sub-groups in the community'.[43] In the context of drug and addiction prevention, secondary prevention today means targeting the group of people who already use addictive substances. The aim is to gain influence over an already existing use of substances. Interventions in secondary prevention try to keep the use of addictive substances from deteriorating into misuse or chronicity. The main target group is young people who exhibit high-risk patterns of substance use, but who do not yet show clear symptoms of dependence or pathology. The basic messages can be articulated as 'If you take drugs, do it safely' and 'If you have problems, contact the drug services'.[44] Applied to 'new', synthetic drugs, this means instilling a risk awareness in the people that take these drugs. Pill-testing services and the provision of drug education information about pill dosages and dangerous combinations of drugs can explicitly be a part of such secondary prevention activities.[45]

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40 EMCDDA (1999)
41 Schmidt (1998)
42 Ibid.
43 WHO (1973)
44 EMCDDA (1999)
45 Ibid.

Professionals see the general acceptance of the use of drugs, and the questioning of whether drugs are always harmful, as significant advantages of secondary prevention over primary prevention. By setting a goal of moderation and self-control in the use of drugs, rather than striving for total abstinence, prevention workers find that their message enjoys far more credibility among young people who have taken drugs and still perceive that experience as positive. A further advantage of secondary prevention is that it focuses on reducing not only the risks specific to drug addiction, but also the more general risks that can lead to drug problems.[46] A number of drawbacks to secondary prevention have also been noted. Intervention often does not occur until a very late point in time. Identifying the target groups, the so-called high-risk groups, also presents difficulties, due to a lack of viable instruments and procedures for early recognition and intervention. A further objection to secondary prevention is that defining a 'high-risk group' can be tantamount to stigmatising the members of that group. This could work counterproductively by inducing progressively more substance use instead of the intended reduction.[47]

Towards a comprehensive prevention strategy

In a statement aimed at improving addiction prevention, the Drug and Addiction Committee of the German Federal Ministry of Health, a panel of 12 university professors and other experts specialised in addiction and drugs research, has recently recommended doing away with the separation between primary and secondary prevention efforts.[48] In its place, the committee urges a comprehensive strategy embracing both types of prevention. It argues that distinguishing separate target groups of people who do not yet use drugs (primary prevention) and those who already use them (secondary prevention) is largely artificial, since such groups can scarcely be distinguished in practice. In terms of both the conceptualisation and the practical implementation of prevention, the German expert panel instead favours a focus on more concrete groups. It stresses the need to clearly specify the criteria for defining such groups and to regularly revise such criteria. Determining which groups to target can be based on very different types of criteria, such as the impact of a particular drug phenomenon on a specified group, the previous neglect of that group, or the problems and costs that might arise in relation to that group.[49] The committee argues that a differential focus on gender, ethnicity and social status must be an integral part of the planning and implementation of all measures to combat addiction.

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46 Schmidt (1998)

47 Ibid.

48 Drogen- und Suchtkommission (2002)

49 Ibid.

Such recommendations for addiction prevention not only seem wise on the strength of the theoretical analysis, but they are also borne out by the empirical data and findings reported in the present study carried out in a European framework. First of all, our cross-city, cross-national investigation of pill-testing, ecstasy and prevention has made it clear that one and the same dance party setting encompasses two distinct groups in two social worlds existing alongside one another – the users of synthetic substances such as ecstasy, and the individuals and groups that take no ecstasy. Each group was found to have its own social frame of reference in the form of networks of ecstasy users and networks of non-users. Nevertheless, both these networks could be reached more easily and more persuasively through a comprehensive prevention strategy than through separate prevention initiatives targeting them as separate groups, as defined by the principles of primary or secondary prevention.

In the second place, our study indicates that the peer education method produced differential effects in the two networks found in the dance party scene. Peer education achieved primary prevention objectives within the network of non-users, and secondary prevention objectives in the network of ecstasy users. Here, too, our findings demonstrate the value of a comprehensive prevention strategy that can transcend the separate perspectives that traditionally inform primary and secondary prevention.

Third, we observed in our study that age-group peers with experience in taking ecstasy form an important and trusted source of information for all three of the groups studied – for testers, non-testers and non-users alike. Such 'peer educators' can bridge the gap between the fields of primary and secondary prevention. They can be mobilised to perform prevention tasks that can count on wide acceptance by all target groups. This is yet another finding that points to the urgent need for developing a comprehensive prevention strategy.

The life skills approaches that are often drawn upon as a theoretical basis for primary prevention activities are also well-suited for a more comprehensive approach that integrates primary and secondary prevention measures. It is important to fundamentally strengthen the current transition from a more deficiency-oriented to a more health promotion-oriented perspective for addiction prevention. In life skills approaches, health promotion is viewed as a process of enabling people to take greater control over their state of health – that is, to strengthen their own physical, mental and social well-being. The aim is to support people in developing their personal and social resources, to ensure that they have both the opportunities and the capabilities to identify and achieve their own aspirations. Satisfying one's own

needs, and changing or coping with one's own environment, are two of the central aims of health promotion as defined by the World Health Organization.[50]

From a salutogenic, health promotion point of view, people can occupy many different positions on the scale between abstinence and dependence when it comes to psychoactive substances. In judging how people behave in relation to such substances, this scale enables us to make a fundamental distinction between use, harmful use and dependence. A comprehensive prevention strategy that integrates primary and secondary prevention measures should take sufficient account of this distinction. It should be founded on the principles of health promotion, in order to help overcome a deficiency-oriented approach to addiction prevention.

Summary

The preceding chapters show first of all that pill-testing, which is basically a secondary prevention measure, can be of direct benefit for the primary prevention of ecstasy use, for example by motivating potential users to refrain from or postpone their first use of the drug. Indirectly, it can also reveal valuable information to prevention workers to help them improve primary prevention activities. What was consistently evident throughout our study was that the dance party scene is inhabited by two separate groups of young people – ecstasy users and non-ecstasy users – who exist side by side in two different social worlds. The peer education method produces differential effects within each of these two networks in the party scene. For non-ecstasy users, it achieves primary prevention objectives such as continued abstinence, while for ecstasy users it serves secondary prevention aims such as risk minimisation. We observed in our study that age-group peers who have experience in taking ecstasy form a valuable and trusted source of information for users and non-users alike.

The classical dividing line between primary and secondary prevention can be challenged both on general theoretical grounds and on the basis of the concrete empirical findings presented in this report. Insights such as these call for an integrated prevention method that can transcend the current viewpoints of primary and secondary prevention. A comprehensive prevention strategy of this kind will be able to bridge the gap that now exists between the fields of primary and secondary prevention. It will create a framework in which prevention efforts can count on greater acceptance by all target groups.

[50] Drogen- und Suchtkommission (2002)

12

SUMMARY

This closing chapter summarises the key findings of our empirical investigation of the impact of pill-testing services on the drug-taking behaviour and the risk awareness of ecstasy users. The study was carried out in three cities: Amsterdam in the Netherlands, Hanover in Germany and Vienna in Austria.

Method

Our comparison of the three local pill-testing initiatives revealed a number of similarities and differences. All the agencies involved had similar aims in providing such services – secondary prevention and risk minimisation – and they focused primarily on the same target group: users of 'party drugs' such as ecstasy. Distinctions between the projects emerged first of all in the testing methods applied locally: quick tests in conjunction with pill identification lists in Hanover, laboratory analysis in Vienna, and both techniques in Amsterdam. The chosen venues for testing were also different: exclusively on-site testing in Vienna, exclusively in the prevention agency's offices in Amsterdam, and both options in Hanover.

The main thrust of our research design was to obtain information from people who attended large dance parties in the three cities. Three groups of partygoers were questioned:

- Testers: people who had taken ecstasy at least once in the past 12 months and who had utilised a pill-testing service at least once in their lives.
- Non-testers: people who had taken ecstasy at least once in the past 12 months but who had never used a pill-testing service.
- Non-users: people who had never taken any ecstasy in their lives.

Three questionnaires were developed, one for each subgroup of partygoers. The questionnaires were similarly structured, but some questions were put to only one or two appropriate subgroups. All questionnaires included items on impulsive sensation seeking, in order to gauge whether differences in testing behaviour (testers versus non-testers) or differences in ecstasy use (users versus non-users) could have de-

rived more from personality traits than from the accessibility of pill-testing services. The questionnaire data was collected in all three cities in the same period extending from March to July 2002. To ensure the comparability of results, we only visited dance parties attended by more than 1000 partygoers.

The survey data refer to a convenience sample of 702 partygoers. Respondents from the three groups (testers, non-testers and non-users) and from the three cities were evenly represented. The starting point in the analysis of the survey data was to look for differences between testers and non-testers, as well as between users (both testers and non-testers) and non-users. We then investigated whether differences between the groups were biased or clouded by differences in background characteristics. This was done using regression analyses in which age, personality (impulsive sensation seeking), gender, ethnicity, education and city were also entered as independent variables. Finally, within the group of testers the influence of testing frequency was studied. Since testing frequency correlated with age, partial correlations were conducted, controlling for age. Differences between groups reported in this summary refer to statistically significant results ($p < 0.05$) after correction for differences in background characteristics.

We also conducted interviews with experts in the field of drug prevention. All interviews were guided by the same thematic checklist. The central focus was to explore and evaluate the pros and cons of the locally or nationally operated pill-testing projects from an expert point of view, with a special emphasis on whether such services form a viable means of monitoring the ecstasy market. Three experts were personally interviewed in each city, each recruited from a specific field of professional responsibility: local drug policy coordination, local police, and national coordinating bodies for drug policy or drug prevention.

Testers, Non-testers and Non-Users

The majority of the 702 respondents is male (63%); the mean age is 22 years. A large majority of respondents is employed and/or student. Levels of impulsive sensation seeking among the total research group are comparable to those within a reference group of American university students. In general, the respondents go out regularly. Most respondents are current users of alcohol, tobacco and/or cannabis. The use of other drugs (besides ecstasy, which two thirds of the respondents use by definition) is also fairly common. Remarkably few differences are found between respondents from the three cities.

With regard to general background characteristics, substance use and party behaviour, testers and non-testers show more similarities than differences. More marked differences are found between non-users and users (both testers and non-testers).

Non-users are more often female, have a somewhat higher level of education, but are also more often unemployed and have a lower monthly income. In line with other studies, non-users also show lower levels of impulsive sensation seeking. Non-users of course have never used ecstasy, but both lifetime and current use of most other substances – except alcohol – is also markedly lower among non-users, compared to testers and non-testers.
The most common reason for testers to participate in pill-testing programmes is curiosity about the pill contents, followed by warnings about dangerous pills and health concerns. The most common reason for non-testers not to use the test service is that they trust their ecstasy supplier. A number of reasons furthermore are linked to the accessibility of the test service (no facility in the neighbourhood or not knowing where to find it). Almost half of the non-testers reports they just have not come around to testing yet.

Extending the reach of prevention

According to our survey among partygoers, peers play the most important role in obtaining information about ecstasy. All respondents get much information about ecstasy from partners and friends who use ecstasy, whereas they get little information from peers who do not use this drug. Non-users get far less information about ecstasy from using peers.
The mass media (television, newspapers) do not play an important role in informing partygoers about ecstasy. The same holds for lifestyle magazines. Especially users refrain from using the mass media as a source of information.
Pill-testing is an addition to various sources of information about ecstasy available to youth. It increases the likelihood of being informed about ecstasy through other educational strategies such as flyers and education at parties. Besides being an additional source of information, for testers pill-testing is more important than most other sources, and it becomes even more important as the frequency of pill-testing increases. For experienced testers, pill-testing and educational flyers become increasingly important as a source of information, while using peers become less important.
Almost irrespective of the test results, many testers inquire about potential risks of the substance they bought. When the test shows that a pill contains amphetamines, suspicious substances or a high dose of MDMA, testers will warn their friends. This informal route of dissemination of information about potentially dangerous pills is a hidden strength of pill-testing. Users obtain a lot of information about ecstasy through peers. Indirectly, warnings are spread through more than just the conventional channels such as folders or flyers.
Pill-testing programmes reach ecstasy users who are not reached by the traditional drug care system. Many testing ecstasy users would not have been reached if only traditional drug prevention and care services were available.

In conclusion: Pill-testing widens the net of drug prevention and lowers the threshold for contacting prevention.

Acceptance of pill-testing

Pill-testing programmes have a relatively high level of credibility among all three groups included in our study. A vast majority of testers evaluates pill-testing in itself, the information and advice obtained from this service, and the personal communication with the pill-testing staff as important, often even as very important. Again, a vast majority of testers is satisfied with the quality of these three elements of pill-testing. Pill-testing services are evaluated as very positive by the major part of testers; the higher the testing frequency, moreover, the more positive their evaluation.
Although non-users less often think that the information provided by pill-testing is objective, they still evaluate pill-testing as relatively credible. The latter finding is important from the perspective of a more general acceptance of this service. Clearly, pill-testing services are not only appreciated by ecstasy users, but also by partygoers who refrain from using ecstasy.
When combining the importance or reach of information sources with their perceived credibility, peers (partners and friends) who use ecstasy can be qualified as both important and credible sources of information for all three groups. Conversely, non-using peers can be qualified as unimportant and not credible sources of information about ecstasy for all three groups. It would seem that peer education by ecstasy users has strong potential for secondary prevention (risk reduction) among ecstasy users.
Educational flyers and education at parties can be classified as important and credible sources of information for testers, and as unimportant but credible sources of information for non-testers and non-users. Among testers, the credibility of these sources increases with more frequent pill-testing. This means that flyers and education at parties gain in importance when combined with pill-testing. This reinforces the conclusion that pill-testing widens the net of prevention through educational flyers and education at parties and raves.
In sum, warnings about substances involving health risks, issued within the framework of pill-testing programmes, have a higher level of credibility and acceptance than traditional prevention methods.

Knowledge, myths and party behaviour

Although many respondents report that they have all the information they need about ecstasy, apparently there are also respondents who are still in need of information. Pill-testing would seem to contribute to the level of knowledge, since the more often

users have their ecstasy tested, the more they feel that they have all the information they need.
Non-users know little about the specific risks and effects of ecstasy. Users on the whole are more knowledgeable about ecstasy, although some users are still uninformed or give credence to certain myths. The awareness that the logo on ecstasy pills does not provide any information about the contents of the pill appears to have gained a strong enough foothold, especially among testers. An area in which pill-testing really makes a difference is in the knowledge of dosages and their effects. Most non-testers are not aware of the likelihood of fatal emergencies when using a dose of 500 mgs of MDMA. And most of them do not know which dose is effective at minimal risk. Not many ecstasy users know that an EZ test (a commercially sold kit for home use) does not say how much MDMA a pill contains. Pill-testing has increased knowledge of the limitations of the EZ test, but many users still think that the test can quantify the pills' content. All in all, testers are more knowledgeable about ecstasy than non-testers. With regard to behaviour, most testers still drink too little fluids or too much alcohol at parties and dance all night without taking enough rest. However, this also holds for non-testers, and even more so for non-users. Again, getting physically unwell at a party is not limited to those partygoers who use ecstasy. The hot and crowded atmosphere gets to the non-using visitors as well. Getting unwell because of poor quality ecstasy seems to happen more often to non-testers than to testers. However, it is difficult to draw definitive conclusions on the basis of these kinds of self-reported causes. Getting sick is easily attributed to a ‘bad pill’.
Initial analysis did not show any difference in party behaviour between testers and non-testers. However, further analysis showed that behavioural change depends on the frequency of testing. The higher the frequency of testing by ecstasy users, the safer their behaviour at parties.
In conclusion, pill-testing programmes increase the level of knowledge, decrease belief in myths surrounding ecstasy among partygoers, and also contribute to safer behaviour. In other words, pill-testing is an effective instrument in secondary prevention.

Ecstasy consumption

Testers and non-testers show similar careers in ecstasy use. A large majority of testers states that pill-testing has not influenced their ecstasy use. Pill-testing does not influence the number of pills taken per occasion. However, testers are more frequent users. Because more than a third of the testers had their pills tested for the first time, the consumption patterns we measured for a large part concern behaviour prior to pill-testing. The causality of this relationship between pill-testing and frequency of use is therefore questionable. On the other hand, the frequency of ecstasy use decreases with an increasing frequency of pill-testing. So to some extent, pill-testing can be said to cause a positive change in ecstasy use. With a lower frequency of use, the chance

of developing tolerance becomes smaller and the total ecstasy intake will decrease. In addition, testers refrain from using pills that according to the test results contain amphetamines or suspicious substances. Moreover, they adjust the number of pills they take according to the reported MDMA content: the more MDMA a pill contains, the fewer pills they take. This is in line with the finding that testers are more knowledgeable about ecstasy dosages and their effects.
In conclusion, pill-testing does not lead to a direct and profound change in the careers of ecstasy users, but neither does it seem to increase ecstasy consumption. In fact, ecstasy consumption is adjusted according to the test results to reduce risks, and with more frequent testing, the frequency of ecstasy use decreases.

First use of ecstasy

A general finding of our survey among partygoers is that ecstasy users and those who refrain from using ecstasy belong to more or less separate social worlds within the same party setting. This is indicated by the high number of ecstasy-using friends within the social networks of users, and the lack of using friends in the networks of non-users. The two groups differ with regard to many characteristics, including gender, personality and drug use in general. Users are more strongly orientated towards other users, whereas non-users are more strongly orientated towards non-using peers.
Users started using ecstasy around the age of 17, mostly out of curiosity and because of 'good' stories. Pill-testing has no direct influence on the onset of ecstasy use. First use of ecstasy usually precedes first pill-testing by a couple of years.
Non-users refrain from using ecstasy mainly because of personal preferences, fear of harmful consequences and reservations concerning the effects. Although pill-testing programmes only play a moderate role in the decision not to use ecstasy, pill-tests revealing dangerous substances as well as the distribution of warning flyers do keep a group of non-users from starting to use the substance.
Many complex factors can be of influence on the initiation of use: informal networks, setting, opportunity, predisposition, peer influence, life events, etcetera. Although there seems to be a distinct group of partygoers with similar personalities who consciously decide not to use ecstasy, this decision, or even group membership is not necessarily final. There are non-users who appear to be waiting for the right opportunity to use ecstasy. Fears and reservations concerning the effects of ecstasy might diminish when knowledge of ecstasy indirectly increases through pill-testing, but might also be reinforced through pill-testing. To fully understand the dynamics of preferences, decisions, group memberships and the influence of pill-testing on these processes, a thorough, long-term longitudinal study would be required. Nevertheless, by applying a cross-sectional design, our survey data indicate that so far pill-testing programmes have prevented onset of use for part of the non-users in our study. Tak-

ing into account that users and non-users do not differ in age, this means that if and when some non-users do start using ecstasy in the future, pill-testing will probably have postponed the age of onset of ecstasy use. Moreover, non-users are aware of pill-testing programmes and evaluate them as credible, as stated earlier. Even at parties with on-site pill-testing, finding and interviewing non-users was not a problem. This indicates that the availability of pill-testing does not simply or easily motivate non-users to take ecstasy.
In conclusion: pill-testing programmes have prevented the onset of ecstasy use for some partygoers, and could postpone the onset of use among the undecided. It does not seem very likely that pill-testing extends the circle of ecstasy users.

Monitoring and analysis of drug markets

The data from the dance party survey showed that ecstasy users obtained their drug largely in private and domestic settings. This makes it virtually impossible to monitor the market. Consequently, pill-testing services might be a means of gaining more insights into the synthetic drugs market and monitoring it more systematically.

Taken altogether, the experts in the field of drugs policy whom we spoke to in the qualitative interviews in each city took stances that ranged from ambivalent to positive towards pill-testing as such. A basically pro-testing attitude predominated among the national- and local-level professionals, whilst the police experts tended to be more critical. When pill-testing was judged more specifically as an instrument for continuous market monitoring and analysis, most experts were inclined to scepticism. An obvious factor influencing this verdict seemed to be the current regional confinement and infrequent provision of testing by most of the individual local projects we studied. It thus seems clear that effective market monitoring and analysis through pill-testing will not be feasible on a broader scale until the necessary conditions have been put in place – continuous availability of testing facilities, adequate frequency and capacity of services, an interregional or broader scope for the testing, and the availability of laboratory analysis.

To summarise, although the dance party survey indicated that pill-testing services may potentially be a viable means of market monitoring and analysis with respect to synthetic drugs, the interviewed experts tended to be critical, not least because the necessary conditions for it have been insufficiently met.

Consequences for drug prevention efforts

Our findings suggest that pill-testing, which is basically a secondary prevention measure, is of direct benefit for the primary prevention of ecstasy use, for example because it motivates potential users to refrain from or postpone their first use of the drug. The mass media (television, newspapers) and lifestyle magazines are unimportant sources of information about ecstasy and have relatively low credibility among testers and non-testers. This would make these sources less adequate in secondary prevention. From a primary prevention perspective, the finding that television and newspapers have low credibility among non-users makes it unlikely that these media can support non-users in staying away from ecstasy.

Indirectly, pill-testing can also reveal valuable information to prevention workers to help them improve primary prevention activities. What was consistently evident throughout our study was that the dance party scene is inhabited by two separate groups of young people – ecstasy users and non-ecstasy users – who exist side by side in two different social worlds. The peer education method produces differential effects within each of these two networks in the party scene. For non-ecstasy users, it achieves primary prevention objectives such as continued abstinence, while for ecstasy users it serves secondary prevention aims such as risk minimisation. We observed in our study that age-group peers who have experience in taking ecstasy form a valuable and trusted source of information for users and non-users alike.

The classical dividing line between primary and secondary prevention can be challenged both on general theoretical grounds and on the basis of the concrete empirical findings presented in this report. Insights such as these call for an integrated prevention method that can transcend the current viewpoints of primary and secondary prevention. A comprehensive prevention strategy of this kind should help to bridge the gap that now exists between the fields of primary and secondary prevention. It would create a framework in which prevention efforts can count on greater acceptance by all target groups.

Final conclusions

Users and non-users seem to be part of separate social networks. Even within the same setting (parties), users are more strongly orientated towards other users, whereas non-users are more strongly orientated towards non-using peers.
Pill-testing is one of many factors playing a role in the lives and behaviour of ecstasy users. From that perspective, pill-testing cannot be expected to have a very strong impact. Nevertheless, the empirical findings largely support the hypotheses of our study. This leads to the following conclusions:

- Pill-testing services enable drug workers to contact and communicate with drug users who were previously out of reach.
- Health warnings about dangerous substances are received with more credibility and acceptance when delivered in the context of pill-testing services.
- Pill-testing services result in better-informed drug users and increasingly health-conscious behaviour.
- Provided that certain conditions are fulfilled, pill-testing services can potentially enable the monitoring and analysis of synthetic drug markets.
- Pill-testing services do not stimulate the use of ecstasy and most likely will not extend the circle of ecstasy users.
- Pill-testing services lead potential ecstasy users to postpone or abstain from an initial use of the drug.
- As a secondary prevention measure, pill-testing yields valuable information for primary prevention efforts. The classical separation between primary and secondary prevention activities needs to be questioned.
- Pill-testing services serve to demystify synthetic drugs.

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Significance levels and symbols

n.s.	no significant difference		
*	≤ .05	~	not included in the questionnaire
**	≤ .01	*TE - NT*	(significance of) differences between testers and non-testers
***	≤ .005	*ALL*	(significance of) overall differences
****	≤ .001	*within group*	(significance of) overall differences within the group

Tables chapter 4 – Respondents and testing

4.1 Response

	Response	Final Sample[51]	%
Amsterdam			
Testers	83	76	31.4%
Non-testers[52]	115	110	45.5%
Non-users	72	56	23.1%
Total	270	242	
Hanover			
Testers	67	65	27.7%
Non-testers	89	84	35.7%
Non-users	92	86	36.6%
Total	248	235	
Vienna			
Testers	90	73	32.4%
Non-testers	98	78	34.7%
Non-users	86	74	32.9%
Total	274	225	

4.2 Nationality and native country

	Nationality	Native country respondent	Native country father	Native country mother
Amsterdam				
The Netherlands	95.0%	93.4%	88.4%	89.7%
Surinam	0.4%	0.4%	2.1%	2.1%
Dutch Antilles	-%	0.4%	-%	-%
Turkey	-%	-%	-%	-%
Morocco	-%	-%	0.4%	0.4%
Other Western country[53]	3.7%	4.1%	7.0%	6.2%
Other Non-western[54]	0.8%	1.7%	2.1%	1.7%
Hanover				
Germany	95.3%	91.5%	82.6%	86.8%
Turkey	2.1%	2.6%	4.3%	3.0%
Balkan area	0.9%	1.3%	2.6%	1.7%
Eastern Europe	0.4%	3.4%	5.1%	5.1%
EU nation	0.9%	0.9%	3.8%	2.1%
Other Western country[55]	-%	-%	0.9%	0.4%
Other Non-western[56]	0.4%	0.4%	0.9%	0.9%
Vienna				
Austria	94.8%	94.0%	88.8%	88.8%
Turkey	0.4%	-%	0.9%	-%
Yugoslavia	-%	-%	0.4%	-%
Bosnia	0.4%	0.4%	0.4%	0.4%
Croatia	-%	-%	0.4%	0.4%
Other Western country[57]	3.9%	5.2%	7.7%	9.4%
Other Non-western[58]	0.4%	0.4%	1.3%	0.9%

[51] A total of 90 questionnaires were omitted due to lacking answers (more than 20% of the obligatory questions were skipped) and/or because the respondent did not meet the inclusion criteria (e.g. ecstasy use in the previous year for testers and non-testers, and no use at any time for non-users).

[52] Including 11 testers recruited at the office test service.

[53] Australia, Belgium, Canada, Denmark, Germany, Great-Britain, Greece, Indonesia, Italy, New Zealand, Russia, Spain, South Africa, United States.

[54] Iran, Israel, Mexico, Moluccas, Philippines.

[55] Hungary.

[56] Africa, Iran, Syria.

4.3 Nationality and ethnicity[59]

	Amsterdam N = 242	Hanover N = 235	Vienna N = 225
Nationality			
native	95.0%	95.3%	95.3%
foreign	5.0%	4.7%	4.7%
Ethnicity			
native	84.3%	78.7%	82.8%
foreign	15.7%	21.3%	17.2%

4.4 Educational level (ISCED[60])

	Amsterdam N = 242	Hanover N = 235	Vienna N = 225
Amsterdam			
ISCED 1			
geen diploma / alleen basisschool	7.0%		
ISCED 2			
LBO, VBO, LTS	8.3%		
MAVO, MULO	14.0%		
ISCED 3			
HAVO,MMS	17.8%		
MBO	28.5%		
VWO, gymnasium, atheneum, HBS	9.9%		
ISCED 5			
HBO, universiteit	14.5%		
Hanover			
ISCED 1			
keiner, nur Schulpflicht erfüllt		4.3%	
ISCED 2			
Hauptschule, qualifizierter Hauptschule		15.3%	
Realschule		39.6%	
ISCED 3			
Facharbitur		14.0%	
Arbitur		15.7%	
ISCED 5			
Fachhochschule		6.0%	
Universität		5.1%	
Vienna			
ISCED 1			
Volksschule			0.9%
ISCED 2			
Hauptschule			15.9%
Sonderschule			-%
nur Schulpflicht erfüllt			0.9%
AHS -Unterstufe			8.2%
ISCED 3			
Polytechnische Schule			6.9%
AHS-Matura			14.7%
Berufsbildende Schule			15.1%
Berufsschule			29.3%
ISCED 5			
Fach-/Hochschule			8.2%
ISCED			
1 - primary level	7.0%	4.3%	0.9%
2 - lower secondary level	22.3%	54.9%	25.0%
3 - upper secondary level	56.2%	29.8%	62.9%
5 - tertiary level	14.5%	11.1%	8.2%

[57] Canada, Germany, Finland, France, Hungary, Italy, The Netherlands, Poland, Rumania, Spain, Slovakia, Czech Republic, United States.

[58] Egypt, Persia, Lebanon, Unknown.

[59] When one of both parents is born abroad, the ethnicity of respondent is considered foreign. Only when both parents are native, the respondents ethnicity is considered native – regardless of native country of respondent.

[60] International Standard Classification of Education

4.5 Characteristics by city

	Amsterdam N = 242	Hanover N = 235	Vienna N = 225	TOTAL N = 702
Gender				
male	67.2%	59.1%	61.2%	**62.6%**
female	32.8%	40.9%	38.8%	**37.4%**
Age				
range	14-43 years	16-41 years	15-31 years	**14-43 years**
mean	22.8	22.7	19.8	**21.8**
median	21.0	22.0	19.0	**21.0**
Nationality				
native	93.0%	95.3%	96.0%	**95.4%**
foreign	7.0%	4.7%	4.0%	**4.6%**
Ethnic background				
native	84.3%	78.7%	83.0%	**82.0%**
foreign	15.7%	21.3%	17.0%	**18.0%**
Living situation				
independent / alone	25.2%	28.9%	24.1%	**26.1%**
with partner, without child(ren)	14.0%	10.2%	8.5%	**11.0%**
with partner and child(ren)	3.3%	3.8%	2.2%	**3.1%**
single parent	-%	1.3%	-%	**0.4%**
with parents / caretakers	48.8%	32.8%	57.1%	**46.1%**
with others	5.4%	15.3%	4.9%	**8.6%**
other	3.3%	7.7%	3.1%	**4.7%**
Education				
primary level	7.0%	4.3%	0.4%	**4.0%**
lower secondary level	22.3%	54.9%	25.1%	**34.1%**
upper secondary level	56.2%	29.8%	65.9%	**50.4%**
tertiary level	14.5%	11.1%	8.5%	**11.4%**
Student				
yes	49.2%	34.0%	56.8%	**46.5%**
no	50.8%	66.0%	43.2%	**53.5%**
Employment				
fulltime employment (≥ 20 hrs/wk)	63.2%	50.2%	61.3%	**58.2%**
parttime employment (< 20 hrs/wk)	27.3%	18.3%	11.7%	**19.3%**
unemployed	9.5%	31.5%	27.0%	**22.5%**
Monthly income				
less than € 500	16.7%	30.9%	35.1%	**27.3%**
between € 500 and € 999	28.3%	33.5%	26.0%	**29.4%**
between € 1000 and € 1499	28.8%	23.6%	26.4%	**26.3%**
between € 1500 and € 1999	10.3%	7.3%	7.2%	**8.3%**
between € 2000 and € 2499	6.4%	1.7%	2.4%	**3.6%**
€ 2500 or more	9.4%	3.0%	2.9%	**5.2%**
Personality - Impulsive Sensation Seeking				
Males				
range	3-18 pts.	1-18 pts.	2-18 pts.	**1-18 pts.**
mean raw score	11.7 pts.	9.5 pts.	10.1 pts.	**10.5 pts.**
percentile[61]	57.7	39.2	39.2	**48.3**
Females				
range	1-18 pts.	1-19 pts.	1-19 pts.	**1-19 pts.**
mean raw score	11.4 pts.	9.2 pts.	9.9 pts.	**10.1 pts.**
percentile	68.7	44.8	53.1	**53.1**

[61] Percentage scoring less than the rounded value within a reference group of 2969 American university students. A percentile of 57.7 means that 57.7% of the male American university students scored less that 12 points (rounded value of 11.7) on the ImpSS.

4.6 Substance use by city

	Amsterdam N = 242	Hanover N = 235	Vienna N = 225	TOTAL N = 702
Tobacco				
lifetime	89.2%	92.1%	94.0%	**91.7%**
last year	80.1%	86.6%	87.2%	**84.5%**
last month	75.5%	83.7%	83.0%	**80.6%**
Alcohol				
lifetime	98.8%	98.7%	98.2%	**98.5%**
last year	95.8%	93.1%	93.6%	**94.2%**
last month	87.9%	90.9%	81.2%	**86.8%**
Cannabis				
lifetime	89.2%	88.1%	80.6%	**86.1%**
last year	78.8%	78.4%	72.7%	**76.7%**
last month	65.4%	66.5%	55.6%	**62.7%**
Ecstasy				
lifetime	77.2%	64.2%	67.0%	**69.6%**
last year	77.2%	64.2%	67.0%	**69.6%**
last month	56.4%	50.7%	46.8%	**51.5%**
Cocaine				
lifetime	47.7%	43.8%	41.7%	**44.5%**
last year	39.8%	31.9%	35.5%	**35.8%**
last month	22.4%	21.2%	23.7%	**22.4%**
Amphetamines				
lifetime	45.0%	59.8%	60.9%	**55.0%**
last year	27.9%	53.7%	54.9%	**45.0%**
last month	13.3%	38.9%	36.3%	**29.1%**
LSD				
lifetime	16.9%	37.7%	36.5%	**30.0%**
last year	6.6%	22.4%	21.8%	**16.6%**
last month	1.2%	4.4%	6.2%	**3.8%**
Mushrooms				
lifetime	51.2%	45.0%	42.3%	**46.3%**
last year	29.8%	30.6%	34.7%	**31.6%**
last month	9.1%	10.0%	14.1%	**11.0%**
Poppers				
lifetime	36.0%	33.8%	45.7%	**38.2%**
last year	19.8%	22.8%	24.5%	**22.3%**
last month	3.7%	10.1%	11.5%	**8.3%**
Herbal ecstasy / ephedra				
lifetime	53.7%	29.6%	27.1%	**37.3%**
last year	39.3%	20.4%	16.8%	**25.9%**
last month	17.4%	6.1%	7.0%	**10.3%**
GHB				
lifetime	24.1%	8.3%	12.6%	**15.2%**
last year	16.2%	5.2%	7.4%	**9.8%**
last month	8.3%	-%	3.7%	**4.1%**
Ketamine				
lifetime	6.2%	6.2%	11.7%	**7.9%**
last year	2.1%	2.6%	6.6%	**3.7%**
last month	0.4%	-%	3.8%	**1.3%**
Crack / basecoke				
lifetime	6.2%	7.3%	8.9%	**7.4%**
last year	2.1%	3.4%	7.9%	**4.4%**
last month	1.2%	0.9%	4.2%	**2.0%**
Heroin				
lifetime	1.7%	6.5%	15.0%	**7.4%**
last year	-%	2.2%	9.8%	**3.8%**
last month	-%	0.9%	4.7%	**1.7%**
Valium				
lifetime	4.6%	10.0%	8.0%	**7.4%**
last year	2.1%	4.8%	6.1%	**4.2%**
last month	0.4%	1.7%	2.8%	**1.6%**

4.7 Age of onset substance use by city

	Amsterdam N = 242	Hanover N = 235	Vienna N = 225	TOTAL N = 702
Tobacco				
range	6-28 years	4-26 years	5-22 years	**4-28 years**
mean	14.1	13.7	13.2	**13.7**
median	14.0	13.5	13.0	**14.0**
Alcohol				
range	8-21 years	6-25 years	6-19 years	**3-25 years**
mean	13.5	13.7	13.3	**13.5**
median	14.0	14.0	13.0	**14.0**
Cannabis				
range	11-30 years	9-26 years	11-25 years	**9-30 years**
mean	15.3	15.7	15.2	**15.4**
median	15.0	15.0	15.0	**15.0**
Ecstasy				
range	12-41 years	10-29 years	12-26 years	**10-41 years**
mean	18.4	18.0	16.6	**17.8**
median	17.0	17.0	16.0	**17.0**
Cocaine				
range	12-33 years	13-27 years	12-26 years	**12-33 years**
mean	18.8	18.6	17.5	**18.3**
median	18.0	18.0	17.0	**18.0**
Amphetamines				
range	12-35 years	11-29 years	12-26 years	**11-35 years**
mean	18.0	18.4	17.0	**17.8**
median	17.0	18.0	16.5	**17.0**
LSD				
range	12-34 years	11-28 years	13-26 years	**11-34 years**
mean	18.6	18.0	17.4	**17.9**
median	18.0	18.0	17.0	**17.0**
Mushrooms				
range	11-35 years	10-34 years	12-28 years	**10-35 years**
mean	18.3	18.6	17.4	**18.1**
median	18.0	18.0	17.0	**18.0**
Poppers				
range	11-36 years	12-33 years	12-26 years	**11-36 years**
mean	18.8	18.0	16.5	**17.8**
median	18.0	18.0	16.0	**17.0**
Herbal ecstasy / ephedra				
range	12-38 years	13-34 years	14-27 years	**12-34 years**
mean	19.4	19.6	18.3	**19.1**
median	18.0	19.0	17.0	**18.0**
GHB				
range	13-36 years	15-21 years	11-30 years	**11-36 years**
mean	21.4	18.2	19.4	**20.4**
median	20.0	19.0	18.0	**19.0**
Ketamine				
range	16-28 years	15-21 years	12-25 years	**12-28 years**
mean	20.1	17.9	18.1	**18.8**
median	19.0	18.0	18.0	**18.0**
Crack / basecoke				
range	14-25 years	14-25 years	15-20 years	**14-25 years**
mean	18.9	19.1	17.1	**18.4**
median	18.5	19.0	17.0	**18.0**
Heroin				
range	18-26 years	13-30 years	15-25 years	**13-30 years**
mean	21.3	19.9	17.8	**18.7**
median	20.5	18.0	17.0	**18.0**
Valium				
range	16-33 years	12-30 years	15-27 years	**12-33 years**
mean	21.6	19.5	18.9	**19.7**
median	21.0	18.0	17.0	**18.0**

4.8 Party behaviour by city

	Amsterdam N = 242	Hanover N = 235	Vienna N = 225	TOTAL N = 702
Frequency of going out (last month)[62]				
none	7.9%	7.3%	8.0%	**7.7%**
1 time	11.2%	9.4%	8.0%	**9.6%**
2-3 times	35.1%	27.8%	29.8%	**31.0%**
4-9 times	29.8%	34.6%	35.6%	**33.2%**
10 times or more	16.1%	20.9%	18.7%	**18.5%**
Age of first party visit				
range	11-41 years	10-32 years	12-25 years	**10-41 years**
mean	17.9	18.0	16.3	**17.4**
median	17.0	17.0	16.0	**17.0**
Party frequency (last year)				
Large-scale parties				
mean	6.8	7.2	11.0	**8.3**
median	5.0	4.0	5.0	**5.0**
Small-scale parties				
mean	12.9	24.3	11.7	**16.3**
median	6.0	20.0	5.0	**10.0**
Clubs				
mean	13.2	24.7	25.6	**21.0**
median	6.0	20.0	10.0	**10.0**

[62] excl. party of research

4.9 Characteristics by group

	Testers N = 225	Non-Testers N = 261	*TE - NT*	Non-Users N = 216	*ALL*
Gender					
male	68.8%	70.1%	*n.s.*	47.0%	****
female	31.3%	29.9%		53.0%	
Age					
range	15-42 years	14-43 years		16-41 years	
mean	22.2	21.6	*n.s.*	21.6	*n.s.*
median	21.0	21.0		21.0	
Nationality					
native	93.7%	95.8%	*n.s.*	96.7%	*n.s.*
foreign	6.3%	4.2%		3.3%	
Ethnic background					
native	75.9%	84.3%	*	85.6%	*
foreign	24.1%	15.7%		14.4%	
Living situation					
independent / alone	29.9%	23.8%	*n.s.*	25.0%	*n.s.*
with partner, without child(ren)	14.3%	10.3%		8.3%	
with partner and child(ren)	4.0%	3.1%		2.3%	
single parent	0.4%	0.4%		0.5%	
with parents / caretakers	39.3%	51.3%		46.8%	
with others	8.0%	7.3%		10.6%	
other	4.0%	3.8%		6.5%	
Education[9]					
primary level	3.6%	5.0%	*n.s.*	3.3%	*
lower secondary level	33.5%	41.0%		26.5%	
upper secondary level	49.1%	46.0%		57.2%	
tertiary level	13.8%	8.0%		13.0%	
Student					
yes	46.0%	42.7%	*n.s.*	51.6%	*n.s.*
no	54.0%	57.3%		48.4%	
Employment					
fulltime employment	60.7%	67.7%	*n.s.*	44.2%	****
parttime employment	18.3%	15.8%		24.7%	
unemployed	21.0%	16.5%		31.2%	
Monthly income					
less than € 500	21.3%	24.4%	*	36.8%	****
between € 500 and € 999	28.9%	31.1%		27.8%	
between € 1000 and € 1499	24.6%	30.3%		23.0%	
between € 1500 and € 1999	14.7%	5.9%		4.8%	
between € 2000 and € 2499	4.7%	3.9%		1.9%	
€ 2500 or more	5.7%	4.3%		5.7%	
Impulsive Sensation Seeking					
Males					
range	1-18 pts.	2-18 pts.		1-17 pts.	
mean raw score	11.2	10.8	*n.s.*	8.9	****
Females					
range	1-19 pts.	1-19 pts.		1-17 pts.	
mean raw score	10.9	11.0	*n.s.*	9.0	****

4.10 Substance use by group

	Testers N = 225	Non-Testers N = 261	*TE - NT*	Non-Users N = 216	*ALL*
Tobacco					
lifetime	95.0%	95.0%	*n.s.*	84.4%	****
last year	88.3%	91.6%	*n.s.*	71.6%	****
last month	85.6%	89.3%	*n.s.*	64.5%	****
Alcohol					
lifetime	97.7%	98.9%	*n.s.*	99.1%	*n.s.*
last year	93.1%	94.4%	*n.s.*	94.8%	*n.s.*
last month	83.9%	88.0%	*n.s.*	88.3%	*n.s.*
Cannabis					
lifetime	95.9%	94.3%	*n.s.*	65.2%	****
last year	86.2%	86.4%	*n.s.*	52.9%	****
last month	75.2%	72.3%	*n.s.*	35.7%	****
Ecstasy					
lifetime	100%	100%	*n.s.*	-%	****
last year	100%	100%	*n.s.*	-%	****
last month	80.5%	68.2%	***	-%	****
Cocaine					
lifetime	67.5%	58.6%	*	5.7%	****
last year	56.1%	46.4%	*	2.8%	****
last month	35.8%	28.9%	*n.s.*	1.9%	****
Amphetamines					
lifetime	75.0%	77.4%	*n.s.*	8.5%	****
last year	63.9%	62.3%	*n.s.*	3.8%	****
last month	43.1%	38.9%	*n.s.*	2.4%	****
LSD					
lifetime	45.3%	39.5%	*n.s.*	3.8%	****
last year	22.2%	24.4%	*n.s.*	0.9%	****
last month	4.7%	6.0%	*n.s.*	0.5%	**
Mushrooms					
lifetime	63.7%	61.7%	*n.s.*	9.4%	****
last year	42.8%	43.2%	*n.s.*	4.7%	****
last month	13.5%	15.4%	*n.s.*	2.4%	****
Poppers					
lifetime	51.2%	52.3%	*n.s.*	8.5%	****
last year	28.7%	31.6%	*n.s.*	4.7%	****
last month	10.0%	12.8%	*n.s.*	0.9%	****
Herbal ecstasy / ephedra					
lifetime	49.5%	50.6%	*n.s.*	8.5%	****
last year	33.9%	33.6%	*n.s.*	7.5%	****
last month	16.1%	10.6%	*n.s.*	3.8%	****
GHB					
lifetime	25.5%	18.7%	*n.s.*	-%	****
last year	13.9%	14.2%	*n.s.*	-%	****
last month	6.5%	5.6%	*n.s.*	-%	****
Ketamine					
lifetime	9.4%	13.2%	*n.s.*	-%	****
last year	4.7%	5.6%	*n.s.*	-%	***
last month	1.4%	2.3%	*n.s.*	-%	*n.s.*
Crack / basecoke					
lifetime	9.7%	10.1%	*n.s.*	1.9%	****
last year	5.1%	5.6%	*n.s.*	1.9%	*n.s.*
last month	2.3%	2.6%	*n.s.*	0.9%	*n.s.*
Heroin					
lifetime	8.3%	11.2%	*n.s.*	2.4%	****
last year	3.2%	6.4%	*n.s.*	1.4%	*
last month	0.9%	3.7%	*	0.0%	***
Valium					
lifetime	9.7%	9.4%	*n.s.*	2.8%	**
last year	4.2%	6.0%	*n.s.*	2.4%	*n.s.*
last month	0.9%	2.6%	*n.s.*	0.9%	*n.s.*

4.11 Age of onset substance use by group

	Testers N = 225	Non-Testers N = 261	*TE - NT*	Non-Users N = 216	*ALL*
Tobacco					
range	6-22 years	4-28 years	*n.s.*	5-25 years	*n.s.*
mean	13.6	13.5		14.0	
median	14.0	13.0		14.0	
Alcohol					
range	7-25 years	6-19 years	*n.s.*	7-25 years	*
mean	13.5	13.3		13.8	
median	14.0	13.0		14.0	
Cannabis					
range	9-26 years	9-30 years	*n.s.*	11-30 years	*
mean	15.3	15.1		15.9	
median	15.0	15.0		15.0	
Ecstasy					
range	11-41 years	10-35 years	*n.s.*	-	
mean	17.7	17.7		-	
median	17.0	17.0		-	
Cocaine					
range	12-33 years	13-32 years	*n.s.*	15-22 years	*n.s.*
mean	18.3	18.5		17.6	
median	18.0	18.0		17.0	
Amphetamines					
range	11-35 years	12-30 years	*n.s.*	14-27 years	*n.s.*
mean	17.5	18.0		18.3	
median	17.0	17.0		18.0	
LSD					
range	11-34 years	12-26 years	*n.s.*	15-22 years	*n.s.*
mean	18.1	17.5		17.9	
median	17.0	17.0		18.0	
Mushrooms					
range	12-35 years	10-30 years	*n.s.*	15-34 years	*n.s.*
mean	18.3	17.8		19.0	
median	18.0	17.0		18.0	
Poppers					
range	12-36 years	11-30 years	*n.s.*	12-33 years	*n.s.*
mean	17.6	17.7		17.9	
median	17.0	17.0		17.0	
Herbal ecstasy / ephedra					
range	13-38 years	12-33 years	*n.s.*	15-34 years	*n.s.*
mean	19.2	19.2		19.1	
median	18.0	18.5		18.0	
GHB					
range	15-36 years	11-32 years	*n.s.*	-	
mean	20.2	20.7		-	
median	19.0	19.0		-	
Ketamine					
range	15-28 years	12-23 years	*n.s.*	-	
mean	19.5	18.0		-	
median	18.0	18.0		-	
Crack / basecoke					
range	14-25 years	14-23 years	*n.s.*	15-18 years	*n.s.*
mean	18.4	18.6		16.3	
median	18.0	19.0		16.0	
Heroin					
range	15-30 years	15-27 years	*n.s.*	13-24 years	*n.s.*
mean	19.0	18.5		18.0	
median	18.0	18.0		18.0	
Valium					
range	12-33 years	16-30 years	*n.s.*	18-25 years	*n.s.*
mean	19.4	19.5		21.4	
median	17.0	18.0		22.0	

4.12 Party behaviour by group

	Testers N = 225	Non-Testers N = 261	*TE - NT*	Non-Users N = 216	*ALL*
Frequency of going out (last month)[63]					
none	7.1%	8.0%	*n.s.*	7.9%	*
1 time	11.1%	10.7%		6.5%	
2-3 times	36.9%	28.7%		27.4%	
4-9 times	28.4%	30.3%		41.9%	
10 times or more	16.4%	22.2%		16.3%	
Age of first party visit					
range	11-41 years	10-35 years		11-32 years	
mean	17.4	17.2	*n.s.*	17.7	*n.s.*
median	17.0	16.0		17.0	
Party frequency (last year)					
Large-scale parties					
mean	9.8	8.4	*n.s.*	6.6	*
median	6.0	5.0		3.0	
Small-scale parties					
mean	18.4	17.7	*n.s.*	12.3	**
median	10.0	10.0		6.0	
Clubs					
mean	21.5	18.0	*n.s.*	21.0	*n.s.*
median	10.0	10.0		10.0	

[63] excl. party of research

4.13 Testing

	Testers N = 225	Non-Testers N = 261	*TE - NT*
Frequency of pill-testing			
never	35.9%	~	
seldom	29.1%	~	
sometimes	15.5%	~	
often	11.4%	~	
always	8.2%	~	
Why do you have your ecstasy tested?			
concern of health	50.0%	~	
want to know what it contains	85.1%	~	
because of warnings	60.4%	~	
want to know if dealer can be trusted	34.4%	~	
Who among your friends have their ecstasy tested?			
all of them	5.0%	3.8%	****
most of them (more than half)	13.1%	3.1%	
about half of them	8.1%	4.2%	
a few (less than half)	46.4%	30.4%	
no one	27.5%	58.5%	
Testing methods used			
test service	65.9%	~	
test service from another institution	23.5%	~	
test service at a party in this country	20.3%	~	
test service at a party abroad	6.9%	~	
tested by someone else at testservice	12.4%	13.1%	*n.s.*
tested myself (Easytest, EZ test)	15.7%	8.9%	*
tested by a friend	9.2%	10.4%	*n.s.*
tested by a dealer	7.9%	7.7%	*n.s.*
Other methods used			
won't use it	21.4%	~	
just using	56.6%	55.6%	*n.s.*
asking a friend	69.7%	71.8%	*n.s.*
asking a dealer	54.5%	62.2%	*n.s.*
using a little and awaiting the effect	51.4%	49.8%	*n.s.*
looking up the logo (flyer/internet)	26.0%	16.2%	**
looking at the price (expensive = good)	~	5.4%	

4.14 Not Testing

	Non-Testers N = 261
Reasons for not testing	
I trust the person I buy my ecstasy from	57.0%
I haven't come around to it yet	48.0%
There is no testing facility in my neighbourhood	36.3%
I don't know where I can find the test service	35.9%
I'm afraid I cannot remain anonymous	26.4%
I will use it anyway, whatever the test result	25.7%
It's exciting not to know exactly what effect you'll get	25.1%
I have no faith in the test	15.2%
My friends have my ecstasy tested at the test service	14.1%
I dislike prevention / aid workers	12.6%
The testing takes too long	11.4%
I don't believe the stories about bad pills	11.3%

Tables chapter 5 – Extending the reach of prevention

5.1 Use of Information sources

	Testers N = 225	Non-Testers N = 261	*TE - NT*	Non-Users N = 216	*ALL*

Use of information sources[64]					
non-using friends	1.7	1.6	*n.s.*	1.9	*
using friends	3.7	3.6	*n.s.*	2.6	****
newspapers	2.4	2.4	*n.s.*	2.7	*
lifestyle magazines	2.0	1.9	*n.s.*	2.1	*n.s.*
television	2.1	2.0	*n.s.*	2.6	****
internet	2.7	2.4	*n.s.*	2.2	***
educational flyers	2.8	2.4	**	2.3	****
education at parties	2.7	2.1	****	1.8	****
pill-testing service	3.0	1.7	****	1.5	****
Use of information sources[65]					
non-using friends	11.9%	9.4%	*n.s.*	11.7%	*n.s.*
using friends	65.1%	62.7%	*n.s.*	30.7%	****
newspapers	22.5%	20.4%	*n.s.*	25.5%	*n.s.*
lifestyle magazines	13.3%	10.2%	*n.s.*	16.1%	*n.s.*
television	16.4%	9.0%	*	26.4%	****
internet	33.8%	27.2%	*n.s.*	17.5%	****
educational flyers	31.6%	23.5%	*n.s.*	20.7%	*
education at parties	28.3%	15.5%	****	11.4%	****
pill-testing service	39.1%	10.7%	****	6.2%	****

5.2 Relative use of Information sources[66]

	Testers N = 225	*within group*	**Non-Testers N = 261**	*within group*	**Non-Users N = 216**	*within group*
Relative use of sources						
non-using friends	-1.3	****	-0.1	*n.s.*	0.4	****
using friends	0.6	****	1.9	****	1.0	****
newspapers	-0.6	****	0.7	****	1.2	****
lifestyle magazines	-1.1	****	0.1	*n.s.*	0.6	****
television	-0.9	****	0.3	***	1.0	****
internet	-0.4	***	0.7	****	0.7	****
educational flyers	-0.2	*	0.7	****	0.8	****
education at parties	-0.3	****	0.4	****	0.3	****
pill-testing service *(reference)*	-		-		-	

[64] Mean scale scores: 1 = no use; 2 = a little use; 3 = in between; 4 = much use; 5 = very much use.

[65] Percentage scoring (very) much.

[66] Figures shown are the mean difference between the score on 'pill-testing' and other sources within each sub-group (paired t-test). A negative figure means that, within the subgroup, respondents make more use of pill-testing as a source of information than the source concerned.

5.3 Regression – Use of information sources[67]

	non-using friends	using friends	newspapers	lifestyle magazines	television	internet	educational flyers	education at parties	pill-testing service
TE versus NT	**-**	**-**	**-**	**-**	**-**	**-**	**1.45**	**2.10**	**7.03**
NT versus NU	**0.51**	**4.76**	**-**	**0.68**	**0.51**	**-**	**-**	**1.68**	**1.55**
Age	0.94	0.93	-	-	-	-	1.05	-	-
Personality - ImpSS	-	-	-	-	0.96	-	-	-	-
Gender									
male	-	-	0.52	-	0.54	-	-	-	-
female *(reference)*									
Ethnic background									
foreign	-	-	-	-	-	-	-	-	-
native *(reference)*									
Education									
primary	-	-	-	-	-	-	-	-	-
lower secondary	-	-	-	-	-	-	-	-	-
upper secondary	-	-	-	-	-	-	-	-	-
tertiary *(reference)*									
City									
Amsterdam	-	-	-	-	-	-	-	0.62	0.52
Hanover	-	-	0.63	0.66	0.46	-	0.44	0.44	0.38
Vienna *(reference)*									

5.4 Partial correlation of testing frequency with use of information sources[68]

	Partial correlation (Testers N = 225)	*significance*
Use of information sources		
non-using friends	-	*n.s.*
using friends	-.1605	*
newspapers	-	*n.s.*
lifestyle magazines	-	*n.s.*
television	-	*n.s.*
internet	.2167	**
educational flyers	.2167	**
education at parties	-	*n.s.*
pill-testing service	.2094	**

[67] Ordinal regression. Presented are the odds ratios for the variables that significantly contribute to the model ($p < 0.05$). An odds ratio between 0 and 1 implies that, compared to the reference category, the odds is lower. An odds ratio of 0.5 for males means that, compared to females, males make half as much use of an information source. In other words, females make twice as much use of the information source than males.

[68] Controlled for age.

5.5 Contact with prevention and treatment

	Testers N = 225	Non-Testers N = 261	*TE - NT*	Non-Users N = 216	*ALL*
Would you contact drug prevention without testing?					
yes	42.1%	~		~	
no	57.9%	~		~	
Would you test when costs were involved?					
yes	36.8%	~		~	
no	63.2%	~		~	
Have you ever contacted drug care services besides the testservice?					
yes	18.8%	19.2%	*n.s.*	7.9%	****
no	81.3%	80.8%		92.1%	

5.6 Regression – Contact with prevention and treatment[69]

	Have you ever contacted drug care services besides the testservice?
TE versus NT	-
NT versus NU	2.83
Age	1.06
Personality - ImpSS	-
Gender	
male	-
female *(reference)*	
Ethnic background	
foreign	-
native *(reference)*	
Education	
primary	-
lower secondary	-
upper secondary	-
tertiary *(reference)*	
City	
Amsterdam	-
Hanover	-
Vienna *(reference)*	

[69] Logistic regression. Presented are the odds ratios for the variables that significantly contribute to the model ($p < 0.05$). An odds ratio between 0 and 1 implies that, compared to the reference category, the odds is lower.

Tables chapter 6 – Acceptance of prevention

6.1 Perceived credibility of information sources

	Testers N = 225	Non-Testers N = 261	*TE - NT*	Non-Users N = 216	*ALL*
Perceived credibility of sources[70]					
non-using friends	1.4	1.4	*n.s.*	1.8	****
using friends	2.4	2.5	*n.s.*	2.1	****
newspapers	1.7	1.7	*n.s.*	2.0	****
lifestyle magazines	1.6	1.5	*n.s.*	1.8	****
television	1.7	1.6	*n.s.*	1.9	****
internet	2.0	1.9	*	1.9	*n.s.*
educational flyers	2.4	2.2	***	2.3	*
education at parties	2.4	2.1	****	2.1	****
pill-testing service	2.6	2.2	****	2.2	****
Perceived credibility of sources[71]					
non-using friends	6.9%	10.7%	*n.s.*	20.4%	****
using friends	50.0%	54.2%	*n.s.*	36.5%	****
newspapers	12.4%	12.0%	*n.s.*	25.1%	****
lifestyle magazines	9.5%	7.9%	*n.s.*	16.7%	**
television	11.9%	10.0%	*n.s.*	26.1%	****
internet	29.2%	22.8%	*n.s.*	19.0%	*
educational flyers	50.2%	38.5%	*	44.3%	*
education at parties	50.2%	39.3%	*	36.0%	**
pill-testing service	66.7%	45.9%	****	38.4%	****

6.2 Relative credibility of Information sources[72]

	Testers N = 225	*within group*	Non-Testers N = 261	*within group*	Non-Users N = 216	*within group*
Credibility of information sources						
non-using friends	-1.1	****	-0.8	****	-0.4	****
using friends	-0.2	**	0.2	****	-0.1	*n.s.*
newspapers	-0.9	****	-0.5	****	-0.2	***
lifestyle magazines	-1.0	****	-0.7	****	-0.4	****
television	-0.9	****	-0.6	****	-0.2	****
internet	-0.5	****	-0.3	****	-0.3	****
educational flyers	-0.2	****	-0.1	*n.s.*	0.1	*n.s.*
education at parties	-0.2	****	-0.1	****	-0.0	*n.s.*
pill-testing service *(reference)*	-		-			

[70] Mean scale scores: 1 = unreliable; 2 = in between; 3 = reliable.

[71] Percentage scoring reliable.

[72] Figures shown are the mean difference between the score on 'pill-testing' and other sources within each subgroup (paired t-test). A negative figure means that, within the subgroup, the reliability of pill-testing is considered to be higher than the source concerned.

6.3 Regression – Perceived credibility of information sources[73]

	non-using friends	using friends	newspapers	lifestyle magazines	television	internet	educational flyers	education at parties	pill-testing service
TE versus NT	-	-	-	-	-	1.62	1.75	1.97	3.00
NT versus NU	0.34	2.61	0.50	0.55	0.43	-	-	-	-
Age	-	-	-	-	-	-	1.05	1.03	1.04
Personality - ImpSS	-	-	0.91	0.93	0.93	-	0.94	-	0.95
Gender									
male	-	-	0.59	0.65	0.44	0.67	0.53	0.62	0.61
female *(reference)*									
Ethnic background									
foreign	-	-	-	0.64	-	-	-	-	-
native *(reference)*									
Education									
primary	-	-	-	-	-	-	-	-	-
lower secondary	-	-	1.84	-	-	-	-	-	-
upper secondary	-	-	1.75	-	-	-	-	-	-
tertiary *(reference)*									
City									
Amsterdam	-	-	-	2.75	1.75	-	1.60	-	-
Hanover	-	1.62	-	-	0.44	-	0.49	0.52	-
Vienna *(reference)*									

6.4 Partial correlation of testing frequency with perceived credibility of information sources[74]

	Partial correlation (Testers N = 225)	*significance*
Credibility of information sources		
non-using friends	-	*n.s.*
using friends	-.1608	*
newspapers	-	*n.s.*
lifestyle magazines	-	*n.s.*
television	-	*n.s.*
internet	-	*n.s.*
educational flyers	.1890	**
education at parties	.1673	*
pill-testing service	-	*n.s.*

[73] Ordinal regression. Presented are the odds ratios for the variables that significantly contribute to the model ($p < 0.05$). An odds ratio between 0 and 1 implies that, compared to the reference category, the odds is lower.

[74] Controlled for age.

6.5 Attitude towards information sources

	Testers N = 225	Non-Testers N = 261	*TE - NT*	Non-Users N = 216	*ALL*
Statements[75]					
"I have all the information I need about ecstasy."	3.4	3.3	*n.s.*	3.2	*n.s.*
"My friends tell me everything I need to know about ecstasy."	2.8	2.9	*n.s.*	2.3	****
"The best information about ecstasy comes from people who've used it."	3.7	3.9	*	3.2	****
"People who tell you that you shouldn't use ecstasy just want to spoil your fun."	2.0	1.8	*	1.6	***
"Newspapers and TV programmes always exaggerate the bad sides of ecstasy."	3.5	3.3	*n.s.*	2.8	****
"By testing ecstasy you get objective information."	3.9	3.8	*n.s.*	2.8	****
Statements[76]					
"I have all the information I need about ecstasy."	51.1%	45.3%	*n.s.*	45.1%	*n.s.*
"My friends tell me everything I need to know about ecstasy."	28.3%	30.5%	*n.s.*	17.2%	***
"The best information about ecstasy comes from people who've used it."	61.1%	70.8%	*	45.8%	****
"People who tell you that you shouldn't use ecstasy just want to spoil your fun."	10.5%	8.2%	*n.s.*	5.6%	*n.s.*
"Newspapers and TV programmes always exaggerate the bad sides of ecstasy."	48.6%	45.5%	*n.s.*	27.2%	****
"By testing ecstasy you get objective information."	67.3%	65.1%	*n.s.*	34.9%	****

[75] Mean scale scores: 1 = strongly disagree; 2 = disagree; 3 = in between; 4 = agree; 5 = strongly agree.

[76] Percentage scoring (strongly) agree.

6.6 Regression – Attitude towards information sources[77]

	"I have all the information I need about ecstasy."	"My friends tell me everything I need to know about ecstasy."	"The best information about ecstasy comes from people who've used it."	"People who tell you that you shouldn't use ecstasy just want to spoil your fun."	"Newspapers and TV programmes always exaggerate the bad sides of ecstasy."	"By testing ecstasy you get objective information."
TE versus NT	-	-	0.70	1.49	-	-
NT versus NU	-	2.34	2.69	-	1.82	3.78
Age	-	0.95	0.94	-	-	-
Personality - ImpSS	-	-	1.08	1.11	1.07	-
Gender						
male	-	-	-	-	-	-
female *(reference)*						
Ethnic background						
foreign	-	-	-	-	-	1.48
native *(reference)*						
Education						
primary	0.39	-	-	-	-	-
lower secondary	0.48	-	-	-	-	-
upper secondary	-	-	-	-	-	-
tertiary *(reference)*						
City						
Amsterdam	-	1.58	0.68	-	-	-
Hanover	-	-	-	-	-	-
Vienna *(reference)*						

6.7 Partial correlation of testing frequency with attitude towards information sources[78]

Statements[79]	**Partial correlation (Testers N = 225)**	*significance*
"I have all the information I need about ecstasy."	.1489	*
"My friends tell me everything I need to know about ecstasy."	-	*n.s.*
"The best information about ecstasy comes from people who've used it."	-	*n.s.*
"People who tell you that you shouldn't use ecstasy just want to spoil your fun."	-	*n.s.*
"Newspapers and TV programmes always exaggerate the bad sides of ecstasy."	-	*n.s.*
"By testing ecstasy you get objective information."	-	*n.s.*

[77] Ordinal regression. Presented are the odds ratios for the variables that significantly contribute to the model ($p < 0.05$). An odds ratio between 0 and 1 implies that, compared to the reference category, the odds is lower.

[78] Controlled for age.

[79] Mean scale scores: 1 = strongly disagree; 2 = disagree; 3 = in between; 4 = agree; 5 = strongly agree.

6.8 Services offered – importance and satisfaction

	Testers N = 225
Pill-testing service	
very important	55.4%
important	34.8%
unimportant	8.0%
very unimportant	1.8%
Information and advise from the service	
very important	63.8%
important	28.6%
unimportant	4.9%
very unimportant	2.7%
Personal communication with the service	
very important	53.6%
important	36.6%
unimportant	9.4%
very unimportant	0.4%

	Testers N = 225
Pill-testing service	
very satisfied	44.7%
satisfied	42.9%
unsatisfied	11.1%
very unsatisfied	1.4%
Information and advise from the service	
very satisfied	45.7%
satisfied	48.9%
unsatisfied	5.0%
very unsatisfied	0.5%
Personal communication with the service	
very satisfied	35.3%
satisfied	45.7%
unsatisfied	3.6%
very unsatisfied	0.9%
not applicable	14.5%

6.9 Partial correlation of testing frequency with evaluation of test services[80]

	Partial correlation (Testers N = 225)	*significance*
Importance		
pill-testing service	.2506	**
information and advise	-	*n.s.*
personal communication	-	*n.s.*
Satisfaction		
pill-testing service	.1660	*
information and advise	-	*n.s.*
personal communication[81]	-	*n.s.*

[80] Controlled for age.

[81] The “not applicable” category is omitted from the analysis.

Tables chapter 7 – Knowledge and party behaviour

7.1 Knowledge - items[82]

	Testers N = 225	Non-Testers N = 261	*TE - NT*	Non-Users N = 216	*ALL*
"If you use ecstasy on a regular basis, you need to take more and more to keep experiencing its psychedelic effects."					
yes	71.9	66.1	*n.s.*	50.5	****
no	22.8	24.9		15.3	
don't know	5.4	8.9		34.3	
"If you stop using ecstasy you'll get physical withdrawal symptoms."					
yes	22.5	26.3	*n.s.*	42.6	****
no	62.6	55.7		24.5	
don't know	14.9	18.0		32.9	
"You can become psychologically addicted to ecstasy."					
yes	75.3	76.9	*	74.8	****
no	19.7	13.3		7.0	
don't know	4.9	9.8		18.2	
"A dose of 500 mg ecstasy (MDMA) implies a very large possibility of death."					
yes	65.0	44.7	****	28.4	****
no	13.0	9.0		7.4	
don't know	22.0	46.3		64.2	
"Most ecstasy is no true ecstasy (MDMA)."					
yes	58.1	55.3	*	38.1	****
no	22.5	16.5		11.2	
don't know	19.4	28.2		50.7	
"Ecstasy is often diluted with other drugs."					
yes	65.9	61.6	*	27.0	****
no	17.5	12.9		10.2	
don't know	16.6	25.5		62.8	
"Ecstasy works for four to six hours."					
yes	71.3	67.6	*n.s.*	32.6	****
no	22.9	23.8		13.5	
don't know	5.8	8.6		54.0	
"The logo shows you whether or not your pill is any good."					
yes	15.8	16.8	*	9.3	****
no	77.5	68.8		47.0	
don't know	6.8	14.5		43.7	
"The Easytest or EZ test shows you how much MDMA your ecstasy contains."					
yes	44.6	39.8	****	29.4	****
no	29.3	16.5		6.5	
don't know	26.1	43.7		64.0	
Which dose of MDMA is 'right' for someone with a body-weight of 70 kg?					
50 mg MDMA	32.0	18.8	****	8.3	****
100 mg MDMA	36.4	27.7		5.6	
200 mg MDMA	3.1	1.9		0.5	
don't know	28.4	51.5		85.6	
How regular do you think you can use ecstasy without it loosing its typical effect?					
once a week	13.8	18.8	*n.s.*	10.2	****
once every 2-3 weeks	24.4	21.1		9.7	
less than once a month	45.8	42.9		17.1	
don't know	16.0	17.2		63.0	

[82] Correct answers to the questions are underlined.

7.2 Knowledge – score

	Testers N = 225	Non-Testers N = 261	*TE - NT*	Non-Users N = 216	*ALL*
Knowledge					
Mean number of correct answers	5.7	4.9	****	3.0	****
Mean number of incorrect answers	2.0	1.9	*n.s.*	1.5	****
Mean number of 'don't knows'	1.3	2.2	****	4.6	****

7.3 Party behaviour – dancing and resting

	Testers N = 225	Non-Testers N = 261	*TE - NT*	Non-Users N = 216	*ALL*
With whom do you usually go to a party?					
alone	2.2%	3.1%	*n.s.*	4.4%	*
with partner	13.8%	8.5%		11.7%	
with a friend	18.3%	16.7%		25.7%	
with a group of friends	65.6%	71.7%		58.3%	
How long do you usually stay at a party?					
range	2-30 hours	1-20 hours		2-30 hours	
mean	9.2	8.7	*n.s.*	7.3	****
median	8.0	8.0		6.0	
Do you go to afterparties?					
never	15.7%	17.1%	*n.s.*	38.7%	****
seldom	26.9%	26.8%		31.9%	
sometimes	30.0%	30.4%		21.1%	
often	15.7%	14.8%		4.9%	
always	11.7%	10.9%		3.4%	
How long do you usually dance at a party?					
all night	15.2%	13.2%	*n.s.*	12.7%	*n.s.*
the larger part of the night	39.0%	34.2%		39.5%	
about half the night	27.4%	34.6%		25.4%	
the smaller part of the night	15.2%	14.8%		17.6%	
(almost) never	3.1%	3.1%		4.9%	
How often do you sit down in a quiet place during the party?					
not once	5.8%	6.6%	*n.s.*	2.4%	*
once or twice a night	31.7%	27.1%		42.0%	
three or four times a night	33.5%	31.8%		32.7%	
five of six times a night	16.5%	15.9%		12.7%	
more than six times a night	12.5%	18.6%		10.2%	

7.4 Party behaviour – drinking and eating[83]

	Testers N = 225	Non-Testers N = 261	*TE - NT*	Non-Users N = 216	*ALL*
Alcohol					
percentage	51.8 %	57.4 %	*n.s.*	62.3 %	*n.s.*
range	1-30 glasses	1-40 glasses		1-30 glasses	
mean	6.9	7.6	*n.s.*	5.3	*n.s.*
median	5.0	5.0		4.0	
Water, soda or fruit juice					
percentage	86.2 %	81.5 %	*n.s.*	75.0 %	*
range	1-30 glasses	1-100 glasses		1-20 glasses	
mean	7.9	7.9	*n.s.*	4.1	****
median	7.0	5.0		3.0	
Sports drinks (e.g. AA, Isostar)					
percentage	11.2 %	13.7 %	*n.s.*	10.8 %	*n.s.*
range	1-15 glasses	1-10 glasses		1-6 glasses	
mean	3.1	2.7	*n.s.*	2.9	*n.s.*
median	2.0	2.0		2.5	
Energy drinks (e.g. Red bull)					
percentage	32.9 %	43.4 %	*	45.1 %	*
range	1-10 glasses	1-20 glasses		1-32 glasses	
mean	3.0	3.5	*	3.8	*
median	2.0	3.0		2.5	
Do you usually eat something at a party?					
yes	14.7%	22.7%	*	33.0%	****
no	85.3%	77.3%		67.0%	

7.5 Party behaviour – substance use

	Testers N = 225	Non-Testers N = 261	*TE - NT*	Non-Users N = 216	*ALL*
Substances[84]					
ecstasy	3.9	3.8	*n.s.*	1.0	****
cannabis	3.1	3.1	*n.s.*	2.0	****
amphetamines	2.6	2.6	*n.s.*	1.1	****
cocaine	1.9	1.8	*n.s.*	1.1	****
mushrooms	1.4	1.5	*n.s.*	1.1	****
poppers	1.3	1.4	*n.s.*	1.0	****
LSD	1.4	1.5	*n.s.*	1.0	****
herbal ecstasy / ephedra	1.5	1.6	*n.s.*	1.1	****
GHB	1.2	1.2	*n.s.*	1.0	****
ketamine	1.1	1.1	*n.s.*	1.0	**
Combinations with ecstasy[85]					
alcohol	2.6	2.7	*n.s.*	~	
cannabis	3.0	2.9	*n.s.*	~	
amphetamines	2.4	2.4	*n.s.*	~	
cocaine	1.8	1.7	*n.s*	~	

[83] Range, mean and median number of glasses refer only to those who consume the drink concerned.

[84] Mean scale scores: 1 = never; 2 = seldom; 3 = sometimes; 4 = often; 5 = always.

[85] Combination is defined as use of the substance simultaneous, or a few hours before or after ecstasy use. Mean scale scores: 1 = never; 2 = seldom; 3 = sometimes; 4 = often; 5 = always.

7.6 Party behaviour – prepare and repair

	Testers N = 225	Non-Testers N = 261	*TE - NT*	Non-Users N = 216	*ALL*
Preparations with last ecstasy use					
feeling fit beforehand	80.0%	77.7%	*n.s.*	~	
having the next day off	81.0%	75.8%	*n.s.*	~	
not drinking alcohol	56.6%	57.4%	*n.s.*	~	
not using any drugs, beside ecstasy	34.4%	44.5%	*	~	
letting friends know you used ecstasy	79.2%	83.5%	*n.s.*	~	
not driving home yourself	80.5%	84.4%	*n.s.*	~	
How long do you usually sleep after the party ?					
range	0-24 hours	0-24 hours		0-20 hours	
mean	8.2	8.1	*n.s.*	8.1	*n.s.*
median	8.0	8.0		8.0	
How much do you eat the day after the party?					
much more than usual	4.5%	5.1%	*n.s.*	4.9%	****
a little more than usual	9.8%	8.9%		14.6%	
as usual	23.2%	17.5%		57.1%	
less than usual	35.7%	38.9%		21.5%	
hardly anything	26.8%	29.6%		2.0%	
Do you take extra fruit or vitamins the day after the party?					
never	10.3%	15.9%	*	25.0%	****
seldom	17.0%	17.8%		28.4%	
sometimes	25.9%	18.2%		27.0%	
often	21.0%	27.5%		12.3%	
always	25.9%	20.5%		7.4%	
Do you take any sleeping pills or sedatives the day after the party?					
never	90.6%	89.9%	*n.s.*	93.7%	*n.s.*
seldom	3.6%	5.0%		2.4%	
sometimes	4.0%	3.9%		2.9%	
often	0.9%	0.4%		0.5%	
always	0.9%	0.8%		0.5%	

7.7 Party behaviour – incidents

	Testers N = 225	Non-Testers N = 261	*TE - NT*	Non-Users N = 216	*ALL*
Did you ever become (physically) unwell at a party?					
yes	51.8%	49.0%	*n.s.*	34.8%	****
no	48.2%	51.0%		65.2%	
Causes[86]					
too much alcohol	24.6%	36.0%	*n.s.*	58.3%	****
too little water or soda	40.4%	38.1%	*n.s.*	43.1%	*n.s.*
too much ecstasy	54.4%	46.0%	*n.s.*	-%	*n.s.*
too little food	45.6%	48.0%	*n.s.*	53.5%	*n.s.*
too much dancing	21.9%	25.6%	*n.s.*	26.8%	*n.s.*
ecstasy of bad quality	28.9%	41.6%	*	-%	*
unfit beforehand	25.7%	37.6%	*n.s.*	38.0%	*n.s.*
mixed too many drugs	35.1%	44.4%	*n.s.*	4.2%	****
it was too hot / crowded / stuffy	58.8%	64.0%	*n.s.*	71.8%	*n.s.*

7.8 Unsafe party behaviour

	Testers N = 225	Non-Testers N = 261	*TE - NT*	Non-Users N = 216	*ALL*

[86] Self reported causes, multiple causes possible.

Unsafe party behaviour					
party longer than 16 hours	5.5%	1.6%	*	2.4%	*
always attending afterparties	11.2%	10.9%	*n.s.*	3.4%	***
partying without resting/cooling down[87]	50.5%	48.2%	*n.s.*	50.7%	*n.s.*
drinking too little or too much alcohol[88]	86.4%	86.8%	*n.s.*	96.1%	****
insufficient eating at a party[89]	71.2%	65.3%	*n.s.*	31.5%	****
insufficient sleep after party[90]	7.7%	9.7%	*n.s.*	4.9%	*n.s.*
insufficient eating after party[91]	26.8%	29.6%	*n.s.*	2.0%	****
taking no vitamins/fruit after party	27.2%	33.7%	*n.s.*	53.4%	****
taking downers often/always after party	1.8%	1.2%	*n.s.*	1.0%	*n.s.*
often combining ecstasy with other drugs[92]	65.6%	66.0%	*n.s.*	~	
last use: not feeling fit before use	20.4%	22.3%	*n.s.*	~	
last use: not having next day off	19.0%	24.2%	*n.s.*	~	
last use: friends were unaware of use	20.8%	16.5%	*n.s.*	~	
last use: driving a car after ecstasy use	19.5%	15.6%	*n.s.*	~	
Mean number of unsafe behaviours (all respondents)	3.7	3.7	*n.s.*	3.4	*
Mean number of unsafe behaviours (users)	5.2	5.2	*n.s.*	~	

87 Resting for less than once every two hours and/or dancing at least the larger part of the night and resting no more than twice.

88 Drinking less than two glasses (all fluids) an hour and/or drinking no water / soft drink / fruit juice at all and/or drinking more than one glass of alcohol an hour.

89 Not eating something at a party when staying longer than six hours.

90 Getting less than four hours of sleep after a party.

91 Eating almost nothing the day after the party.

92 Often or always combining ecstasy with alcohol, cannabis, amphetamines and/or cocaine.

7.9 Regression – Knowledge and behaviour[93]

	Score of correct answers	Score of incorrect answers	Score of don't knows	Score of unsafe behaviour (all resp.)	Score of unsafe behaviour (users)
TE versus NT	**0.75**	**-**	**-0.59**	**-**	**-**
NT versus NU	**1.96**	**0.40**	**0.13**	**0.35**	
Age	-	-0.03	0.04	-0.04	-0.06
Personality - ImpSS	-	0.03	-0.04	0.06	0.08
Gender					
male	-	0.27	-	-0.48	-
female *(reference)*					
Ethnic background					
foreign	-	-	-	-	-
native *(reference)*					
Education					
primary	-1.32	-	-1.25	-	-
lower secondary	-0.83	-	-	0.48	1.02
upper secondary	-0.46	-	-	-	-
tertiary *(reference)*					
City					
Amsterdam	-	-	-	-0.30	-0.52
Hanover	-	-	-	-	0.57
Vienna *(reference)*					

7.10 Partial correlation of testing frequency with knowledge and unsafe party behaviour[94]

	Partial correlation (Testers N = 225)	*significance*
Knowledge		
score of correct answers	.2000	***
score of incorrect answers	-.1902	**
score of don't knows	-	*n.s.*
Behaviour		
unsafe party behaviour score	-1640	*

[93] Linear regression. Presented are the estimates that significantly contribute to the model ($p < 0.05$). Estimates represent the slope of the regression curve. A negative estimate implies a downward curve, which implies that – compared to the reference category – the score is lower. A positive estimate implies an upward curve.

[94] Controlled for age.

Tables chapter 8 – Ecstasy consumption

8.1 Ecstasy consumption pattern

	Testers N = 225	Non-Testers N = 261	*TE - NT*
Age of onset			
range	11-41 years	12-35 years	
mean	17.7	17.8	*n.s.*
median	17.0	17.0	
Pattern of use			
A - increase	19.0%	12.2%	*n.s.*
B - decrease	11.9%	14.6%	
C - the same	11.3%	11.0%	
D - irregular	25.0%	27.4%	
E - consolidation	32.7%	34.8%	
Has your ecstasy use changed through testing?			
Increase in ecstasy use	6.8%		
Decrease in ecstasy use	14.9%		
No change	78.3%		

8.2 Frequency and amount of ecstasy use

	Testers N = 225	Non-Testers N = 261	*TE - NT*
Frequency			
daily	-%	0.4%	***
a few times a week	1.8%	6.1%	
once a week	14.0%	13.4%	
a few times a month	31.2%	21.5%	
once a month	22.2%	15.7%	
less than once a month	30.8%	42.9%	
Usual number of pills a night			
mean	3.1	3.0	*n.s.*
median	2.5	2.0	

8.3 Problems related to ecstasy consumption

	Testers N = 225	Non-Testers N = 261	*TE - NT*
Has your ecstasy use influenced your work/school?			
no influence	65.0%	68.5%	*
positive influence	11.2%	5.0%	
negative influence	23.8%	26.5%	
Has your ecstasy use influenced your relationship/friendships?			
no influence	57.4%	55.6%	*n.s.*
positive influence	24.7%	20.8%	
negative influence	17.9%	23.6%	
Has your ecstasy use influenced your physical health?			
no influence	48.2%	46.3%	*n.s.*
positive influence	12.1%	11.6%	
negative influence	39.7%	42.1%	
Number of problematic areas			
none	49.1%	43.4%	*n.s.*
1 area	27.9%	29.5%	
2 areas	16.2%	19.0%	
3 areas	6.8%	8.1%	
mean	0.8	0.9	*n.s.*

8.4 Regression – ecstasy consumption[95]

	Frequency[96]	Usual number of pills	Number of problematic areas
TE versus NT	**1.47**	**-**	**-**
Age	0.95	-	-0.03
Personality - ImpSS	1.06	0.12	0.05
Gender			
male	-	0.70	-
female *(reference)*			
Ethnic background			
foreign	-	-	-
native *(reference)*			
Education			
primary	-	-	-
lower secondary	2.11	-	-
upper secondary	-	-	-
tertiary *(reference)*			
City			
Amsterdam	0.59	-0.68	-
Hanover	-	-	0.30
Vienna *(reference)*			

8.5 Partial correlation of testing frequency with ecstasy consumption pattern[97]

	Partial correlation (Testers N = 225)	*significance*
Consumption pattern		
age of onset	-	*n.s.*
frequency of use	-.1452	**
usual number of pills used	-	*n.s.*
number of problematic areas	-	*n.s.*

[95] Linear Regression. Presented are the estimates that significantly contribute to the model ($p < 0.05$). Estimates represent the slope of the regression curve. A negative estimate implies a downward curve, which implies that – compared to the reference category – the score is lower. A positive estimate implies an upward curve.

[96] Frequency of ecstasy use was analysed using ordinal regression. Presented are the odds ratios for the variables that significantly contribute to the model ($p< 0.05$). An odds ratio between 0 and 1 implies that, compared to the reference category, the odds is lower.

[97] Controlled for age.

8.6 Impact of test results[98]

	Testers N = 225
Test result = (also) amphetamines	
won't use	41.4%
warn friends	58.0%
buy more	20.5%
tell the dealer	40.6%
go to another dealer	28.7%
sell it	12.9%
inquire about possible risks	40.9%
mean number of pills used	1.4 pills
Test result = suspicious substances	
won't use	84.8%
warn friends	81.7%
buy more	4.5%
tell the dealer	66.1%
go to another dealer	53.9%
sell it	9.5%
inquire about possible risks	66.9%
mean number of pills used	0.2 pills

	Testers N = 225
Test result = 25 mg MDMA	
won't use	33.0%
warn friends	46.2%
buy more	15.4%
tell the dealer	45.1%
go to another dealer	35.1%
sell it	16.9%
inquire about possible risks	38.5%
mean number of pills used	2.9 pills
Test result = 75 mg MDMA	
won't use	32.2%
warn friends	42.7%
buy more	23.8%
tell the dealer	29.9%
go to another dealer	13.4%
sell it	11.8%
inquire about possible risks	37.4%
mean number of pills used	1.7 pills
Test result = 150 mg MDMA	
won't use	35.8%
warn friends	63.5%
buy more	31.1%
tell the dealer	35.2%
go to another dealer	15.7%
sell it	10.7%
inquire about possible risks	42.5%
mean number of pills used	1.4 pills

8.7 Impact of test results (compared to 75 mg)[99]

	don't use	number of pills used	warn friends	buy more	tell the dealer	go to another dealer	sell it	inquire about risks
Test result = 25 mg		+		-	+	+	+	
Test result = 150 mg		-	+	+				
Test result = speed	+	-	+		+	+		
Test result = suspicious	+	-	+	-	+	+		+

[98] Some of these data might be unreliable due to inconsistencies in the questionnaires and missing data (for some questions up to 24%).

[99] Symbols represent significant differences in reactions to test results, compared to a test result of 75 mg MDMA (an 'average' dose). A plus sign in the column 'inquire about risks' means that with suspicious test results more testers would inquire about the risks than with a test result of 75 mg MDMA.

Tables chapter 9 – Onset of ecstasy use

9.1 Chronology of use and testing

	Testers N = 225
Age of onset ecstasy use	
range	11-41 years
mean	17.7
median	17.0
Age of first pill-testing	
range	13-41 years
mean	20.0
median	19.0
Gap between use and testing	
range	0-15 years
mean	2.2
median	2.0
Did you use ecstasy before you tested?	
yes, untested ecstasy	82.5%
yes, tested ecstasy	8.8%
no	8.8%
If no, would you have taken your first ecstasy if you could not have tested it?	
yes	60.6%
no	39.4%

9.2 Setting

	Testers N = 225	Non-Testers N = 261	*TE - NT*	Non-Users N = 216	*ALL*
Do you ever use ecstasy when you're alone?					
never	81.8%	81.9%	*n.s.*	~	
seldom	12.9%	12.3%		~	
sometimes	4.0%	5.4%		~	
often	0.9%	-%		~	
always	0.4%	0.4%		~	
Who among your friends uses ecstasy?					
all of them	10.2%	12.7%	*n.s.*	2.3%	****
most of them (more than half)	40.4%	36.5%		10.6%	
about half of them	23.6%	18.8%		8.8%	
a few (less than half)	24.0%	31.2%		46.3%	
no one	1.8%	0.8%		31.9%	

9.3 Reasons for first use

	Testers N = 225	Non-Testers N = 261	*TE - NT*
What were your reasons to start using ecstasy?			
I was curious	86.5%	92.0%	*n.s.*
I heard good stories	49.5%	51.0%	*n.s.*
It was offered to me	38.3%	34.0%	*n.s.*
I had a need for a stimulant	35.1%	29.9%	*n.s.*
I had a need for a psychedelic	26.5%	29.1%	*n.s.*
Everyone around me used ecstasy	26.5%	25.7%	*n.s.*

9.4 Regression – Age of onset, reasons for use and setting[100]

	age of onset ecstasy use[101]	I was curious	I heard good stories	Ii was offered to me	I had a need for a stimulant	I had a need for a psychedelic	Everyone around me used ecstasy	ecstasy use among friends
TE versus NT	**-0.56**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
NT versus NU								**10.80**
Age	0.59	-	-	-	-	1.09	-	0.94
Personality - ImpSS	-0.11	-	1.08	-	1.09	1.15	-	1.04
Gender								
male	-0.61	-	-	-	-	-	0.39	-
female *(reference)*								
Ethnic background								
foreign	0.70	-	-	-	-	0.52	-	-
native *(reference)*								
Education								
primary	-	-	-	-	-	-	-	-
lower secondary	-	-	0.35	-	-	-	-	-
upper secondary	-	-	0.36	-	-	-	-	-
tertiary *(reference)*								
City								
Amsterdam	-	-	-	-	0.51	0.33	-	1.80
Hanover	-	-	-	-	-	-	0.45	-
Vienna *(reference)*								

[100] Logistic and ordinal regression. Presented are the odds ratios for the variables that significantly contribute to the model ($p < 0.05$). An odds ratio between 0 and 1 implies that, compared to the reference category, the odds of something occurring is lower.

[101] Linear regression. Presented are the estimates that significantly contribute to the model ($p < 0.05$). Estimates represent the slope of the regression curve. A negative estimate implies a downward curve, which implies that – compared to the reference category – the score is lower. A positive estimate implies an upward curve.

9.5 Reasons for non-use

	Non-Users N = 216
What were your reasons not to start using ecstasy?	
I have no need for a stimulant	74.4%
Out of principle / ideology	71.2%
I have no need for a psychedelic	68.2%
You never know what you take	66.5%
I think it's harmful to my body	63.6%
I thinks it's damaging to the brain	61.9%
I think it's psychologically harmful	59.5%
I've seen what ecstasy did to others	54.2%
I don't know what ecstasy does to you	44.1%
I'm afraid I'll only feel worst after	43.7%
I'm afraid of becoming addicted	39.3%
Because of bad stories in the media	35.8%
It's too expensive	30.7%
No one around me uses ecstasy	30.7%
I use another substance	30.4%
I heard bad stories from friends / acquaintances	28.0%
Because the pill-test often finds dangerous substances	27.9%
I haven't come around to it yet	23.6%
Because of the warning flyers	23.3%
It has never been offered to me	20.0%
Someone I know was hospitalised because of ecstasy use	19.5%
On medical grounds (medication, allergy, heart condition, etc.)	17.3%
I don't know how to get it	16.4%

Tables chapter 10 – Monitoring the market

10.1 Obtaining ecstasy

	Testers N = 225	Non-Testers N = 261	*TE - NT*
Where do you buy your ecstasy?			
At home, at someone's house	52.9%	50.8%	*n.s.*
On the street	5.4%	4.2%	*n.s.*
At a party	32.3%	33.8%	*n.s.*
It is delivered to my home	9.4%	11.2%	*n.s.*
How do you usually get your ecstasy?			
I get it from my partner/friend (free)	12.9%	13.9%	*n.s.*
A friend buys it for me	15.6%	15.0%	*n.s.*
I buy it from a friend	28.1%	33.9%	*n.s.*
I buy it from a known dealer	36.6%	20.2%	*n.s.*
I buy it from an unknown dealer	6.3%	7.7%	*n.s.*
I buy it trough the internet	0.4%	0.1%	*n.s.*

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