

# A Methodology for Student Drug-use Surveys

R. G. SMART

*Addiction Research Foundation,  
Toronto, Canada*

P. H. HUGHES

*Division of Mental Health, World Health  
Organization, Geneva, Switzerland*

L. D. JOHNSTON

*Survey Research Centre,  
University of Michigan,  
Ann Arbor, MI, USA*

A. ANUMONYE

*University of Lagos,  
Nigeria*

U KHANT

*Rangoon Psychiatric  
Hospital, Burma*

MARIA ELENA MEDINA MORA

*Mexican Centre of Mental Health  
Studies, Mexico City, Mexico*

V. NAVARATNAM

*University of Science  
of Malaysia, Minden,  
Penang, Malaysia*

VICHAI POSHYACHINDA

*Chulalongkorn University,  
Bangkok, Thailand*

V. K. VARMA

*Postgraduate Institute  
of Medical Education & Research,  
Chandigarh, India*

K. A. WADUD

*Pakistan Narcotics Control Board,  
Islamabad, Pakistan*



WORLD HEALTH ORGANIZATION  
GENEVA  
1980

*WHO Offset Publication No. 50*

## CONTENTS

	<u>Page</u>
Preface . . . . .	5
Acknowledgements . . . . .	6
1. Introduction . . . . .	7
1.1 Need for comparability and for a tested questionnaire . . . . .	7
1.2 Self-administered drug-use questionnaire for young people . . . . .	8
1.3 Advantages and disadvantages of self-administered surveys . . . . .	9
1.4 Youth populations suitable for this type of survey . . . . .	9
1.5 Nonmedical use of drugs, drug abuse, and drug dependence . . . . .	9
2. Development of the questionnaire and plan for its testing . . . . .	10
2.1 General plan for the project . . . . .	10
2.2 Rationale for the selection of data items and organization of the questionnaire . . . . .	10
2.3 Coordination of technical work . . . . .	12
2.4 Collaborating institutions . . . . .	12
3. Results of testing the questionnaire in seven countries . . . . .	14
3.1 Overview of testing experience at each centre . . . . .	14
3.2 Data analysis . . . . .	15
3.3 Reliability studies . . . . .	15
3.4 Validity studies . . . . .	17
3.5 Summary of results . . . . .	19
4. Application and further development of the final questionnaire . . . . .	21
Annex 1. Methodological guidelines for self-administered surveys of youth . .	22
Annex 2. Student drug-use questionnaire . . . . .	35
Annex 3. Instructions to investigators for use of the questionnaire . . . . .	44
Annex 4. Optional questions . . . . .	49
References . . . . .	53

PREFACE

This report of the WHO Research and Reporting Project on the Epidemiology of Drug Dependence describes the work of an international team of investigators to improve the comparability and scientific quality of information on the use of drugs by young people. In this collaborative study, teams in seven countries developed and tested a "self-administered drug use questionnaire" -- i.e., a questionnaire that may be filled in by the young people themselves. The object was to develop an operational methodology for use in many different settings to assess drug use among young people.

The report describes the study and its conclusions. It provides the general rationale for the choice of questionnaire items as well as the reasons for using the self-administered type of questionnaire. In carrying out the study a number of reliability and validity checks were made and the results of these are reported.

The report of the study is supplemented by a review of the methodology and practical issues confronting the general researcher or epidemiologist who may be called upon to implement a self-administered survey on drug use among students or other groups (Annex 1). The review provides guidelines for selecting the sample and for the administration of this type of survey, for carrying out checks of reliability and validity, and for ensuring confidentiality and proper analysis of the data. The finalized questionnaire and instructions for its use are presented in Annexes 2 and 3. Optional questions are listed in Annex 4. An effort has been made to give practical information on how such studies should be carried out in order to yield reliable results.

The core items in this questionnaire are comparable to those in other questionnaires that are being developed by WHO and by the United Nations Division of Narcotic Drugs for the collection of data on drug abuse. It is hoped that the use of similar methods and the collection of comparable data will improve the planning and coordination of intervention programmes by permitting national and international comparisons and the exchange of information on the epidemiology of drug dependence.

Researchers and administrators who are planning surveys of drug use among students, prisoners, military conscripts, or other youth groups capable of filling in questionnaires themselves are invited to consider either using the present questionnaire or including its core items in their studies. In this way, the data from their surveys will be comparable with those of WHO collaborating investigators and others who may use the questionnaire. To this end, it would be most helpful if investigators using the questionnaire or selected items from it would send copies of their study reports, along with a description of the methods used, to the Division of Mental Health, World Health Organization, 1211 Geneva 27, Switzerland.

ACKNOWLEDGEMENTS

The authors acknowledge the financial support given to the project by the United Nations Fund for Drug Abuse Control and by the participating centres and the governments concerned. They thank the United Nations Division of Narcotic Drugs for its close collaboration and the International Narcotics Control Board and International Council on Alcohol and Addictions for participating in meetings held in connexion with the project. Thanks are due also to the Addiction Research Foundation, Toronto, Canada, which served as a coordinating centre by providing special technical support and by analysing the data for the study.

## 1. INTRODUCTION

A large number of excellent surveys of drug use have been carried out among young people. Unfortunately, it has been difficult to compare the findings because each team of investigators has tended to gather a different type of data and to employ instruments and methods different from those used by other teams. This report describes a WHO study that tackled this issue by bringing together teams of experts from various parts of the world to agree on the core data items for a student drug-use questionnaire. The object was to develop a broadly acceptable methodology that would be practical for use in various age groups and sociocultural settings. The experts were then invited to test the questionnaire in a variety of languages and settings to determine its general effectiveness, reliability, and validity. On the basis of the experience gained in testing it in seven countries, the questionnaire was finalized at a second meeting of collaborating investigators in 1977.

The study was carried out as one of the initial activities of the WHO Research and Reporting Project on the Epidemiology of Drug Dependence - a project developed in response to World Health Assembly resolutions WHA23.42 and WHA28.80. The first aim of the project is to develop instruments and methods to meet the priority data-collecting needs of developing countries with serious problems of drug dependence. In addition to the research described here, a number of studies have been carried out to develop additional methods of obtaining information on drug abuse through case-reporting and intensive case-finding systems, surveys of the general population and of non-student youth, and the evaluation of methods of treating drug dependence. The results of these studies will be available soon. To develop and test these methods, a network of collaborating institutions has been established, primarily in developing countries with serious problems of drug dependence. This network was mainly responsible for carrying out the present study.

The subject of this report - the development of a methodology for self-administered surveys of drug use among students - was selected as one of the first priorities of the project because, in many countries, young people run a high risk of becoming drug-dependent. Furthermore, the use of self-administered questionnaires for this purpose is well established. For literate populations, such as students, that may be brought together at one time and place, such questionnaires offer advantages over other methods - chiefly their low cost, ease of administration, and relatively high validity and reliability. They may also be used for postal surveys of incidence and prevalence, for follow-up studies, and to monitor trends and evaluate prevention programmes.

The prototype questionnaire presented in this report contains questions on demographic characteristics; the use of 10 classes of drug in the past 30 days, in the past year, or ever in the respondent's lifetime; the age at which the drugs were first used; and the honesty of reporting. It was distributed to some 1655 students by collaborating centres in 7 countries: Burma, Canada, India, Malaysia, Mexico, Nigeria, and Pakistan.

Data on the rates of drug use found among the young people who participated in the study are not reported, since the samples in individual countries were small and unrepresentative of the total youth populations from which they were drawn. However, because the study was directed towards the development of an operational questionnaire and methods of using it, results are presented on the reliability and validity of the questionnaire. These results showed the questionnaire to have satisfactory reliability and validity in most settings, but additional methodological work is clearly needed. Some centres reported that students had difficulty in understanding certain questions and were not familiar with the questionnaire format originally presented. The questionnaire was revised accordingly and its final version contains improvements in both questions and format.

### 1.1 Need for comparability and for a tested questionnaire

The student drug-use survey is the most common form of epidemiological study of drug abuse. A number of such surveys based on excellent methodology have been carried out, though mostly in developed countries. Because planners in developing countries are

becoming increasingly interested in obtaining information on the use of drugs by young people, there is a need for a practical methodology that could be adapted to most socio-cultural settings and applied at a relatively low cost. To be useful in developing countries, such a methodology should yield reasonably reliable results in the hands of researchers or epidemiologists who may not be experts in the special field of drug abuse.

An internationally acceptable methodology would also help to meet the need for comparability of epidemiological information on drug abuse. Until now, it has been the tendency for each investigator to develop and use his own instrument and methods for assessing drug abuse. For this reason, it has not been possible to compare the results of studies from different countries, and it is rarely possible even to compare the studies of different investigators within the same country. Such comparisons are important for planners, who must examine trends over time in order to assess the effectiveness of legal, educational, and treatment programmes. Drug use trends need to be compared and monitored both within and between countries, but no methods are available for doing so.

At the international level, comparability of data would permit (1) the identification of real differences in the extent, patterns, and trends of drug use in different sociocultural settings, and (2), where demographic and other explanatory variables occur regularly, the possible identification of basic causal factors that are not peculiar to particular settings.

An important initial step in encouraging comparability of data collection in any field is the development of a standardized questionnaire that will yield reliable and valid results in various sociocultural settings. If such a questionnaire were available to investigators planning future studies, it might contribute significantly to the comparability of data collected in the important area of drug-abuse research. The development and testing of a youth survey questionnaire would also provide a rather simple data-collecting activity to determine whether an international team of survey experts from developing and developed countries could work effectively together. If so, the team might then turn its expertise to collaborative survey work of a more complex nature.

#### 1.2 Self-administered drug-use questionnaire for young people

For many years, people have been enquiring about the use of alcohol and drugs in various populations. The method most frequently used is now the anonymous self-administered questionnaire. This is popular for a number of reasons: it is inexpensive; it requires no interviewers, since respondents complete the questionnaire themselves; it can be distributed quickly to large groups of literate persons; and the data that it yields may be processed relatively inexpensively and efficiently because the questions asked are usually straightforward and their answers easily interpreted.

A "self-report" or self-administered questionnaire is a form on which the individual respondent marks his answers to a series of printed questions. The questions and the answer possibilities are specified in advance, although in some cases answers may be open-ended — that is, space is provided for the respondent to write in his own answer. Self-administered questionnaires may be contrasted with interview schedules, which are completed on each subject by a trained interviewer.

Self-administered surveys of drug use among young people have been conducted in many countries. A partial list of such surveys is to be found in the reviews by Mercer & Smart (1) and by Blumberg (2). Recent studies of students, by means of self-report questionnaires, have also been carried out in many developing countries, including Colombia (3), India (4), Malaysia (5), Mexico (6), and Thailand (7).

### 1.3 Advantages and disadvantages of self-administered surveys

Like any other method, the self-administered survey has advantages and disadvantages. Its overwhelming advantage is surely its relatively low cost. The method may be used with populations of 10 000 or more, at a fraction of the field cost of an interview study, depending, of course, on the salaries paid to interviewers and the geographical dispersion of the population. The method is well accepted in many parts of the world and refusal rates are often below 1%. In contrast, refusal rates in household surveys are frequently 20-30% and in postal surveys non-completion rates are typically 50-60%.

Many researchers would argue that the self-administered survey is the best way to obtain information about private behaviour because the information may be obtained anonymously. The method may also take advantage of the efficient technology available for data processing, such as machine-readable and other easily processed forms. This expedites data handling at every stage, tends to reduce costs and labour, and makes surveys of large populations more manageable.

The limitations of the approach include the considerable technical skills, personnel and equipment required for large-scale studies, e.g., of 3000 or more subjects, which might not be available regularly in most developing countries. The skills involved are those required for sampling, questionnaire administration, coding, and data analysis. Data processing and handling are greatly facilitated if a computer is available for studies with more than about 500 subjects and 30 or more questions. In addition, there are some unsolved problems with reliability and validity, which will be discussed in detail later.

### 1.4 Youth populations suitable for this type of survey

In practice, the self-administered survey is typically used for studies of students, soldiers, and prisoners, since these groups can be readily convened for survey administration. The method is best used in situations where cooperation may be expected from the participants as a matter of routine. Where cooperation is unlikely to be obtained without individually tailored explanations, interview surveys are preferable. Within the field of alcohol and drug research, most surveys of this type have been carried out on high-school and college students—see reviews by Berg (8) and Mercer & Smart (1). However, such surveys have also been made on primary-school children (9) and in military groups and prison populations (10).

### 1.5 Nonmedical use of drugs, drug abuse, and drug dependence

In this study the investigators found it more practical to collect information on nonmedical drug use than on drug abuse or drug dependence. If only drug abuse or drug dependence had been measured in this study, a large population of occasional drug users would have had to be excluded. This group—which would clearly not be considered as being drug-dependent and might not be drug abusers—is of central concern in such surveys. An equally important reason for collecting information on drug use is that the measurement of drug abuse or drug dependence in an epidemiological survey presents a number of technical difficulties. At present, there is no universally agreed operational research definition of drug abuse or drug dependence. For the purposes of this study, therefore, the term "nonmedical drug use" has been used in the sense proposed by the WHO Expert Committee on Drug Dependence (47)—that is, "the use of dependence-producing drugs ... other than when medically indicated". These drugs comprise the following types: amphetamines, barbiturates and tranquillizers, cannabis, cocaine, hallucinogens, khat, opiates, and volatile solvents. Although use of the term "drug dependence" has been avoided wherever possible in this report, the term "drug abuse"—a rather imprecise term—has been used. As noted in another WHO publication (48), there is no universal agreement on the definition of "drug abuse". The term is used here in connexion with the problems and adverse consequences associated with nonmedical drug use.



## 2. DEVELOPMENT OF THE QUESTIONNAIRE AND PLAN FOR ITS TESTING

A Working Group on Encouraging Comparability in Drug Use Surveys of Young People was held in Geneva from 19 to 21 September 1976 to plan a WHO collaborative effort in that field. A model self-administered questionnaire for use among students was to be developed and tested in several countries by the centres participating in the trial. The main purposes of the study were to determine whether comparable data on drug use in young people might be obtained by means of the questionnaire and whether the answers given would be reliable and valid.

### 2.1 General plan for the project

In each of the countries, some 300 students of both sexes, living in various environments, were to complete the questionnaire. This was to be given to them anonymously except when used to check the reliability of answers (in a test-retest reliability study). In the latter case, the questionnaires were to be identified, e.g., by number, in order to allow the first questionnaire to be matched with a second one given 4-8 weeks later. About 100 students were to be retested at each centre.

Validity studies also were planned. For this purpose, a lie scale and questions asking the students whether they had responded honestly were included in the questionnaire. At one centre, comparisons were made between self-report and interview methods and between students from schools believed to have high and low drug use.

Pilot testing would permit centres with limited resources to determine the feasibility and difficulties of student drug use surveys. Furthermore, a simultaneous study by teams of investigators in a wide range of countries would permit a coordinated effort leading to the revision of questionnaires and procedures so that they might be usable in most parts of the world.

### 2.2 Rationale for the selection of data items and organization of the questionnaire

It was expected that most centres would need to keep their questionnaires short in order to hold the interest of respondents, to minimize interference with school work, and to reduce costs. It was therefore decided to develop a questionnaire with separate units or blocks of items, some of which were essential or "core" items and others optional. All centres were to test the core items and optional items of particular interest. Table 1 shows the structure of the questionnaire and the main areas covered.

#### Core questionnaire

Originally, 32 core items were chosen to give the essential demographic, drug-use, and validity information. In order to ensure comparability with other WHO data-collecting activities on drug abuse, many of the items were derived from a set of core data items previously agreed by the collaborating investigators to be the minimum essential information required by planners of drug-abuse programmes. Most of the core items on the youth survey questionnaire are therefore comparable with items on other WHO questionnaires for collecting data on drug abuse and on those of the United Nations Division of Narcotic Drugs (13).

The demographic items included the basic variables of age, sex, and years of schooling. For an understanding of drug use among young people, it was considered important also to know the duration of parental education as a measure of socioeconomic status, and whether the respondent was working full-time or part-time in addition to being at school.

TABLE 1. CLASSIFICATION OF VARIABLES

Priority levels	Drug-related for 10 drug classes	Demographic	Other
Core	Ever used (lifetime) Use/non-use (last year) Frequency of use (last month) Age at first use	Age Sex Parental education Type of community Years of school completed School status Work status	Validity, i.e., self-report of honesty in responding Lie scale
Optional	Route of administration Reasons for first use Source of first drug used Approval/disapproval of drug use Perceived availability Social connotations	Race* Religion* Region of the country* History of migration*	
Others to consider**	Perceived harmfulness Perceived problems Frequency of use (lifetime, last year) Year of first use Fictitious drugs Exposure to use Perceived parental norms	Father's occupation Presence of parents in home	Education plans Religious participation Importance of religion Criminal behaviour Social alienation Counter-culture orientation Academic performance

\*Standard measures have not been recommended, owing to inter-country variations.

\*\*Further items and variables of possible interest to investigators may be obtained from the review of Nehemkis et al. (11) or Elinson & Nurco (12) and from reference to papers in the reviews by Mercer & Smart (1) or Blumberg (2).

Out of the large number of possible questions on drug abuse, a few were chosen. These asked if a particular type of drug had ever been used, if it had been used in the past year or in the past 30 days, and at what age it had first been used. The 10 types of drug enquired about were:

tobacco	hallucinogens
alcohol	inhalants
cannabis	tranquillizers
amphetamine or other stimulants	sedatives
cocaine	opiates

Because of the importance of heroin and other opiates, such as methadone, morphine, and codeine, additional questions were included on three subclasses of opiate. Most of these items have been retained in the final questionnaire (see Annex 1).

### Optional questionnaire items

A number of items were also developed for variables judged by the collaborating investigators to be of high or medium importance, though inappropriate for inclusion as core items in this study. Among the drug-related variables suggested were: route of administration (of drugs used); source of, and reason for taking, the first drug used; approval or disapproval of drug use; perceived availability of drugs; social connotations of drug use; perceived harmfulness of drugs; perceived problems with drug use; frequency of drug use (during lifetime and previous year); fictitious drugs; exposure to use; and perceived parental norms. Among the additional demographic variables suggested for consideration were: race, religion, region of the country, history of migration, father's occupation, and parents' presence at or absence from home.

Although the core items were tested by all centres, the optional items were used by only a few. However, the inclusion of optional items allows sufficient flexibility to meet widely differing measurement needs in various settings, and facilitates maximum comparability. Some of the optional items, with responses, are shown in Annex 4.

### 2.3 Coordination of technical work

In order to facilitate the collection and analysis of data, WHO invited the Addiction Research Foundation, Toronto, Canada, (one of the 7 collaborating institutions) to serve as the coordinating centre for the study. Its tasks were to: (1) finalize the core questionnaire and instructions for its use, (2) send copies of each to collaborating investigators, (3) receive data collected by collaborators, (4) key-punch IBM cards for the core questionnaire items, and (5) prepare analyses of the data.

The analyses performed by the coordinating centre included: (1) frequency of users by centre for each drug; (2) frequency of drug use, age of first use for each drug in each centre; (3) frequencies for all demographic items; (4) cross-tabulation of demographic characteristics, validity questions, and reliability scores for each type of drug use; and (5) multivariate analysis of the validity and lie scale items as predictors of drug use.

It was planned that each collaborating centre should be responsible for analysing its own data on test-retest reliability from centres in countries other than Canada. It was originally thought that, because of the limited time available, this would be too difficult to do at long range. In retrospect, it seems that the analysis of these data should also have been centrally managed, since only three centres reported reliability test results.

### 2.4 Collaborating institutions

In addition to the Addiction Research Foundation, Toronto, which coordinated the study, research teams from the following six institutions participated in the testing of the questionnaire and collected data on the forms.

Chandigarh centre. The Postgraduate Institute of Medical Education and Research, Chandigarh, India, had been invited to participate as part of a current programme of collaborative research with WHO in drug dependence and mental health. Drug abuse in the region of Chandigarh involves primarily cannabis, though there is also some abuse of opium and psychotropic drugs.

Islamabad centre. The Pakistan Narcotics Control Board is the national coordinating agency for drug-abuse prevention, treatment, and control activities in the country. It is responsible for implementing the WHO component of the United Nations Pakistan Programme on Prevention and Treatment of Drug Dependence, supported by the United Nations Fund for Drug Abuse Control. Pakistan is a country with a large population of opium and cannabis users, with increasing use of psychotropic substances during recent years.

Lagos centre. The Department of Psychiatry of the University of Lagos had prior experience in conducting drug-abuse surveys of young people. While drug abuse in Nigeria is not as serious as in many other countries, there is moderate use of cannabis and psychotropic drugs. This appears to be a common pattern of drug abuse in many African countries.

Mexico City centre. The Mexican Drug Dependence Centre was invited to participate because of its expertise in drug-abuse surveys. The centre serves as the national coordinating organization for drug-abuse research, training, and prevention activities in Mexico and is a WHO collaborating centre for drug dependence.<sup>1</sup> It has established communications with investigators and governments in other Latin American countries, which will facilitate dissemination of the results of WHO collaborative studies. Drug abuse in Mexico City at the time of this study involved primarily the use of cannabis and psychotropic drugs by adolescents and young adults and the use of inhalants among children.

Penang centre. The Drug Abuse Research Project at the University of Science of Malaysia has recently been designated as the Malaysian National Drug Dependence Research Centre. The university has expertise and experience in drug-use surveys of young people, and is responsible for implementing a national integrated data-reporting system for problems of drug abuse. In addition to the long-standing traditional use of opium and cannabis, the country has experienced in recent years a serious spread of heroin among urban youth, as well as the increasing use of psychotropic substances.

Rangoon centre. The Rangoon Psychiatric Hospital of the Burmese Ministry of Health is developing a programme of epidemiological and treatment evaluation research in drug dependence. Technical personnel in the Ministry are responsible for implementing the WHO component of the United Nations/Burma Programme on Prevention and Treatment of Drug Dependence, which is supported by the United Nations Fund for Drug Abuse Control. The problem of drug abuse in Burma includes the traditional use of opium among rural populations and, in recent years, the use of heroin and psychotropic substances among urban youth.

The network of centres involved in this WHO study thus represents most regions of the world, and most of the centres are in developing countries. The participants included key technical personnel involved in implementing the WHO/United Nations country programmes on the prevention and control of drug dependence in countries of the Eastern Mediterranean and South-East Asia. The centres had varying degrees of expertise in the type of research that was to be undertaken, and could be expected to identify the kinds of problem encountered in such a study in developing countries.

---

<sup>1</sup>Since this study was implemented, the functions of the centre have been expanded to include activities in the field of mental health, and the centre is now called the Mexican Centre of Mental Health Studies.

### 3. RESULTS OF TESTING THE QUESTIONNAIRE IN SEVEN COUNTRIES

Approximately 300 questionnaires were handed out by each of the seven centres. Most of the subjects surveyed were students, but the range in age, level of education, and cultural setting permitted the questionnaire to be tested under widely varying circumstances.

Of the 2118 questionnaires received from the seven centres, 463 (21%) were excluded because of incomplete or inconsistent responses, leaving a total of 1655 for analysis. The criterion for excluding questionnaires was the presence of four or more blanks or inconsistent responses. For example, if a student answered that he had used a given drug in the past month but not in the last year, his response was inconsistent.

#### 3.1 Overview of testing experience at each centre

Chandigarh centre. Both Hindi and English questionnaires were used. Data were sent for 411 students in primary and secondary schools and universities. The original sample was reduced to 309 by deleting every fourth questionnaire. A further 53 were eliminated because of incomplete or inconsistent responses, leaving a total of 256 for analysis.

Islamabad centre. The questionnaire was translated into Urdu and used in a bilingual (English/Urdu) version. Two college student groups were sampled, plus some persons in households. Of 329 questionnaires, 88 were eliminated because of inadequate responses, leaving 241.

Lagos centre. The questionnaire was given in English to students in five post-secondary schools and universities. Of the 312 students surveyed, 177 were eliminated because of blanks and inconsistencies. The final sample was 135. Most of the blanks and inconsistencies were on the items dealing with the use of heroin and other opiates. Because these drugs are rarely used in Nigeria, students were simply not familiar with them and chose either to leave these questions blank or to answer them inconsistently. There were no other major difficulties with the survey.

Mexico City centre. The questionnaire was in Spanish. The study population was 335 pupils from several secondary schools. Many of the children had no previous experience with instructions to skip certain items that did not apply. Instead they skipped entire sections of the questionnaire. This contributed to the elimination of 106 questionnaires because of blanks and inconsistencies, leaving 229. Both validity and reliability studies were performed.

Penang centre. The questionnaire was translated into Malay, Chinese, and Tamil. A stratified sample of 300 students was selected from two schools and 100 of these students were retested 5 weeks later. No questionnaires were deleted because of blanks or inconsistencies. The main problems encountered in the pilot study were that: (1) the format of the tested questionnaire was not consistent with local practice, (2) translations were often too literal, and (3) students found it difficult to follow the instruction to skip certain questions.

Rangoon centre. The questionnaires were given in English. In all, 300 were given, only 3 of which were eliminated because of blanks or inconsistencies. The questionnaires were distributed in secondary schools believed to have high, low, and intermediate levels of drug use.

Toronto centre. In all, 233 questionnaires in English were given to high-school students aged 14-18 years, most of whom were 15 or 16 years of age. A full sample was not obtained because a severe snow storm kept students away from school on the day of the testing. There were no major difficulties in administration or in students' understanding of the questions. Of the students tested, 36 were eliminated because of blanks or inconsistencies. The final sample was 197. Test-retest studies were done.

Collaborating investigators from Ann Arbor, MI, USA, and from Bangkok participated in the planning and review meetings but did not test the WHO questionnaire. However, they contributed data and experience from related research conducted by their respective institutions.

### 3.2 Data analysis

The plan was to collect data primarily to improve the usefulness of the pilot questionnaire, and for the reliability and validity analyses. Because of time and resource limitations, it was not intended to obtain data on samples large enough to permit inter-country comparisons or studies of particular groups within each country. The findings cannot, therefore, be seen as indicating the extent of drug use in any of the countries in which data were collected. Collaborating investigators felt that to publish the drug-use rates in these small and unrepresentative samples might lead to misinterpretations. For these reasons, data on drug use in the study populations are not included in this project.

However, Table 2 shows some major characteristics of the study subjects, such as the type of student, language of the survey, number surveyed, sex, and median age.

### 3.3 Reliability studies

Three centres examined the consistency of the results of the survey with those obtained on retesting, each centre analysing its own data.

At the Penang centre the questionnaire was administered to 150 students on two occasions 5 weeks apart. The coefficients of association for the drug-use questions were all significant except for alcohol and methaqualone (included as an optional item). It may be that translation difficulties contributed to the lower statistical association for these drugs. Consistency between tests was best for those with higher education levels.

In Toronto questionnaires were administered to 197 students on two occasions 8 weeks apart. Students did not sign their names and a numbering system was used to compare questionnaires for the same student from the two tests.<sup>1</sup> Students' answers to demographic questions were nearly identical at both tests. For the drug-use questions "ever used" and "used in past 12 months", the correspondence was very high; for both sets of questions, more than 90% of students gave the same answers at both tests. As expected, answers to the questions on drug use in the last 30 days were less consistent. A drug-use score comprising all reported drug use (ranging up to 96) showed a correlation of 0.88 ( $P < .001$ ) for the two tests. However the lie-score correlation was only 0.53 ( $P < .001$ ), indicating somewhat lower reliability for the lie scale.

In Mexico City, the questionnaires were administered to 294 students on two occasions about 6 weeks apart. Pearson correlations<sup>2</sup> were calculated for all drugs except opium and heroin, since there were too few answers for these two drugs to calculate correlations. For the other drugs, the correlations ranged from 0.30 to 0.71, and all but one were over 0.60. This indicates relatively high reliability for drug-use items.

In summary, the test-retest studies at the three centres suggest generally high reliability of answers to drug-use questions, except for rarely used drugs and some items that might involve translation difficulties.

<sup>1</sup>With this system two questionnaires are prepared, each with the student's name and unique number typed on a two-part label, the part with the name being detachable. In class, the student tears off the part with his name, leaving the number on the questionnaire on both occasions when he completes the questionnaire. Of course, it is necessary to be sure that students receive questionnaires with the same number at the first and second tests. The numbers are used to bring together each student's questionnaires from the two tests. Thus the student's name is not associated with his answers to drug questions and confidentiality is maintained.

<sup>2</sup>The Pearson product moment correlation coefficient varies from -1 through 0 to +1. A coefficient of -1 indicates a high negative relationship, 0 none at all, and +1 a high positive relationship.

TABLE 2. CHARACTERISTICS OF STUDY POPULATIONS

Centre	Language	Level of student	Questionnaires received	Questionnaires analysed	Sex		Median age (years)
					M	F	
Chandigarh	English Hindi	Primary Secondary University	309	256	109	147	17-18
Islamabad	English Urdu	Secondary University Non-student	329	241	168	73	19-20
Lagos	English	University	312	135	75	59	21-22
Mexico City	Spanish	Secondary	335	229	115	112	15-16
Penang	Chinese Malay Tamil	Secondary	300	300	150	150	15-16
Rangoon	Burmese	Secondary	300	297	258	39	15-16
Toronto	English	Secondary	233	197	72	125	15-16

### 3.4 Validity studies

High reliability is a necessary but not sufficient condition for high validity so validity checks were carried out to determine whether the answers to the questionnaire were accurate - that is, whether students who had used drugs reported this on the questionnaire and whether non-users reported that they had not used drugs. Validity was further assessed by asking direct questions about the honesty of students by using lie scales to detect respondents who were on the defensive and by conducting special studies on validity. One reason for using the first two of these validity checks is that they may be administered as part of the questionnaire testing. There are other possible checks on validity that might have been used, and these are described in Annex 1, which reviews the methodological issues. However, most of these checks require additional substudies, which increase the time and cost of the survey.

Honesty questions. The logic of including questions on self-reported honesty is that they permit the respondent to verify that his answers to questions were not deliberately falsified. Admittedly, this is a rather weak and indirect validity check, since anyone who wishes to falsify his answers may answer honesty questions in the same manner. The results of data generated by this validity check cannot, therefore, be given the same weight as those of more objective methods, such as testing urine or searching official records for evidence of drug use among surveyed subjects. However, the inclusion of honesty questions has the advantage over these other procedures in that such questions may be collected easily and inexpensively on all subjects as an integral part of the survey questionnaire.

Two honesty questions were selected for testing on the prototype questionnaire. The first was: "If you had ever used any cannabis /local term/, do you think that you would have said so in this questionnaire?" The second asked the same about "opium or heroin". The possible answers were "No", "Not sure", and "Yes". The aim of asking these questions was to have some indication of the level of honesty or defensiveness in the students' replies. Table 3 shows the response to these two questions in the countries concerned. Overall, 68% said that they would have reported the use of cannabis, 18% said "No", and 14% were "Not sure". The figures were much the same for opium or heroin: 68% said "Yes", i.e., they would have reported honestly, 19% said "No", and 13% were "Not sure". Thus only a minority of the total population stated that they would not report the use of cannabis or of opium or heroin on the questionnaire.

However, there was considerable variation from one centre to another in the proportions of students that would have answered honestly about their use of drugs. For all but two centres (Table 3), more than 70% of the students said they would have admitted to using cannabis, and less than 20% stated they would not have admitted using it. Findings for the opium/heroin question were similar; in all but the same two countries, over 70% would have admitted to using opium/heroin and less than 20% stated that they would not have admitted doing so. These findings suggest that the questionnaire had some validity in most of the centres involved.

Centre E reported that subjects complained of difficulty in understanding the two honesty questions as well as three lie scale questions, which were later omitted from the final questionnaire (Annex 2). The reason suggested by collaborating investigators at that centre was that, in their culture, individuals are not permitted to withhold information. Therefore, the questions asking if they had reported honestly were seen by some respondents as questioning their integrity. This appeared to confuse the respondents to such an extent that all kinds of inappropriate answers were given. The poor response to these items might also be attributed to the difficulty that individuals in this particular setting had in answering hypothetical questions. These findings suggest that the honesty items may require modification in certain cultural settings and may not be relevant to others.

Data from honesty questions were also examined for users and non-users of drugs separately. Those who answered untruthfully might be expected to report less use of all drugs than those who were truthful. This expectation was borne out by the data, which showed that students who said they would not have reported honestly were less likely to report the use



TABLE 3. COMPARISON OF ANSWERS TO THE HONESTY ITEMS IN DIFFERENT COUNTRIES\*

Centre  (Total, all centres, = 1655)	Admit to using cannabis (n=1627)			Admit to using opium or heroin (n=1626)		
	Yes (%)	Not sure (%)	No (%)	Yes (%)	Not sure (%)	No (%)
A	76.4	14.1	9.4	74.7	12.8	12.5
B	62.3	17.3	20.3	63.3	18.0	18.7
C	75.6	16.1	8.3	70.5	19.2	10.4
D	84.0	0.0	15.6	81.3	0.0	16.4
E	37.8	23.3	37.8	39.0	16.1	45.0
F	77.7	13.1	9.2	78.5	11.5	10.0
G	72.2	9.7	18.1	72.6	9.7	17.7
Total	68.4	13.7	17.7	67.6	12.7	19.4

\*The table does not include data from students with two or more "problem" answers to the nine-item lie scale.

of tobacco, alcohol, and cannabis. They were also less likely to report the use of each of the other 9 drugs, though few of the differences are statistically significant. The findings were similar for those who would have admitted to using opium or heroin. Furthermore, both groups — those who would and those who would not have reported the use of opium or heroin — did, in fact, report the same frequency of use of heroin, opiates, and opium.

Lie scale scores. The Eysenck lie scale (14) was included as a measure of defensiveness and has been used in a number of studies. The scale consists of nine questions that have been shown to yield highly reliable and valid answers.

All centres except one were found to have 40% or more students with high lie scores. This is an unexpected result and is almost certainly due to cultural or social variations in the way in which these questions are read and understood. It was found also that lie scores did not differentiate between users and non-users of drugs in a practically useful way. For these reasons, it was the view of the majority of the collaborating investigators that the lie scale, without additional methodological work, appears to have limited usefulness as a validity check for the prototype questionnaire.

Special studies of validity. Three special studies of validity were carried out by the Mexico City centre. In one study, 50 students drawn from schools with a high prevalence of drug use (according to school officials and official records) were compared with 50 students from low-prevalence schools. The results were in the expected direction. Those in the high-prevalence schools reported rates of drug use 5 to 15 times as high as those reported for the low-prevalence schools. Though these findings do not prove the accuracy of answers to the questionnaire, they show that the questionnaire yielded responses indicating more frequent drug use when other information suggested that there was, in fact, more frequent drug use.

In another study, the answers to core questions were obtained from the same subjects by two different methods of data collecting — i.e., by a personal interview followed one week later by the self-administered questionnaire. The subjects were 50 young males in training schools for delinquents. For one-half of the drugs (alcohol, cocaine, tranquilizers, opium, heroin, and other opiates), the total proportion of respondents reporting

lifetime use was identical or within 3% on both occasions. The largest deviation for any drug used on the two occasions was 9%. There was no consistent tendency for either data-collecting method -- i.e., questionnaire or interview - to give higher or lower results.

The third study carried out by the Mexico centre compared three methods of gathering data on drug use among employees of the same business establishments. The methods were (1) the self-administered questionnaire, (2) administration of the questionnaire at personal interviews, and (3) obtaining estimates of the number of drug users among fellow employees. All three methods were applied to the same small group of people and yielded very similar results for both current and lifetime use of drugs.

Thus the results from the Mexico City centre support the validity of the questionnaire findings, at least for the populations for which validity was checked.

### 3.5 Summary of results

Individual centres might be expected to have difficulties with various aspects of the questionnaire. A wide range of countries was involved in the studies, and the testing included both developing and developed countries. For a number of countries, the questionnaire needed to be translated; others have little experience with self-administered studies. In some countries, studies are further complicated by the cultural and social diversity.

In general, collaborating investigators found that the questionnaire worked well with student groups. It was found to have test-retest reliability in three centres and it gave generally valid results in one centre where special validity checks were used. However, there was agreement that use of the questionnaire raised certain general problems in addition to particular problems encountered by individual centres. These problems were as follows:

1. A lie scale was included in the tested questionnaire, but the items were difficult and confusing for many students. Cultural and national problems in interpreting the results made the scale difficult to use. Also, it was found to be somewhat less reliable than other parts of the questionnaire. Furthermore, the lie scale had been developed especially for use in the United Kingdom on students somewhat older than those in this study. For these reasons, the lie scale was dropped from the final version of the questionnaire.
2. The "skip" instructions were confusing to many subjects in some countries, as has already been mentioned. The format of the questionnaire was therefore changed so that the student is required to answer every question on drug use. Now that the "skip" instructions have been omitted from the final questionnaire, there should be fewer blank and inconsistent responses.

A number of less serious problems were reported by some centres:

3. Investigators in Burma, Pakistan, and Thailand observed that the level of parental education was not a good indicator of social status in those countries. Furthermore, it is a culturally accepted pattern not to possess information of this type or, at least, not to repeat it to strangers.
4. In Mexico City, the question about the type of community in which the respondent lived proved impossible to answer. This question had no meaning for many respondents who do not differentiate between living in cities, towns, or suburbs. Indeed large cities in some of the collaborating countries do not have suburbs as seen in North America and some European countries. Some of these cities also have small, semirural, village-like communities within their limits, and this contributed to the difficulty that respondents had in answering the question.
5. In Lagos, students often did not know their age, since births are often not registered in Nigeria, and few accurate records of ages are kept.

6. In Penang, the questionnaire was translated into several languages some of which did not have words for various types of drug (e.g., sedatives, tranquilizers) or their effects (e.g., to settle the nerves).
7. Investigators in Mexico and Pakistan found that it was necessary to drop some descriptions of drugs and to omit completely drugs that are rarely used, because school officials feared that to include them would encourage drug use.
8. In Nigeria and Thailand, at the time of the study, almost all drugs could be purchased without a prescription. Thus the concept of "nonmedical" use or use without the advice of a health worker would not suggest that the drug was obtained on the illicit market, as it does in some settings.
9. In India, it was the impression of investigators that respondents often did not understand the questions dealing with honesty of reporting — e.g., "If you had ever used cannabis /or opium or heroin/, do you think that you would have admitted it in this questionnaire?". When asked these questions at interviews, many respondents found that they were too hypothetical and simply indicated that they had answered the questions on the use of these drugs earlier. They then generally repeated their earlier answers.

Some of these difficulties were corrected in the finalized questionnaire by omitting the lie scale, the "skip" instructions, and the questions on parental education and type of community. Other difficulties were overcome by modifying questions and their possible answers. In addition, a number of optional changes were provided to overcome the difficulties most frequently encountered with the prototype questionnaire. It was also generally agreed by collaborating investigators that a flexible approach should be adopted in using the questionnaire and that this should be modified, as required, to meet local needs.

#### 4. APPLICATION AND FURTHER DEVELOPMENT OF THE FINAL QUESTIONNAIRE

The revised questionnaire (Annex 2) is being made available for use in countries where self-reported measurements of drug use are needed. No other drug-use questionnaire has been tried out in so many countries. The evidence of its validity and reliability should generate some confidence in the use of this questionnaire in national and international studies. Nevertheless, investigators planning to use the questionnaire should test its validity and reliability in the particular settings where it will be used. It might also be desirable to add to the core elements described here, in accordance with local needs or interests. In addition, investigators might wish to add some of the optional items suggested in Annex 4, such as those concerned with drug availability and the reasons for use.

The revised questionnaire described in this report may be used in the following types of study: (1) assessment of the prevalence of drug use in the populations studied at a particular point in time, (2) comparison of trends in various types of drug use through repeated surveys over time, (3) comparison of factors associated with drug use and identification of high-risk groups, (4) assessment of the impact of changes in drug policies or legislation on drug use, and (5) assessment of the effects of preventive programmes through surveys of drug use before and after the programmes have been implemented.

As pointed out earlier, this type of questionnaire is best used with high-risk literate populations that can be readily brought together at one time and place. Students, soldiers, and prisoners are therefore the most likely subjects for study. The questionnaire may have to be translated into several languages if used in certain countries.

The self-administered survey is not often used to study groups or patients making heavy use of drugs. These populations are generally studied in smaller numbers and in greater depth through clinical interviews, psychological tests, or field observations (15). It is rarely used for general adult populations, which are most frequently studied by means of personal interviews or household surveys.

The questionnaire may also be used in postal surveys of drug use (16). The problem with such surveys is that the number of questionnaires returned is frequently low, rates below 50% being common. Although there have been no reliability studies with mailed drug-use surveys, these may be used as an adjunct to school studies to obtain information from students who are absent or who have recently dropped out of school. They may also be used in general population surveys and follow-up studies, when subjects cannot be contacted after repeated visits to their homes. However, there are likely to be serious difficulties in conducting postal surveys in countries with low levels of literacy and with unreliable postal services.

The questionnaire might be further developed in several ways. It might be changed into an interview format for investigations of special populations, such as heavy drug users or young people who are not students. In its new form, the questionnaire would require testing with new reliability and validity studies. Other investigators might wish to extend the range of core items by testing some of the optional questions for reliability and validity.

Further work to improve the validity and reliability of the current questionnaire might also be considered. For example, test-retest reliability studies might be made during a longer period - perhaps up to a year - or test results might be compared with evidence of drug use from observers or official sources.

If the use of this questionnaire becomes sufficiently widespread, it might be advisable to convene a meeting of selected investigators to modify it further with a view to making it more practical and effective.

---

Annex 1

METHODOLOGICAL GUIDELINES FOR SELF-ADMINISTERED SURVEYS OF YOUTH

The general aim of this annex is to supplement the description of methodological issues encountered in the course of the collaborative study by presenting a more general review of the methodology of self-administered questionnaires, especially those developed for use with young people. The focus will be on the following key issues: the selection of samples, the questionnaires and administrative procedures to be adopted, and the problems of validity, reliability, and confidentiality. Once these issues have been dealt with, self-administered questionnaires may be very helpful in monitoring drug-use trends, in follow-up studies, and in planning and evaluating preventive programmes.

Sampling, with special reference to young people

The main task in sampling is to select a group of people who are representative of the total or special population of interest in terms of its chief characteristics. The various ways in which sampling can be done have been the object of detailed reviews (17, 18). These guidelines cover only the major considerations directly related to surveys of the use of alcohol and drugs in student and other youth populations.

Sampling is frequently not well done in alcohol and drug use studies. Typically, all problems of sampling are ignored and studies are made of the total population of concern. For example, Smart & Fejer (9) studied all students at school in several Canadian counties on a particular day. This amounted to sampling the days and avoided the problem of constructing a population sample, but it means that only students at school were included. Yet studies by Haberman et al. (19) have indicated that students who are absent from school have higher rates of drug use than those who are present. Therefore, some bias exists even in surveys of total school populations if non-attenders are omitted.

Too often the procedures used for sample selection are not included in study reports. For examples of studies in which the sampling approaches are described in detail, the reader is referred to Russell & Hollander (20), Champion (21), and Johnston (22).

The population of interest. Before a decision can be made as to the design or size of the sample or even as to whether a sampling procedure will be used instead of a total population survey, the population to which the study results are to apply must be precisely defined. For example, sampling considerations for all youths between the ages of 12 and 20 years in a country would be quite different from those for youths attending school in a specified city in that country. They would also be different for military personnel at a particular base. Unless the population is well specified in advance, the sampling scheme, however excellent, might be applied to the wrong population.

If a population is small enough, it may be more efficient and less expensive to study all of it rather than to sample a part of it. Examples of such a total population survey or census might be all youths attending school in a single community, all young men serving at a certain military base, or all workers in a particular factory. Studying the total population avoids certain practical and logistic problems involved in selecting a sample, such as the possible need to enumerate a complete population and the need to identify persons selected for inclusion in the sample. Travel between sample subjects must be considered. A survey of the total population, where feasible, also avoids the problem of subjects selected by a sampling scheme feeling "picked on" or discriminated against; it may also be less disruptive of routine in a school or other institution.

If, however, it is decided that a sample is required, the specific population of interest must be defined with the necessary exactitude before an appropriate sampling scheme can be constructed.

Considerations in selection of sample size. The object of the sampling scheme is to yield the most precise estimates of drug use possible within a given budget. In choosing a scheme, several factors need to be considered:

(a) The complexity of the population structure being studied. Some populations may be heterogeneous with respect to variables that influence drug use; for example, they may not be of the same age, sex, or socioeconomic status. The scheme must then provide for the selection of study subjects representative of the population of interest with respect to these variables. This approach to sampling may also be used to obtain separate estimates of drug use for each subgroup for comparative purposes.

If the prevalence of use varies between subgroups, it may be desirable to select greater-than-proportional sample sizes in subgroups where the prevalence is low. This will ensure equal precision of prevalence estimates in all subgrouping.

(b) The geographical spread of the population is important in choosing the most efficient sampling scheme. If estimates are needed on a national basis or for a population that is spread out geographically, cost considerations may demand some clustering of the persons to be sampled. Also if the geographical spread cuts across administrative boundaries, use of the same sampling scheme for all administrative districts may not be possible. For example, in a school survey the number of students per class may be greater in one state or province than in another, and a sampling scheme by class might therefore over-represent some school systems. For these reasons a geographically dispersed population may require a more complex sample scheme.

(c) Some sampling schemes are more costly and/or time-consuming than others. To ensure that a random selection of persons is made at some stage of the sampling scheme, a sampling frame must be available from which to choose the subjects. A sampling frame is merely a listing of all units or individuals from which a sample is to be selected. If a survey of all students in selected classes is wanted, the sample frame would consist of a listing of all classes. If only certain students are to be selected, the sample frame must be a listing of all students.

If the population is to be divided into subgroups, information is needed on the subgroup status for each person on the list. Such lists may be very costly or impossible to obtain, however, and very often the information needed to assign a person to a subgroup is not available. If, for example, the population of interest is high-school youth in a certain city, and no subgroups of students are to be studied, a listing might be available or compiled relatively quickly and cheaply. If, on the other hand, separate estimates were required for differences in drug use according to sex, age, and socioeconomic status, information on the first two variables might be routinely available; information on the third would generally become known only by a special enquiry and compilation.

If the information needed on subgroup status is not available, there is a way to avoid the costly process of gathering it from all persons in the population. This is the use of "multi-stage sampling" (described later), which obtains the necessary information from a limited number of smaller units. For example, the information could be obtained from all students in only 10 or 15 classrooms in a large city. A study using this approach would be described as using a cluster sample of classrooms.

In practice the study design is tied to an existing sampling frame or to a sampling frame that can be quickly and cheaply compiled. A caution against using lists of persons compiled for other purposes is needed here. Unless these lists have been very carefully checked, they are usually found to be incomplete or to contain many duplicates. They may also be out of date, partially illegible, or inappropriate for the population of interest. The use of such lists may cause biases of unknown magnitude in the estimates of drug use.

(d) Sample design is also affected by administrative considerations. The sponsor of the study may give ready access to some groups of youths, but not to others. Study, work, or training schedules of the respondents may dictate the selection of administratively defined groups such as school classes, factory departments, and military subunits, rather than a selection of persons cutting across these administrative boundaries.

Types of sampling design. The basic concept underlying all forms of scientific sampling is that of the probability sample. A probability sample is one in which every person in the population of interest has a known probability or chance of being selected for the sample. All of the sampling designs mentioned here involve probability sampling. Other forms of sampling not involving probability sampling also exist, such as haphazard sampling, where persons are chosen by other than random means. There is also purposive or quota sampling where "representative" individuals are sought out, according to someone's idea of what is representative. These non-probability sampling methods will not be dealt with here since they do not allow estimates of bias or precision to be made.

Random samples represent conceptually the simplest form of probability sample; each individual in the population has an equal probability of being selected for the sample. The mechanism for selection is usually a table of random numbers. The population is listed and each person on the list is assigned a unique number. The necessary number of subjects to be given questionnaires are then chosen by selecting the necessary random numbers from a table of random numbers, discarding the random numbers which exceed the largest number on the list, or which have been already selected.

Simple random sampling is usually employed at one stage or another in even the most complicated designs. By itself, it is usually employed only when the population of interest is neither too large nor too heterogeneous. Since simple random sampling requires a complete listing of the population to be sampled, it may be very difficult or expensive to obtain the list for large populations; for instance, it might be feasible to obtain a listing of school attenders for a single school or even a single school district, but not feasible at the state or national level. When the population of interest is heterogeneous with respect to factors affecting drug use, a stratified sampling design, discussed below, is called for. Simple random sampling may also be rejected when, for budgetary or administrative reasons, it is necessary to select clusters of individuals or units from the sample frame. In short, for all its simplicity, simple random sampling is useful only for small homogeneous populations where a complete population list is available or can readily be constructed. The investigator undertaking drug-use studies should assure himself on these points beforehand.

Another form of random selection is systematic sampling. Instead of each person being selected at random from the ordered population list, only the initial subject is selected randomly. Thereafter, every 10th, 50th, or  $n$ th person is selected from the ordered list, the value of  $n$  being determined by the size of the population list and the sample size desired. This method has the advantage that the process of selection is easy and the potential advantage that the sample may be spread out over the population listing. Whether it produces a representative sample depends upon the basis of ordering of the population list.

Stratified sampling may be used if the population of interest is thought to be heterogeneous with respect to drug use, or if special estimates of drug use are to be made for certain subgroups. For these purposes a prior stratification of the population is necessary; a separate and independent probability sample is selected within each defined stratum or subgroup. This method produces independent estimates of drug use to permit comparisons between subgroups. They may also be combined for estimates of the total population.

The bases for stratification may vary (e.g., geographical region, school, or classroom) or may be based upon characteristics of the individuals, such as age, sex, race, or socioeconomic status; but each individual in the population must be associated with one, and only one, stratum. If simple random sampling is combined with stratified sampling, either there must be a separate population list for each stratum, or each individual on an overall population list must be identified with a single stratum. It would be futile to use ethnic group, for example, as a stratifying variable if this information was not available for each individual. In addition, the size, or relative size, of each stratum must be known in order to allocate the overall sample proportionately amongst the various strata.

Stratified sampling is often used where certain groups need to be oversampled. This can permit estimates of equal precision to be made for strata where drug use is rare and for strata where it is widespread.

In summary, stratified sampling is a way of ensuring the representativeness of a sample and of increasing the precision of estimates. It is used when the necessary information on strata is available in an appropriate form to be incorporated into the sampling scheme. It can be utilized with simple random sampling or systematic sampling within strata. Stratified sampling may also be combined with the other two probability sampling designs mentioned below.

Rather than selecting individuals at random throughout the population, it is sometimes more efficient to select compact clusters of individuals and to survey all individuals making up the cluster; this is known as cluster sampling. Clusters of individuals may be defined according to their natural groupings, such as a school, a classroom, or a factory department. The costs and logistic problems of administering a questionnaire are often less when an administratively defined unit, (e.g., a classroom or military barracks) can be taken as a whole. It is often operationally more efficient and administratively more convenient for the survey to use such clusters. As with stratified sampling, however, each person must be associated with one, and only one, cluster, and the relative size of the clusters should be known. A survey in which this approach is used might be described for example, as a student survey using a cluster sample of schools.

There are, however, potential drawbacks to cluster sampling. The information obtained on the prevalence of drug use obtained from 1000 students in 20 classes of 50 persons each may not be the same as that obtained from 1000 students selected by simple random sampling from the same population. This is because there may be a concentration of similar drug-use patterns for students in the same classes. In order to obtain the same precision in estimating drug use in a cluster sample, it may be necessary to increase the sample size - i.e., in the above example, to more than 20 classes. The amount by which the sample size needs to be increased is a function of the amount of correlation found between the behaviour of persons within a cluster. If this correlation is zero, then the same precision can be obtained by cluster sampling as by simple random sampling. In that case, cluster sampling is likely to be preferable because of the economies in carrying out the sampling and in data collection.

Multi-stage sampling may be used if the population of interest is distributed over a large geographical area, such as an entire province or country, because a sample frame is often not available for the total population. Furthermore, it is often uneconomical to select a simple random sample over such large areas where travel between individuals could consume a large part of the survey budget. An alternative, then, is first to divide the total area into clusters of units. For a national sample, the clusters might be provinces or other administrative units which are both mutually exclusive and exhaustive. As in cluster sampling, a predetermined number of these units must be selected. For each of the selected clusters (usually called first-stage sampling units) a listing is made of the population within the unit or of still smaller clusters within the unit. At this second stage, a simple random sample could be drawn, using the listing of the population. Alternatively, a sample of clusters could be drawn and all persons within the selected clusters would be administered the questionnaire. One might also take the clusters formed after the first stage of sampling and subdivide them into subclusters, which are listed and sampled in their turn (second-stage sampling).

An example of multi-stage sampling might be a national sample survey of drug use in school attenders. First-stage sampling units could be provinces or states, with a probability sample of a fixed number of provinces being selected (first-stage units). Each state so selected is then subdivided into school districts, and a probability sample of school districts is selected (second-stage sampling units). For the school districts selected either a listing of all individual students is compiled and a simple random sample of students is selected, or a listing of classes is compiled and a cluster sample of classes is selected (third-stage sampling units). It should be noted that the sampling may extend beyond three stages; e.g., classes could have been used as third-stage units and a simple random sample of students within each selected class finally drawn.



A decision as to the complexity and extent of the multi-stage sampling is a difficult one that depends upon the various cost components of sampling at each level, the ability to compile the appropriate sampling frame at each level, and the needs of precision for the estimates of drug use. Stratification can also be superimposed at any stage of sampling to produce a hybrid sampling design of even greater complexity.

Even the simplest sampling design exercise will benefit from the participation of an experienced survey statistician. Multi-stage sample design, however, demands the solution of a set of complex statistical questions; it should therefore not be attempted without appropriate aid.

The size of the sample needed for a drug-use survey depends upon the following factors:

- the rarity of the trait (in this case, drug use) being estimated for the population of interest;
- the relative (percentage) or absolute precision desired for the estimate;
- the subgroups in the population for which separate estimates are required;
- the comparisons to be made between subgroups in the population.

For most surveys it is suggested that a sampling expert be consulted for advice on the appropriate sample size based upon the above considerations. There has, however, been considerable practical experience in conducting student drug-use surveys in recent years and this permits some practical suggestions to be formulated.

To include a sizable number of cases of a rare behaviour, such as using heroin, in a survey designed to characterize users, larger samples must be surveyed or a disproportionate number of respondents must come from high-risk groups. Cluster samples also need to be larger than simple random samples since they are less precise (see Johnston et al. (24) for a statistical method of correcting for clustered sampling).

Statements about drug use in relation to demographic, social, and geographical characteristics of the population are often required. Generally, it is necessary to determine the smallest subcategory the data for which are to be analysed - e.g., males aged 16-18 years living in large cities. As a rule of thumb, at least 50 subjects in each subcategory will generally be required in order to state the extent of drug use.

If the population of students to be studied is less than 1000, they should all be included. If they are fewer than 5000, a study sample of 500 may be sufficient. With populations greater than 5000, samples of 1000 would be a minimum. Probably a sample of 5000 is the maximum that would be needed for determining most types of drug use. That size of sample generally allows almost any analysis to be made and rare types of drug use to be detected. However, if there are 10 000 students, select about 10% of the classrooms. If there are more than 10 000, a stratified sampling plan will be necessary, with the number selected increasing with the total population. Sampling experts must be consulted on the sample size for large national studies.

#### Procedures for administering the survey

One of the most important steps in organizing a survey is the pilot study. All questionnaires should be tried out on a small number of subjects of the type to be studied in the actual survey. This allows a testing of the questionnaire and the development of answer categories. It also indicates whether the subjects understand the questions and can reply to them in the time available. It is often found, as a result of pilot studies, that the questionnaire is too long, too difficult, or not understood by some subjects. The pilot study may also identify difficulties in obtaining cooperation from subjects, so that procedures for selecting the sample and administering the survey may also be modified.

Administrative approaches for surveys of student and military populations will probably vary from one country to another. In most school surveys, it is essential to gain the cooperation of at least four groups: the authorities responsible for the school district; the principal or head master of each school, the teachers, and, finally, the students themselves. The best way is to state the reasons for the survey clearly and honestly to all concerned and to enlist their cooperation. Coercion at any level is likely to produce disturbing side-effects.

Many large studies (9, 20, 24) have used specially trained assistants to administer the surveys and answer questions about the meanings of the questions. If teachers are present in the class at the time of the survey, they must not be allowed to wander about and see students' answers. Since teachers are often required to maintain order in large unruly classes, they cannot always be banished. However, they should not collect or look at the questionnaires at any time. Students should be made aware that the survey is being conducted by outsiders, not by the school authorities or teachers, and that teachers will not see the results. One way of collecting the questionnaires is to place a box at the back of the room so that they may be returned anonymously.

In some cases, schools and teachers stand in loco parentis for students who are then not required to obtain parental consent for their participation. In other areas, schools require parental consent for the student to participate in a survey. When parental consent is required, illicit behaviour such as drug abuse is likely to be underreported (25). Thus, from the point of view of honest reporting, it is preferable to avoid the need for formal parental consent.

In general, it is a good practice to ensure that respondents do not sign their names to drug-use questionnaires. Most investigators feel that subjects will be more honest if they do not sign their names. This permits them to respond honestly, without fear of punishment. Certainly there is less risk of legal difficulties, and respondents seem to prefer anonymity, especially if they are older.

Unfortunately, research on the effects of anonymity on drug-use reporting has given conflicting results. Six studies have examined the question of anonymity: King (26) found no difference in the proportions of students reporting drug use with and without anonymity. Robins (27) obtained similar results with interviews and mailed questionnaires, except that the use of alcohol and tobacco was underreported in interviews. However, Luetgart & Armstrong (28) found that students reported more marijuana use in anonymous surveys.

Several studies have also been carried out with a randomized response model in which the respondent answers a question without revealing his own behaviour. For example, he is given several questions from which he may choose one to answer. The questions might include a drug-use question and a more innocuous one — say, about what he had for breakfast. Statistical techniques are then used to estimate the numbers of drug users. Boruch (29) found no difference in reported drug use with this anonymous method and with coded methods. However, Brown & Harding (30) and Goodstadt & Gruson (31) found underreporting with non-anonymous methods. In general, the results suggest that anonymous methods are superior to those in which respondents are identified. Anonymous administration is to be preferred unless there is a compelling reason for gathering identifying information.

#### Reliability and validity

The most serious weakness of many drug-use surveys is their lack of reliability and validity checks. Only a few investigators have attempted to establish any reliability or validity coefficients for their questionnaires. Investigators often devise new questionnaires rather than using an established one, and the quality of the new questionnaires is difficult to determine. More care has been taken with the quality of scales for measuring drinking behaviour than with the quality of scales for measuring drug use. It should also be noted that validity and reliability are not permanent qualities of a particular questionnaire. They are established for a given set of circumstances, given populations, and even particular time periods. For example, a questionnaire may give valid measures of drug use in one country but not in another, or it may be valid for young students in a classroom survey but not for a postal survey of adults.

Reliability. As stated by Anastasi (32), "reliability refers to the consistency of scores obtained by the same individuals when re-examined with the same test on different occasions, or with different sets of equivalent items, or under other variable examining conditions". Reliability is important because scores should be consistent and dependable and because "reliability attenuates validity". This means that only the reliable or consistent portion of a score can correlate with other variables. If a test or questionnaire has low reliability, its validity must also be low. Therefore, efforts should be made to achieve reliable measures before considering validity.

Reliability tests are usually made by examining either internal consistency or test-retest reliability. The former involves mathematical methods of assessing reliability. It examines the reliability of a questionnaire essentially by comparing scores on one-half of the items with scores on the other half. In most drug-use surveys, internal consistency is unlikely since single questions are generally used to measure a variable rather than multiple-item indexes or scales. However, when questions about drug use figure in several places in the questionnaire, one might expect to obtain the same answers and, hence, internal consistency. Statistical methods for these tests may be found in the work of Anastasi (32).

As the name suggests, test-retest reliability is determined by repeating the test or questionnaire on a second occasion. Such reliability is the degree of consistency between answers to the same questions in the two tests. For example, in drug-use questionnaires, people who reported use of a drug in the past year might be expected to report it again when asked the same question a month later. Of course, there are many situations in which test-retest reliability cannot be expected to be high. If the types of behaviour tested are highly variable or expected to change with time, consistency is an unreasonable requirement. This is sometimes the case where drug use is of an experimental nature and does not persist. Most users of drugs such as cannabis try the drug out of curiosity or because of peer pressure, and do not intend to continue its use. Consequently, testing on two occasions may give quite different responses. This may be avoided by keeping the test-retest interval short and by asking about drug use over a long time rather than a short one - e.g., by asking students if they ever used a drug during their lifetime rather than during the last month.

Perhaps because of the difficulties in analysis and interpretation, few reliability studies have been made with self-administered questionnaires. Whitehead & Smart (33) and Smart (34) have summarized many of the available data on reliability.

Only Haberman et al. (19) have carried out a test-retest study with students. The proportions of students who have never used cannabis were identical in the two studies. About 80% reported that they had answered questions about drugs honestly. This illustrates reliability in the aggregate statistics but not necessarily high reliability for individual students in the two testings.

Some sociologists determine reliability by comparing data from two sources. Stephens (35) studied 100 adults by means of a mailed questionnaire and compared the results for the same individuals from another source, that is hospital counsellors and relatives. A high degree of agreement was found for the questions about drug use and arrests. A similar study by Ball (36) also obtained highly reliable results with addicts.

Validity. The concept of validity is concerned with whether the test or questionnaire measures what it is supposed to measure. Validity coefficients tell how well this has been done (see 33 and 34 for reviews). In drug-use surveys, it is desirable to obtain accurate data from every respondent - that is, each respondent who has actually used drugs should indicate this on the questionnaire and non-users should report that they have not used drugs.

It is often difficult to establish the validity of information on drug use because such behaviour is often of a private and sometimes illegal nature. It is not readily subject to observation or verification by others. Thus it is difficult to obtain an outside measure

against which to compare survey results for individual cases. A further problem is that surveys at best can report only the drugs that the respondent believes he took. It is known from laboratory analyses that illicit drugs frequently do not contain any of the substances that they are supposed to contain.

Various approaches to validity in drug surveys have been attempted, some of which are described below.

Questions on "fictitious" drugs. Some early surveys (33) examined the use of "fictitious" drugs such as C.H.D., Lovar-25 (Love Pills), and monoxytriptamate (MOT) in an effort to assess overreporting. A large survey in Toronto indicated that only 0.8% of respondents reported the use of MOT. However, about 6% of addicts under treatment reported the use of fictitious drugs. Perhaps there is a greater overreporting problem with heavy users.

Comparison of self-report with other reporting methods. An early study by Smart & Jackson (37) compared the extent of self-reported drug use revealed by a questionnaire survey with estimates of drug use made by elected student leaders. This study indicated that self-reported cannabis use was somewhat greater for both males and females than the estimates of use provided by student leaders.

Comparison of self-report with documentary evidence. Stimson & Ogborne (38) found close agreement between drug use reported by addicts and that indicated by clinical case-notes. Robins (27) studied known heroin users and found varying agreement between interview data, case records, and laboratory reports on urine taken at the time of the interview. Agreement was high for the use of heroin (97%) and opium (80%) in the interview and case-notes but low for urinalysis reports. However, technical difficulties with the urinalyses may have contributed to this.

Some studies have compared self-reported rates of drug use in general populations with rates expected from prescription data. Parry et al. (39) interviewed adults known to have had prescriptions for psychoactive drugs in the past year. About 83% of those known to have received tranquilizers and 72% of those who received sedatives said so at the interview.

Lie scale to assess truthfulness. Smart et al. (40) used a nine-item lie scale developed by Eysenck & Eysenck (14), and found that students with high lie-scale scores were less likely to report the use of many legal and illicit drugs. However, the differences were small for most drugs. Furthermore, students with high lie scores were few in number and thus had a minor effect on the overall rates of alcohol and drug use. Later studies by the same team, using multivariate analysis, have shown that lie scores are far less adequate predictors of reported drug use than demographic characteristics are. This experience is consistent with the findings of the collaborative study described in the main body of this report and it supports the decision to omit the lie scale from the finalized WHO questionnaire.

In conclusion, studies in a number of developed countries have shown that reliability and validity data for drug surveys are generally adequate for research purposes, provided that gross categorizations are used. More work on both aspects is required, particularly on test-retest reliability. An important need is for more data on validity and reliability of drug-use surveys in developing countries.

#### Types of instrument used in studies of youthful drug use

The format or physical layout of the questionnaire is extremely important for purposes of data processing. In self-administered surveys of drug use, three general types of instrument have been used: fill-in forms, separate answer sheets, and machine-readable forms. Examples of the different types are available in a publication by Nehemkis et al. (11) which contains copies of some 40 questionnaires used in drug-use surveys in North America.

The fill-in form was used in many earlier studies. With this form the subject marks his answer directly on the questionnaire. The youth survey questionnaire shown earlier in this report is of this type. The answers are usually "coded" or transferred by hand onto coding sheets, for which computer punch cards are made. This method requires the least from the respondent: he merely has to read the question and mark his answer with a tick or cross, or in any other obvious way. This method works best with children below the age of 13, who often have difficulty with separate answer sheets. The disadvantage of the method is that it tends to be labour-intensive, since assistants are required to do the coding and key punching. These tasks are manual and rather tedious, so that errors are likely. Careful checking of coding and of key punching are necessary.

The answer sheet format is one in which the questionnaire and answer sheet are separate. The answer sheet is numbered in the same way as the questionnaire, with a numbered box for each answer. In some cases both the answers and the boxes for them may be on the answer sheet, but usually the answers are only on the questionnaire. At the end of the survey, the answer sheets are collected and computer cards may be punched directly from the sheets. This method avoids the additional task of coding the answers, and allows questionnaires to be reused. Hence, it is somewhat cheaper than the fill-in form.

The most modern method involves machine-readable forms. No personnel are required to code or key-punch the answers, since the "reader" machine will scan the answer sheet visually and automatically key-punch the answers on to cards or computer tape. In some studies, answer sheets have been made machine-readable and in other studies questionnaires have been made machine-readable. Both methods are relatively costly in terms of materials and equipment, but are extremely labour-efficient. A further problem is that students must mark their answers carefully and distinctly. Since stray marks on the page may be read as answers, subjects must constantly be careful where they put their answers, especially if they leave blanks.

Usually, machine-readable answer sheets must be specially designed for each study and may cost several hundred US dollars per study. Machine-readable questionnaires are even more expensive, and a separate one is required for each subject. They are not reusable as is the case with the answer-sheet method. Also, sophisticated reading machines are needed if the answers are to be directly entered on to the computer tape. This method is the most suitable where sophisticated data processing equipment is available, where labour costs for coding and key punching are high, and when the number of respondents is very large - e.g., over 5000.

#### Data analysis

In most drug-use surveys, data analysis is not difficult. Advance planning is necessary to ensure that the analysis is suitable for the data storage system used. For example, if analysis is to take into account many variables on large samples, computer storage is essential. If samples are small and only gross drug-use rates are required, analysis may be done by hand or with a desk calculator.

Drug-use surveys usually require "univariate" analysis, which examines the data for only one variable at a time - e.g., overall rates of cannabis or alcohol use in the sample. They also require "bivariate" analyses, in which variables are examined two at a time - for example, drug-use rates by age, sex, occupation or other demographic characteristics. If there is a need for multivariate analyses, in which many variables are considered, then large numbers of subjects will be required. Bentler et al. (41) have described the major types of multivariate analysis that may be used in drug-use surveys, including cluster analysis, discriminant analysis, and automatic interaction detection analysis. They have also specified the variables and sample sizes required for each type of analysis and shown the actual methods of analysis.

In any survey, a varying proportion of incomplete questionnaires will be returned. Some are totally unusable, either because the respondent did not follow instructions or because he did not take the survey seriously. Questionnaires that have a significant number of incomplete and/or inconsistent responses form an intermediate group. For these, the

investigator must decide on specific criteria for determining what questionnaires are to be included in the analysis. For example, in the WHO collaborative study reviewed in this report, questionnaires were excluded if they had four or more incomplete or inconsistent answers. The advantages of liberal criteria for inclusion are that more questionnaires can be analysed and that the sample will be larger and more representative of the population surveyed. The disadvantages are that the data are not as reliable and that the number of answers for each questionnaire item will vary. If rather strict criteria are adopted, the data analysis will be performed on questionnaires that are for the most part properly completed—hence the data will be more reliable. The disadvantage is that more questionnaires are rejected, so the results are less representative of the population surveyed. Investigators who have considerable experience in self-administered questionnaire surveys generally expect to omit 5-10% of questionnaires from the analysis for reasons of incompleteness or inconsistency. The proportion of inconsistent and incomplete questionnaires is greatest when the sample contains young students—e.g., below the age of 14—and least with older students.

#### Types of questions in drug-use surveys for youth

Usually drug-use surveys include questions on demographic characteristics and drug-use items, but there has been great variation in the measures of these variables, so that no "standard" set exists. Apparently, only three teams of investigators have used similar questionnaires in a long series of surveys. Similar, but not identical, demographic and drug-use questions were used in Blackford's studies in San Mateo, California (42), the studies by Johnston et al. elsewhere in the USA (24), and those by Smart & Fejer in Toronto (9). However, other questions have been changed from one survey to another—for example, those concerning personality, attitudes, and opinions about drugs.

What should be included in a drug-use survey is largely a matter of the goals of the survey, the time available, and the respondents' capacities. If the survey goals are limited to gross estimates of the frequency of drug use, only a few questions about the major popular drugs are required. The most important categories of question have been covered in the discussion of core and optional items (chapter 2.2). The advantage of incorporating items from the questionnaire mentioned in this report is that the data obtained will be comparable with data produced by other investigators collaborating with WHO and the United Nations in the assessment of drug-abuse problems. To cover all areas of inquiry in a self-administered survey may be impossible and unnecessary. If data on the correlates of drug use are desired, at least demographic characteristics should be included. Age, sex, occupation, and education have usually been closely related to all types of use and abuse. Other correlates, such as attitudes or personality traits, may also be desired and a large number of investigations have included questions on these aspects (see Mercer & Smart (1) for a review). However, it has been recognized that drug-use questionnaires are usually too long and tedious (12). They should be made as short and interesting as possible.

Investigators should include only what is essential in the questionnaire. One method of increasing the number of variables is to have more than one version of the questionnaire. Certain core items may be common to all forms, but other variables may be included in only one form. Of course, this method will work only if there is a sufficient number of respondents to provide adequate samples for each form.

When surveys are conducted in classrooms, they must be completed in one class period (30 - 45 minutes). This includes time for giving instructions, answering questions, and collecting answer sheets. The actual time spent will be dictated by the reading and answering speed of the slowest child in the sample being tested. Thus samples that include a wide range of ages will require different lengths of survey time. Usually students aged 12 - 13 years will take twice as long to answer a questionnaire as those aged 17 - 18 years. Reading levels may also vary among samples of the same age, and students receiving special education for the retarded or "slow progress" classes will often take considerably longer to complete questionnaires. Care should be taken to pretest the questionnaire on the slowest-working as well as the fastest-working subjects of the sample. Sometimes investigators draw

up two questionnaires: one for younger students, containing only demographic and drug-use items, and another for older students, with the same items plus additional attitude or personality items. This allows everyone to finish at about the same time and also allows the collection of some data on the correlates of drug use.

The general format and wording of questionnaires are important. There is a tendency for some investigators to prefer an open-ended style - i.e., where the subject writes in the answer - rather than a closed style, where the possible answers are specified and the respondent marks one of them. Theoretically, open-ended questions allow more specificity and may be more sensitive to changes over time. However, respondents frequently have difficulty in specifying certain information - such as the exact number of times a drug was used - and are able to make only rough estimates. Specified answer categories take this limitation into account and may be precoded to simplify data processing. Many open-ended questions, on the other hand, have to be coded eventually if they are to be computer-processed, and this adds enormously to the duration and cost of the survey research. Uncoded or open-ended questions are best left for small pilot studies.

Another aspect regarding format concerns "skip" directions. As discussed earlier (see page 19), these are instructions to respondents not to answer particular questions if they have answered an earlier one in a certain way. For example, "if you have no father, do not answer the questions on father's occupation or education". In general, "skip" directions are best avoided, since many respondents fail to read them carefully. This is particularly the case with children aged 14 years or below. If such directions are absolutely necessary, they should be few in number, clearly marked on the questionnaire, and, if possible, explained to respondents orally.

#### Confidentiality versus the need to identify subjects

The legal and ethical issues created by drug-use surveys vary from country to country depending on local laws and customs. In some countries such concerns are minimal; in others, respondents' rights are protected through the legal and professional guidelines for research. In some countries, signed questionnaires stating that a given student has used illicit drugs are considered as "hearsay evidence" and cannot be used against the subject in court. However, it is possible that they might be used in investigations. Beyond these legal questions, respondents would not wish their questionnaires to be used for purposes beyond research. In general, respondents have the right to confidentiality and to freedom from harm if they participate in drug-use surveys.

For the type of research under discussion, there are only three situations in which it is necessary to have names or identifying marks: where test-retest reliability studies are planned; where questionnaire data are being compared with data from other sources, such as school records; and where follow-up studies are planned. In a sense all these are "follow-up" studies, since the investigator wishes to match questionnaire responses with other data about the individual. The individual's right to privacy has to be measured against the need of the investigator and of society at large to know the results of follow-up studies.

A number of methods for protecting the rights of subjects have been developed. In some cases, a code has been developed whereby each subject is given a unique number, which is placed on the questionnaire. For the persons conducting the survey or handling the survey questionnaires the data are identified only by number. A third party keeps the list of numbers with the identifying names, but does not have the questionnaire data. In some cases the name-number list will have been sent out of the country to a distant third party.

Other methods have been developed for the assessment of test-retest reliability, in which respondents are asked to fill in identical questionnaires on two occasions. One method is to prepare labels with the name and unique number of each respondent. Two questionnaires with the same name and number are prepared for each respondent. At the time of the first test respondents tear off their names and hand in the questionnaire that has only a number on it. At the retest, it is necessary to make sure that each respondent receives the right questionnaire.

In follow-up studies, the most usual method of protecting the identity of respondents is to use self-generated codes. These might be useful in follow-up and test-retest studies, but less so in studies associating questionnaire data with other case material. Various possibilities exist. J. Swisher (unpublished observations, 1977) tried using the student's telephone number, but found that many numbers were wrong at the second testing. H. Annis & P. Kohn (unpublished observations, 1977) have begun a follow-up study using 4 items: the first letter of the respondent's mother's first name, the day of the month in which the respondent was born, the first letter of his first name, and the street number of his house at the time of the first test. This 4-item code does not tax the memory and should not change with time. Students should be able to use such a system without difficulty. In practice, however, some cases are lost to analysis because earlier and later data cannot be matched. Therefore, other techniques are preferable.

In conclusion, reliability and follow-up studies create certain ethical and confidentiality problems. However, such studies are valuable and methods of carrying them out are improving.

#### Monitoring trends and evaluating prevention programmes

Investigators who use the questionnaire presented here will have various aims. Some will be conducting their drug-use survey solely in order to obtain information on the nature and extent of use at a given time. Most investigators are interested only in determining a point prevalence estimate. However, some will be interested in examining trends and in programme evaluation.

Monitoring trends. Drug-use patterns are constantly changing, and usually only informal or indirect means are available for examining these changes — e.g., hospital records, arrest data, and drug seizures. Two long-term studies have been made of drug use in high-school students. Blackford (42) has surveyed samples of California students annually and Smart & Fejer (9) have studied Toronto students over 6 years. These studies permit an examination of how drug use is changing, what types of use are becoming more popular (for example, less illicit use and more drinking), and what correlates of use are changing (such as more use by females). Repeated annual surveys also provide an opportunity for special studies, for example, in the Toronto studies, special sections on drug education, drinking and driving, and personality variables. Each repeat survey involves the same demographic and drug-use questions with different, specially constructed sections chosen with a view to their timeliness and priority.

Repeated cross-sectional surveys are far cheaper and more easily managed than follow-ups of individuals are. If repeated surveys are planned to monitor trends in schools, it is necessary to retain the same sampling system, administrative procedures, and parts of the questionnaire to be compared over time. No effort is made to resurvey the same individuals.

Of course, such studies must be of fairly short duration, since true sampling similarity is difficult to maintain. Schools change with time, and a particular sample of schools that is representative of the total at the outset of the study may not continue to be representative. Schools may be closed, they may begin to serve different populations, or their function may change. When these events occur, it may be necessary to draw new samples of schools, which will continue to yield samples of students representative of the region being monitored (24).

Evaluating programmes. Only rarely have drug-use surveys been used in programme evaluation, although they could be. They should be considered to examine the impact of educational programmes and certain legal changes. If effective preventive education programmes are introduced, drug-use surveys could detect declining drug use or changing patterns of use. Systematic evaluation studies could be implemented if educational programmes were implemented in some schools but not in others, and if before-and-after surveys were made in both types of school.



Drug-use surveys might also be used to examine the effects of legal changes. For example, it has been found in some communities that, after the legal drinking age has been lowered, an increase in the drinking problem has been detected in student surveys (43). Drug-use surveys might be used to monitor the effects of changes in laws regarding penalties for drug use - e.g., the liberalization of cannabis laws, through which penalties are reduced, might result in an increase in cannabis use among students.

Annex 2

STUDENT DRUG-USE QUESTIONNAIRE

The questionnaire was finalized after testing for reliability and validity in seven countries. It has three sections: questions 1-6 request information on demographic characteristics, questions 7-20 concern frequency and age at first use for 13 types of drug including alcohol and tobacco, and questions 21 and 22 relate to the honesty with which the questions were answered.

Essentially the same question-and-answer sets were used in the test, with some improvements in the items on drug use and demographic characteristics. A lie scale was included in the tested questionnaire, but this has been omitted from the questionnaire given in this annex, because of the numerous difficulties of interpretation.

The format of the final questionnaire is slightly different from that of the tested version. For example, the questions for each item are now written out in full rather than being abbreviated. Also, the final questionnaire does not contain "skip" instructions, which, in the earlier version, required the respondent to disregard items on drugs that he or she had never used. The respondent is now requested to answer all items, because investigators felt that the "skip" questions were too complex in some settings, especially for younger students.

YOUTH SURVEY QUESTIONNAIRE

This questionnaire has been developed by the World Health Organization in cooperation with the United Nations Fund for Drug Abuse Control. The questions ask about drug use as well as your age, whether you are a male or a female, and so on. Your answers will be looked at by people who are trying to learn more about drug use and will be compared with the answers made by young people in other parts of the world.

If this study is to be helpful, it is important that you should answer each question as carefully as possible. All your answers will be kept strictly confidential and we are not asking you your name.

Most people enjoy filling in this questionnaire, and we hope that you will too. Be sure to read the instructions before you begin to answer.

INSTRUCTIONS

*This is not a test: there are no right or wrong answers, but please answer carefully.*

*For each question pick the answer that fits you the best and put an X in the box opposite that answer. Pick only one answer for each question. Look at the example below:*

*Have you drunk any water during the last 30 days?*

- A No
- B Yes, on 1-5 days
- C Yes, on 6-19 days
- D Yes, on 20 or more days

*The answer chosen was "D", indicating that the person who answered the question had drunk water on 20 or more days during the previous 30 days.*

*If you do not know the answer to a question, or if you feel that you cannot answer honestly, leave the question blank. Complete as many questions as possible.*

1. Are you a male or a female  A Male  
 B Female
2. What is your age?   Years
3. How many years of school have you completed? (Do not count kindergarten)   Years
4. For most of the last 12 months, were you a student, full-time or part-time?  I was not a student during most of the last 12 months  
 I was a part-time student  
 I was a full-time student
5. For most of the last 12 months, have you worked on a paid job, full-time or part-time?  I have not worked on a paid job during most of the last 12 months  
 I have worked on a part-time paid job  
 I have worked on a full-time paid job
6. For most of the last 12 months, have you worked on an unpaid job, full-time or part-time?  I have not worked on an unpaid job during most of the last 12 months  
 I have worked on a part-time unpaid job  
 I have worked on a full-time unpaid job

FOR EVERY QUESTION YOU MUST READ PARTS (a), (b), (c), and (d), AND ANSWER EACH PART

7. (a) Have you ever smoked, chewed, or sniffed any tobacco product (such as cigarettes, cigars, pipe tobacco, chewing tobacco)?  A No  
 B Yes
- (b) Have you smoked, chewed, or sniffed a tobacco product in the past 12 months?  A No  
 B Yes
- (c) Have you smoked, chewed, or sniffed a tobacco product during the past 30 days?  A No  
 B Yes
- (d) How old were you when you first smoked, chewed, or sniffed a tobacco product?  A Have never smoked, chewed, or sniffed tobacco products  
 B 10 years old, or less  
 C 11-12 years old  
 D 13-14 years old  
 E 15-16 years old  
 F 17-18 years old  
 G 19 years old, or more

8. (a) Have you ever drunk any alcoholic beverage (including beer, wine, and spirits)?  A No  
 B Yes
- (b) Have you drunk any alcoholic beverage in the past 12 months?  A No  
 B Yes
- (c) Have you drunk any alcoholic beverage during the past 30 days?  A No  
 B Yes, on 1-5 days  
 C Yes, on 6-19 days  
 D Yes, on 20 or more days
- (d) How old were you when you first had a drink of beer, wine, or spirits — more than just a sip?  A Have never drunk alcoholic beverages  
 B 10 years old, or less  
 C 11-12 years old  
 D 13-14 years old  
 E 15-16 years old  
 F 17-18 years old  
 G 19 years old, or more
9. (a) Have you ever taken any cannabis (marijuana, pot, hashish, grass, bhang, ganja)?  A No  
 B Yes
- (b) Have you taken any cannabis in the past 12 months?  A No  
 B Yes
- (c) Have you taken any cannabis during the past 30 days?  A No  
 B Yes, on 1-5 days  
 C Yes, on 6-19 days  
 D Yes, on 20 or more days
- (d) How old were you when you first took cannabis?  A Have never taken cannabis  
 B 10 years old, or less  
 C 11-12 years old  
 D 13-14 years old  
 E 15-16 years old  
 F 17-18 years old  
 G 19 years old, or more

10. (a) Have you ever taken any cocaine?  A No  
 B Yes
- (b) Have you taken any cocaine in the past 12 months?  A No  
 B Yes
- (c) Have you taken any cocaine during the past 30 days?  A No  
 B Yes, on 1-5 days  
 C Yes, on 6-19 days  
 D Yes, on 20 or more days
- (d) How old were you when you first took cocaine?  A Have never taken cocaine  
 B 10 years old, or less  
 C 11-12 years old  
 D 13-14 years old  
 E 15-16 years old  
 F 17-18 years old  
 G 19 years old, or more
11. (a) Have you ever taken any amphetamines or other stimulants (uppers, bennies, speed, pep pills, diet pills) without a doctor or health worker telling you to do so?  A No  
 B Yes
- (b) Have you taken any amphetamines or other stimulants in the past 12 months without a doctor or health worker telling you to do so?  A No  
 B Yes
- (c) Have you taken any amphetamines or other stimulants during the past 30 days without a doctor or health worker telling you to do so?  A No  
 B Yes, on 1-5 days  
 C Yes, on 6-19 days  
 D Yes, on 20 or more days
- (d) How old were you when you first took an amphetamine or other stimulant without a doctor or health worker telling you to take it?  A Have never taken amphetamines  
 B 10 years old, or less  
 C 11-12 years old  
 D 13-14 years old  
 E 15-16 years old  
 F 17-18 years old  
 G 19 years old, or more
- (e) If you have ever taken amphetamines or other stimulants, write in the name of the one you have taken most recently. -----

12. (a) Have you ever taken any hallucinogens (LSD, mescaline, peyote, psilocybin, PCP)?  A No  B Yes
- (b) Have you taken any hallucinogens in the past 12 months  A No  B Yes
- (c) Have you taken any hallucinogens during the past 30 days?  A No  B Yes, on 1-5 days  C Yes, on 6-19 days  D Yes, on 20 or more days
- (d) How old were you when you first took a hallucinogen?  A Have never taken hallucinogens  B 10 years old, or less  C 11-12 years old  D 13-14 years old  E 15-16 years old  F 17-18 years old  G 19 years old, or more
- (e) If you have ever taken hallucinogens, write in the name of the one you took most recently. -----

13. (a) Have you ever sniffed or inhaled things (such as glue, aerosol sprays, or other gases) to get high? (Do not include smoke)  A No  B Yes
- (b) Have you sniffed or inhaled things to get high in the past 12 months?  A No  B Yes
- (c) Have you sniffed or inhaled things to get high during the past 30 days?  A No  B Yes, on 1-5 days  C Yes, on 6-19 days  D Yes, on 20 or more days
- (d) How old were you when you first sniffed or inhaled something to get high?  A Have never sniffed or inhaled anything to get high  B 10 years old, or less  C 11-12 years old  D 13-14 years old  E 15-16 years old  F 17-18 years old  G 19 years old, or more
- (e) If you have ever sniffed or inhaled things, write in the name of the thing you have sniffed or inhaled most recently. -----

14. (a) Have you ever taken any  A No  
tranquillizers (Librium, Valium,  B Yes  
Miltown) without a doctor or health  
worker telling you to do so?
- (b) Have you taken any tranquillizers  A No  
in the past 12 months without a  B Yes  
doctor or health worker telling  
you to do so?
- (c) Have you taken any tranquillizers  A No  
during the past 30 days without a  B Yes, on 1-5 days  
doctor or health worker telling  C Yes, on 6-19 days  
you to do so?  D Yes, on 20 or more days
- (d) How old were you when you first  A Have never taken tranquilizers  
took a tranquillizer without a  B 10 years old, or less  
doctor or health worker telling  C 11-12 years old  
you to take it?  D 13-14 years old  
 E 15-16 years old  
 F 17-18 years old  
 G 19 years old, or more
- (e) If you have ever taken tranquillizers  
write in the name of the one you  
have taken most recently. -----
15. (a) Have you ever taken any sedatives  A No  
(barbiturates, downers, goofballs,  B Yes  
Seconal) without a doctor or health  
worker telling you to do so?
- (b) Have you taken any sedatives in the  A No  
past 12 months without a doctor or  B Yes  
health worker telling you to do so?
- (c) Have you taken any sedatives during  A No  
the past 30 days without a doctor  B Yes, on 1-5 days  
or health worker telling you to do  C Yes, on 6-19 days  
so?  D Yes, on 20 or more days
- (d) How old were you when you first  A Have never taken sedatives  
took a sedative without a doctor  B 10 years old or less  
or health worker telling you to do  C 11-12 years old  
so?  D 13-14 years old  
 E 15-16 years old  
 F 17-18 years old  
 G 19 years old, or more
- (e) If you have ever taken sedatives,  
write in the name of the one you  
have taken most recently. -----



16. (a) Have you ever smoked or eaten any opium without a doctor or health worker telling you to do so?  A No  B Yes
- (b) Have you smoked or eaten any opium in the past 12 months without a doctor or health worker telling you to do so?  A No  B Yes
- (c) Have you smoked or eaten any opium during the past 30 days without a doctor or health worker telling you to do so?  A No  B Yes, on 1-5 days  C Yes, on 6-19 days  D Yes, on 20 or more days
- (d) How old were you when you first smoked or ate opium without a doctor or health worker telling you to do so?  A Have never smoked or eaten opium  B 10 years old, or less  C 11-12 years old  D 13-14 years old  E 15-16 years old  F 17-18 years old  G 19 years old, or more
17. (a) Have you ever taken any heroin (horse, smack, H)?  A No  B Yes
- (b) Have you taken any heroin in the past 12 months?  A No  B Yes
- (c) Have you taken any heroin during the past 30 days?  A No  B Yes, on 1-5 days  C Yes, on 6-19 days  D Yes, on 20 or more days
- (d) How old were you when you first took heroin?  A Have never taken heroin  B 10 years old, or less  C 11-12 years old  D 13-14 years old  E 15-16 years old  F 17-18 years old  G 19 years old, or more

18. (a) Have you ever taken any other opiate  A No  
(methadone, morphine, codeine,  B Yes  
Demerol, paregoric) without a doctor  
or health worker telling you to do so?
- (b) Have you taken any of these opiates  A No  
in the past 12 months without a  B Yes  
doctor or health worker telling you  
to do so?
- (c) Have you taken any of these opiates  A No  
during the past 30 days without a  B Yes, on 1-5 days  
doctor or health worker telling you  C Yes, on 6-19 days  
to do so?  D Yes, on 20 or more days
- (d) How old were you when you first  A Have never taken opiates  
took any of these opiates without  B 10 years old, or less  
a doctor or health worker telling  C 11-12 years old  
you to do so?  D 13-14 years old  
 E 15-16 years old  
 F 17-18 years old  
 G 19 years old, or more
19. (a) Are there any other drugs not  A No  
mentioned that you have taken in  B Yes  
the past year without a doctor or  
health worker telling you to do so?
- (b) If yes, write in the name of the  
drug or drugs here.  
-----  
-----  
-----
20. (a) Do you know of any other drugs that  A No  
people are now taking to make them  B Yes  
feel good or intoxicated?
- (b) If yes, what are these drugs called? -----  
-----  
-----
21. If you had ever used any cannabis, would  A No  
you have admitted it in this question-  B Not sure  
naire?  C Yes
22. If you had ever used any opium or heroin,  A No  
would you have admitted it in this  B Not sure  
questionnaire?  C Yes

---

THANK YOU FOR COMPLETING THIS QUESTIONNAIRE

Annex 3

INSTRUCTIONS TO INVESTIGATORS FOR USE OF THE QUESTIONNAIRE

Planning of the survey

Investigators will need to plan the implementation of any survey carefully. The actual time required for any survey depends on its size and the familiarity of the organizers in conducting such studies. Time for each element in the plan must be more than adequate to allow for some elements to be late. The major elements of planning are listed in the accompanying table, along with a sample time-table for implementing the various stages of a hypothetical survey to be completed in 15 months.

TIME-TABLE FOR SURVEY IMPLEMENTATION

Activities	Duration (months)														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Planning	_____														
Questionnaire design	_____														
Sampling plan	_____														
Pilot test questionnaire and procedures	_____														
Arrangements with school	_____														
Training of supervisors	_____														
Administration of survey	_____														
Data analysis	_____														
Writing of report	_____														

Sampling

Some form of randomized sampling is recommended in student surveys. In order to do this, it is necessary to have a list of classes and schools from which to sample. Usually, classes and not students are the sampling unit in these studies. An alternative is to use the entire school population of a given area or to use all classes of a certain type of student.

Adaptation of the questionnaire

Much of this questionnaire consists of a standard set of questions about drug use, which is repeated for each drug. Therefore, it is important to examine the questions in this set to be sure that they will work well in the study being planned. Each investigator can then adapt the questionnaire to his needs and to the local situation. The following are some optional changes to consider.

(1) Investigators may find, on examining questions on the use of a drug in the respondent's lifetime, or in the past year, that they would like to have more detailed information than simply a "Yes/No" answer. If so, they might rephrase, for example, question 9(a) from "Have you ever taken any cannabis?" to "On how many occasions (if any) have you taken cannabis?". Then the answer set might be elaborated to something on the following lines.

- |                     |                         |
|---------------------|-------------------------|
| A. Never            | D. 6 to 9 occasions     |
| B. 1 or 2 occasions | E. 10 to 49 occasions   |
| C. 3 to 5 occasions | F. 50 or more occasions |

The answer categories could be more or less detailed, depending on the distinctions needed in the results. The question on cannabis use in the previous year 9(b) might be elaborated in much the same way. For purposes of international comparison, the proportions of answers to each of the questions B-F may be combined. The resulting proportion may be compared with the proportion of "Yes" answers to the question in its original form. Such elaborations make the questionnaire longer and require more respondent time, so it would be a good idea to pretest them before making a final decision.

(2) Another very important aspect of drug-use questions is the definition of the drug or drug class. Obviously, the purpose is to communicate clearly to respondents, in terms they will understand, the type of drug in question. There are various methods, which will be effective in various countries, so the wording should be altered as much as necessary to clarify the communication. Sometimes generic or trade names for drugs will be meaningful identifiers for respondents; sometimes giving the legitimate medicinal purpose will help. Usually popular or slang names help to identify the drugs, and some investigators may wish to use a combination of all these approaches. Examples of these approaches have been given in parentheses in the preceding questionnaire. The questions as they are currently worded have been carefully thought out by the collaborating investigators, so an effort should be made to retain the essence of their meaning. In some situations, however, they may have to be substantially reformulated.

For drugs such as barbiturates and tranquilizers, which are sometimes given by a doctor or health worker, the questions ask only about use that occurred without such medical supervision. It may be that investigators also want information about the extent to which these drugs are being used under medical supervision. In that case, an additional but similar set of questions could be asked just before or after the questions about nonmedical use. However, to do so would lengthen an already fairly long and repetitive section about drug use.

(3) Where appropriate, "pharmacist" may be added to the list of health professionals who may "prescribe" substances for medical use (see subitems (a)-(d) of questions 11-19).

(4) The format of drug-use items may be altered to incorporate "skip" or branching instructions, if such directions can be followed easily and accurately. This might reduce the time needed to complete the questionnaire and to monitor repetitive items, but caution is advised, since such instructions may be difficult for some students to follow.

(5) Age categories for the first use of a substance may be altered, depending on the age range of the sample surveyed. For example, if questionnaires are administered to university students or adults, it will be necessary to expand on the response choice "19 years old, or more" (and to combine younger age ranges) for the (d) parts of the drug-use items. Similarly, the question might be changed to "In what year did you first take .... (name of drug)?" This would require answer boxes to be provided for the year, such as 19  .

(6) Regarding the item on tobacco use, the investigator may wish to inquire about the method of ingestion by providing the following response categories: cigarette smoking, pipe smoking, cigar smoking, tobacco chewing, and tobacco sniffing. Similarly, for other types of drug, it may be desirable to offer the following response categories: by mouth, by injection, by smoking, by sniffing, or by inhaling.

(7) For drugs that are relatively unknown locally, the investigator may eliminate items pertaining to their use.

(8) Where necessary, the investigator may feel that the following descriptions of the medical applications of various substances will help the respondent to differentiate drug classes. In such cases, he may wish to provide respondents with the following information.

Tranquillizers            Doctors prescribe these to calm people down.

Sedatives                Doctors prescribe these to help people to relax and fall asleep.

Opiates                      Various drugs are made from opium and may be prescribed by doctors to reduce pain, stop coughing, control diarrhoea, and so on. They include synthetic drugs, such as methadone, as well as derivatives of natural opium.

(9) The original drug-use questions have been modified to include the subquestion (e) "If you have ever taken /amphetamines, hallucinogens, inhalants, tranquilizers, sedatives, etc./ write in the name of the one you have taken most recently". The reason for this question is that it gives information on the specific drugs most recently abused.

At times, there may be a need for even more information on a specific drug. For example, government or international authorities may wish to know the extent of use of a specific substance in order to determine whether the legal controls should be changed. In this case, it would be possible to add an additional question to obtain answers to drug-use subquestions (a) - (d) regarding the use of the specific drug about which there is concern.

Because drug-abusing populations frequently do not know the correct generic names of the drugs that they use, it would be useful to give as much descriptive information as possible in the question to help the subject to identify the correct drug. However, the investigator is cautioned not to insert too many additional questions of this type: the drugs available on the licit and illicit market number in the thousands and it would not be feasible to ask about even a small percentage of them.

(10) If an item on the type of community is to be included — e.g., place of current residence: city, suburb, town, rural area, or village — the response categories should be appropriate to local norms. If respondents are currently living away from their homes (in school residences, institutions, etc.), the investigator must determine beforehand whether the data are to refer to their present living area or to their home location, if these differ. Some investigators have found it useful to ask both the present address and the permanent address.

(11) Investigators may want to add an item about the amount of spending money available to students from all sources, since this may relate to their drug-use patterns.

(12) Regarding social status, some items — such as parental education, place of residence, occupation, and income of the head of the household — should be incorporated into the questionnaire. Use the items that are relevant in your setting for determining an index of socioeconomic status. Because of the great variation in social-status indicators in different parts of the world, no standardized items are provided in this report.

(13) If necessary (perhaps for younger respondents), instructions may be expanded to provide more detailed directions and examples of how to complete the questionnaire.

(14) Additional questions can be added, depending on the investigator's purposes and the ability of respondents to handle a longer questionnaire. Generally, investigators have a tendency to underestimate the time it will take, so they should keep track of the time required for survey administration in the pretest. It is also a good idea in the pretest to discuss the questionnaire informally with respondents once they have finished, to see where they had difficulties and what their general reaction was.

(15) Many survey researchers feel that, unless you ask the same questions, in the same order, with the same instructions, and in a similar setting, comparability will be reduced. The investigator who uses this questionnaire should therefore not make any of the modifications mentioned above unless there is good reason.

#### Translation of the questionnaire

This report, including the final questionnaire, will be published also in French. In addition, it has been translated for testing into Chinese, Malay, Spanish, Hindi, and Urdu. If the WHO youth survey questionnaire is to be translated into other languages, it will be important to ensure that there is language equivalence between the questionnaire as published in this report and the translated questionnaire as it is to be applied.

A number of approaches have been used to ensure the equivalence of translated versions of questionnaires. In the WHO International Pilot Study of Schizophrenia (44) a translation/back-translation approach was used. The procedure was to have one person translate the instrument from the "source" language, in this case English, into the "target" language; this translation was then given to another person for translation back into English. They then compared the original and the back-translation. In order to guarantee a reasonably satisfactory translation, this procedure may be repeated several times.

Another way to ensure equivalence of translation is to have each item discussed intensively and at length by individuals who speak both source and target languages. For more detailed discussion of these and related procedures the reader is referred to the relevant literature (44, 45, 46).

#### Questionnaire administration

Each investigator should adapt the instrument to his local setting and modify the questionnaire format when necessary. Where school authorities believe that certain questions would stimulate interest in drugs, those questions can be deleted.

Most data collection will be carried out in group administration settings such as classrooms or auditoria. It is strongly recommended that administration of the survey be directed by the research team and not by teachers or other institutional staff, since researchers can present the study more effectively and give more reassuring promises of confidentiality. Some investigators may wish teachers to be present, if they are important for maintaining order.

The standard procedure calls for research staff to (a) briefly introduce the study to the respondents, (b) remain available to answer questions while the questionnaires are being completed, (c) collect the questionnaires upon completion and, if desired (d) informally discuss the questionnaire with some or all of the respondents after the survey administration is finished. It is suggested that teachers should not participate in these activities.

It is strongly recommended that the questionnaire should be administered anonymously, and that no names or identifying marks should be placed on it, except where required for purposes of follow-up or reliability and validity studies.

It is also recommended that reliability and validity studies should be conducted that are appropriate for the groups on which the questionnaires would be used. Some reliability and validity checks used by collaborating investigators in the testing of this questionnaire are described elsewhere in the report.

#### Data analysis and reporting

The main purpose of the data analysis would be to provide a statistical picture of the extent of drug use in the total sample and in various segments of it, relative to age, sex, and social class groupings. Data analysis would include:

- (1) Reliability information in the form of correlations between answers on various testings.
- (2) Validity information adjusted to the studies actually done.
- (3) The frequency of various demographic characteristics in the sample chosen.
- (4) The frequency of use of each type of drug and for each period of time.
- (5) Cross-tabulation of drug use with demographic and other characteristics to identify the groups most likely to use drugs.

The report from the study should include the following: when the study took place, the size and nature of the samples, the results and response rates, the method of administering the questionnaires, the specific instruments used, any evidence about validity or reliability, and a description of the institutions where the work was done.

---

Annex 4

OPTIONAL QUESTIONS

1. Route of drug administration  
What methods have you used for taking heroin? (Mark all that apply)
- Sniffing or "snorting"  
 Smoking  
 Injection  
 By mouth  
 Other (please specify)
2. Source of introduction to drug use  
Who introduced you to nonmedical drug use? (Please check one box only)
- Family  
 Casual acquaintance  
 Friends  
 Drug pusher  
 Doctor (physician)  
 Other health practitioner  
 Pharmacist or druggist  
 Other (please specify)  
 Don't know
3. Reason for first nonmedical drug use  
What was the reason for your first nonmedical drug use? (Please check one box only)
- Religious custom  
 To be accepted by others  
 To be sociable  
 Enjoyment  
 Enhancement of sex  
 Curiosity  
 Treatment of health disorder  
 Relief of psychological stress  
 Relief of cold, hunger, or fatigue  
 Improvement of work performance  
 Other (please specify)  
 Don't know
4. Questions dropped from the tested questionnaire
- A. Where do you live now?
- On a farm or in a village  
 In a small or medium-sized city or town  
 In a suburb of a large city  
 In a large city



- B. How much education did your father receive? (Mark the highest level attended)
- No formal schooling
  - Primary school
  - Secondary or high school
  - University or other post-secondary education
  - Don't know
- C. How much education did your mother receive? (Mark the highest level attended)
- No formal schooling
  - Primary school
  - Secondary or high school
  - University or other post-secondary education
  - Don't know

5. Approval or disapproval of drug use

Individuals differ in whether or not they disapprove of people doing certain things. Do you disapprove of people (who are 18 or older) doing the following? (Mark one box for each question)

- A. Smoking 20 or more cigarettes a day
- Don't disapprove
  - Disapprove
  - Strongly disapprove
- B. Trying marijuana (cannabis, pot, grass) once or twice
- Don't disapprove
  - Disapprove
  - Strongly disapprove
- C. Smoking marijuana occasionally
- Don't disapprove
  - Disapprove
  - Strongly disapprove
- D. Smoking marijuana regularly
- Don't disapprove
  - Disapprove
  - Strongly disapprove
- E. -----  
(Other drug-related behaviour of interest to the investigator)
- Don't disapprove
  - Disapprove
  - Strongly disapprove

6. Perceived availability

How difficult do you think it would be for you to get each of the following types of drug if you wanted some?  
(Mark one box for each question)

- A. Marijuana (cannabis, pot, grass)  Probably impossible  
 Very difficult  
 Fairly difficult  
 Fairly easy  
 Very easy
- B. Amphetamines and other stimulants  Probably impossible  
 Very difficult  
 Fairly difficult  
 Fairly easy  
 Very easy
- C. -----  
(Other drug of interest to the investigator)  Probably impossible  
 Very difficult  
 Fairly difficult  
 Fairly easy  
 Very easy

7. The sort of people who use drugs

Drug use has different meanings for different people. We want to know how you think most people of your age view others who use various drugs.

Most people of my age believe that those who use marijuana and other such drugs are:

- A. Ambitious  Much less than average  
 Less than average  
 About average  
 More than average  
 Much more than average
- B. Antisocial  Much less than average  
 Less than average  
 About average  
 More than average  
 Much more than average

Note

A series of questions might follow, on other social characteristics, such as:

- C. Conforming
- D. Criminal
- E. Emotionally unstable
- F. Interesting
- G. Rebellious
- H. Sensible
- I. Sexually permissive
- J. Weak-willed

The response categories would be the same as for A and B.

---

REFERENCES

1. MERCER, G.W. & SMART, R.G. The epidemiology of psychoactive and hallucinogenic drug use. In: Israel, Y. et al., ed. Research advances in alcohol and drug problems, vol.1, New York, Wiley, 1974
2. BLUMBERG, H.H. Surveys of drug use among young people. International journal of the addictions, 10: 699-720 (1975)
3. COLOMBIA, MINISTRY OF HEALTH. Drug dependence among secondary school students at Bogota, Barranquilla, and Bucaramanga (Colombia). Bulletin on narcotics, 28: 11-29 (1976)
4. DUBE, K.C. ET AL. Drug use among college students - an interim report. Bulletin on narcotics, 29: 47-62 (1977)
5. NAVARATNAM, V. Epidemiology of drug abuse. Bulletin of the Public Health Society, 10: 17-22 (1975)
6. CASTRO, M.E. & CHAO, Z. Investigación nacional sobre el consume de drogas y las actitudes hacia la farmacodependencia. Mexico City, CEMEF, 1976
7. SANGSINGKEO, P. ET AL. A survey of Thai student drug use. Bangkok, Chulalongkorn University, 1974
8. BERG, D.F. The non-medical use of dangerous drugs in the United States: a comprehensive review. International journal of the addictions, 5: 777 (1970)
9. SMART, R.G. & FEJER, D. Six years of cross-sectional surveys of student drug use in Toronto. Bulletin on narcotics, 27: 11-22 (1974)
10. SOUIEF, M.I. Chronic cannabis takers: some temperamental characteristics. Drug and alcohol dependence, 1: 125-154 (1975)
11. NEHEMKIS, A. ET AL. Drug abuse instrument handbook. Rockville, MD, National Institute on Drug Abuse, 1976
12. ELINSON, J. & NURCO, D., ed. Operational definitions in socio-behavioural drug use research. Rockville, MD, National Institute on Drug Abuse, 1975
13. UNITED NATIONS DIVISION OF NARCOTIC DRUGS. Draft manual on drug abuse assessment, Part 1. United Nations, Geneva, 1976
14. EYSENCK, H.J. & EYSENCK, S.B.G. Manual of the Eysenck personality questionnaire. London, Hodder & Stoughton, 1975
15. COX, C. & SMART, R.G. Social and psychological aspects of speed use: a study of types of speed users in Toronto. International journal of the addictions, 7: 201-218 (1972)
16. IMPERI, L.L. ET AL. Use of hallucinogenic drugs on campus. Journal of the American Medical Association, 204: 1021-1028 (1968)
17. PARTEN, M. Surveys, polls and samples. New York, Harper, 1950
18. GLOCK, C.Y., ed. Survey research in the social sciences. New York, Russell Sage Foundation, 1967
19. HABERMAN, P.W. ET AL. High school drug behavior: a methodological report on pilot studies. Proceedings of the First International Conference on Student Drug Surveys, Newark, NJ, 12-15 September 1971. New York, Baywood Publishing Co., 1972

20. RUSSELL, J.S. & HOLLANDER, M.J. Drug use among Vancouver secondary school students. Vancouver, Narcotic Addiction Foundation of British Columbia, 1974
21. CHAMPION, R. Trends in marijuana use in New South Wales, 1971 to 1973. Health Commission of New South Wales, Division of Health Service Research, 1976
22. JOHNSTON, L. Drugs and American youth. Ann Arbor, MI, Institute for Social Research, 1973
23. FISHER, R.A. & YATES, F. Statistical tables for biological, agricultural and medical research. Edinburgh, Oliver & Boyd, 1938
24. JOHNSTON, L. ET AL. Drug use among American high school students, 1975-1977. Washington, DC, Government Printing Office, 1977 (National Institute on Drug Abuse publication)
25. SMART, R.G. & GOODSTADT, M. Alcohol and drug use among Ontario students in 1977: preliminary findings. Toronto, Addiction Research Foundation, 1977
26. KING, F.W. Anonymous vs identifiable questionnaires in drug use surveys. American psychologist, 15: 982-985 (1970)
27. ROBINS, L. The Vietnam veteran returns. Washington, DC, 1974 (Special Action Office Monograph Series A.2)
28. LEUTGART, M.J. & ARMSTRONG, A. Methodological issues in drug use surveys: anonymity, recency and frequency. International journal of addictions, 8: 682-689 (1973)
29. BORUCH, R.F. Relations among statistical methods for assuring confidentiality of social research data. Social science research, 1: 403 (1972)
30. BROWN, G.H. & HARDING, F. A comparison of methods of studying illicit drug usage. Hum RRO, Technical Reports, 1973, 73-79
31. GOODSTADT, M. & GRUSON, V. The randomized response technique: a test of the procedure and validity of self-reported drug use. Addiction Research Foundation, Substudy No. 639, 1974
32. ANASTASI, A. Psychological testing, 3rd ed. London, Macmillan, 1968
33. WHITEHEAD, P.C. & SMART, R.G. Validity and reliability of self-reported drug use. Canadian journal of criminology and correction, 14: 1-7 (1972)
34. SMART, R.G. Recent studies of the validity and reliability of self-reported drug use, 1970-1974. Canadian journal of criminology and correction, 17: 326-333 (1975)
35. STEPHENS, R. The truthfulness of addict respondents in research projects. International journal of addictions, 7: 539-558 (1972)
36. BALL, J.C. The reliability and validity of interview data obtained from 59 narcotic drug addicts. American journal of sociology, 72: 650-654 (1967)
37. SMART, R.G. & JACKSON, D. A preliminary report on the attitudes and behaviour of Toronto students in relation to drugs. Toronto, 1969
38. STIMSON, G. & OGBORNE, A. A survey of a representative sample of addicts prescribed heroin at London clinics. Bulletin on narcotics, 22: 12-22 (1970)

39. PARRY, H. ET AL. Primary levels of under-reporting psychoactive drug use. Public opinion quarterly, 34: 582-592 (1970)
40. SMART, R.G. ET AL. The extent of drug use in Metropolitan Toronto schools: a study of changes from 1968 to 1970. Addictions, 18: 1-17 (1971)
41. BENTLER, P.M. ET AL. Data analysis strategies and designs for substance abuse research. Rockville, MD, National Institute on Drug Abuse, 1976
42. BLACKFORD, L. Summary report - surveys of student drug use. San Mateo County, California. San Mateo, 1977
43. SMART, R.G. & SCHMIDT, W. Drinking and problem drinking after a reduction in the minimum drinking age. British journal of addiction, 70: 347-358 (1975)
44. WORLD HEALTH ORGANIZATION. Report of the International Pilot Study of Schizophrenia, vol. 1. Geneva, 1973
45. BRISLIN, R.W. Back translation for cross-cultural research. Journal of cross-cultural psychology, 1: 185-216 (1970)
46. PRINCE, R. & MOMBOUR, W. A technique for improving linguistic equivalence in cross-cultural surveys. International journal of social psychiatry, 13: 229-237 (1967)
47. WHO Technical Report Series, No. 526, 1973, p.17
48. KRAMER, J.F. & CAMERON, D.C., ed. A manual on drug dependence. Geneva, World Health Organization, 1975, p.16

