ASSESSMENT OF SUBSTANCE MISUSE AMONG THAI SCHOOL STUDENTS: DEVELOPING AN ASSESSMENT TOOL AND BASELINE DATA

PAIBOON DAOSODSAI

A thesis submitted in partial fulfilment of the requirements of Liverpool John Moores University for the degree of Doctor of Philosophy

April 2000

ASSESSMENT OF SUBSTANCE MISUSE AMONG THAI SCHOOL STUDENTS: DEVELOPING AN ASSESSMENT TOOL AND BASELINE DATA

Paiboon Daosodsai
Ph.D. Thesis

Abstract

The number of substance dependent patients who are school students is increasing in Thailand, but currently there is a lack of school-base studies assessing epidemiology of substance use among such students. The objectives of this study were to assess the epidemic of substance use, to assess social aspects of substance use, and to establish predictor models for substance use among Khon Kaen secondary school students in Thailand. The research tool, an anonymous self-administered questionnaire, was piloted in November 1997 and data were then collected from a representative sample of 4,217 secondary school students recruited from Khon Kaen secondary schools (10th-12th school year, age 15-19 years) by cluster random sampling in June 1998. The pilot study and all data collection in both pilot and final surveys were done by the author. Participation rates were 100 percent of classes approached and 100 percent of students present in each class. The associations between the levels of prevalence of substance use and socio-demographic, family, school, peer, behavioural/psychological, and health factors were examined by bivariate analysis. Social aspects of substance use were analysed by descriptive and Chi-square statistics. A series of multivariate logistic regression analysis was used to establish predictor models of alcohol, cigarette, and illegal drug use.

Alcohol was the most common substance used. Over a quarter (25.5%) of students were current alcohol drinkers. Most (63.3%) current drinkers were occasional drinkers. A tenth (10.3%) of Khon Kaen secondary school students were current cigarette smokers. Most (62.2%) current smokers were daily smokers. One in twenty (5.3%) students were currently using illegal drugs. In particular, the most prevalent illegal drug use was amphetamine use at almost epidemic level (76.6% of illegal drug users), followed by cannabis (41.9%) and solvent use (11.7%). Very few (less than 2.0%) were opium, heroin, ecstasy, cocaine or magic mushroom use. Half (50.0%) of heroin users and a few (4.6%) amphetamine users were injecting drug users. These

injecting drug users also risk infection with human immunodeficiency virus, hepatitis, and other infections. However, levels of injecting drug use overall were low.

The prevalence of alcohol, cigarette, and illegal drug use among Khon Kaen secondary school students was higher in vocational school students, inner city students, male students, older students, students who were age for school year (older than other students in the same school year) and either relatively rich or poor students. Alcohol, cigarette and illegal drug use were all associated with family problems (separated parents, running away from home, conflicts among family members), negative parents' role models (cigarette smoking parents, alcohol drinking parents), lack of parental monitoring (less restriction by parents, students not staying with parents), health problems (e.g. having a small appetite, coughing, chest pains, sore nose), psychological characteristics (being aggressive, being depressive, and risk taking people), and low school performance. Alcohol, cigarette and illegal drug use was also associated with higher levels of delinquency with higher levels of stealing, truancy, going out for fun at night, having sex early and self-hurting in users. Furthermore, users of all substances appeared closer to their peers in terms of being more likely to stay with friends who in turn were more likely to be users themselves.

Multivariate logistic regression revealed key predictors among various variables associated with substance including alcohol, cigarettes, amphetamine, cannabis, solvents, and other hard drugs. Seven models for prediction of substance use were identified, socio-demographic, family, peer, school, health, behavioural/psychological, as well as an overall model, which included all measured parameters. These models identify the factors that predict students who have a high probability of using substances. All of the models also have high value for predicting the right classification (accuracy from 74.7-99.8% correctly classified).

Students, in particular males, initiate alcohol, cigarette, and illegal drug use at early ages (6 years to 19 years with a mean age 14.5 years (SD=1.97) for cigarette use, 7 to 19 years with a mean age 14.9 (SD=1.68) for alcohol use, and 8 to 19 years with mean age 15.4 (SD=1.55) for illegal drug use). The main reasons for using alcohol, cigarette, and illegal drugs for the first time using were "being curious to try alcohol"

(48.2% of students who ever used alcohol), cigarettes (62.0%), and illegal drugs (59.3-64.1% varying between substances), "being offered the substance (32.4%, 28.0% and 24.6 to 33.9% respectively)" and "copying friends" (39.5%, 40.5% and 22.0 to 38.9% respectively). However, "having fun" (50.3% of current alcohol users, 28.8% of current cigarette users, and 21.7-47.3% of current illegal drug users), "copying friends" (34.6%, 35.7% and 23.1 to 34.8% respectively) and "increasing relaxation" (28.2%, 37.3% and 26.1 to 45.1% respectively) were the common reasons for continuing use. In addition, the specific reasons for continuing using amphetamine (the most commonly used drug) were to have fun (35.5% of current amphetamine users) and be alert (35.9%).

The results suggest that school and family based prevention as well as cessation policies need to be developed both in terms of preventing substance supplies and preventing individual demand, along with surveillance activities for substance use and, cessation and rehabilitation programs. In addition, the prevention and cessation programs should start early from primary school and continue throughout secondary schools. A lack of tools and information on settings and other factors associated with substance use currently restrict the efforts of Thai school administrators in their effort against substance use by school students. It is expected that this research will help in a number of ways. High-risk students who have higher probability of substance use can be identified by using predictor models of substance use developed in this research. The information on why people try drugs, continue to use them and the effects that people feel can be used to develop substance use related education with appropriate materials and training for educators. This information along with social information on the settings, which attract substance use, can also be used to promote and develop; alternative activities, appropriate counselling, parent training and tailored peer pressure resistance training specifically to meet students' needs.

Further research efforts should focus on identifying high risk groups of students and developing effective strategies for prevention and cessation programs based on the models developed in this research. In addition, applied longitudinal study using the tools developed in this research (such as the questionnaires and methodology) will be useful to continually monitor epidemiology and social changes in substance use among school

students in Thailand. The work presented here has already helped inform and develop prevention and cessation programs for substance use among Khon Kaen secondary school students in Thailand.

Acknowledgement

I would like to take this opportunity to express my honest gratitude and deep appreciation to my supervisor, Professor Mark A Bellis for his countless helpful guidances, suggestions and comments. I would also like to thank Paula McIntosh and the staff of the Public Health Sector for their help and for providing facilities, which were a very great help to my work.

I wish to extend gratitude to the Khon Kaen educational officer for giving me permission and support in this research. I also wish to thank all schoolmasters, teachers and students who volunteered and collaborated with this study.

I would like to express my thanks to my wife and to my daughter for their never-ending supply of love and encouragement. Finally, my deep gratitude goes to my mother and father, who are always on my mind, for their love and support.

List of contents

List of Figures

List of Tables

List of Maps

CHAPTER 1: INTRODUCTION

1.1 Demography of Thailand

Thailand is a Southeast Asian country, in the tropical zone, covering an area of 198,455 square miles. The West and Northwest of Thailand are close to Myanmar, the Northeast and east close to Laos, the Southeast close to Cambodia, and the South close to Malaysia. The country is divided into four geographical regions: Central, Northern, North Eastern, and Southern Region (Map 1).

In 1995, the population of Thailand was approximately 59 million (1). Buddhism is the national religion of Thailand. The Language called Thai has its own writing system and linguistic structure and the country is basically agricultural but moving fast to industrialisation with rapid economic growth in recent decades (2,3,4). Recently, the Thai people have improved their socio-economic status and standard of living in many aspects (5). However, changes in Thailand have also created serious problems of a social and familial nature such as, adult & juvenile delinquency, crime, and drug misuse problems (6). Amongst other reasons these have resulted from a lot of changes to the traditional model of family and social life, with members of families becoming separated from one another resulting in a decrease in firm cohesion between family members (6). In other words, the traditional Thai family's role, which provided the strongest protection against social deterioration, has been eroded.

1.2 Substance misuse in Thailand

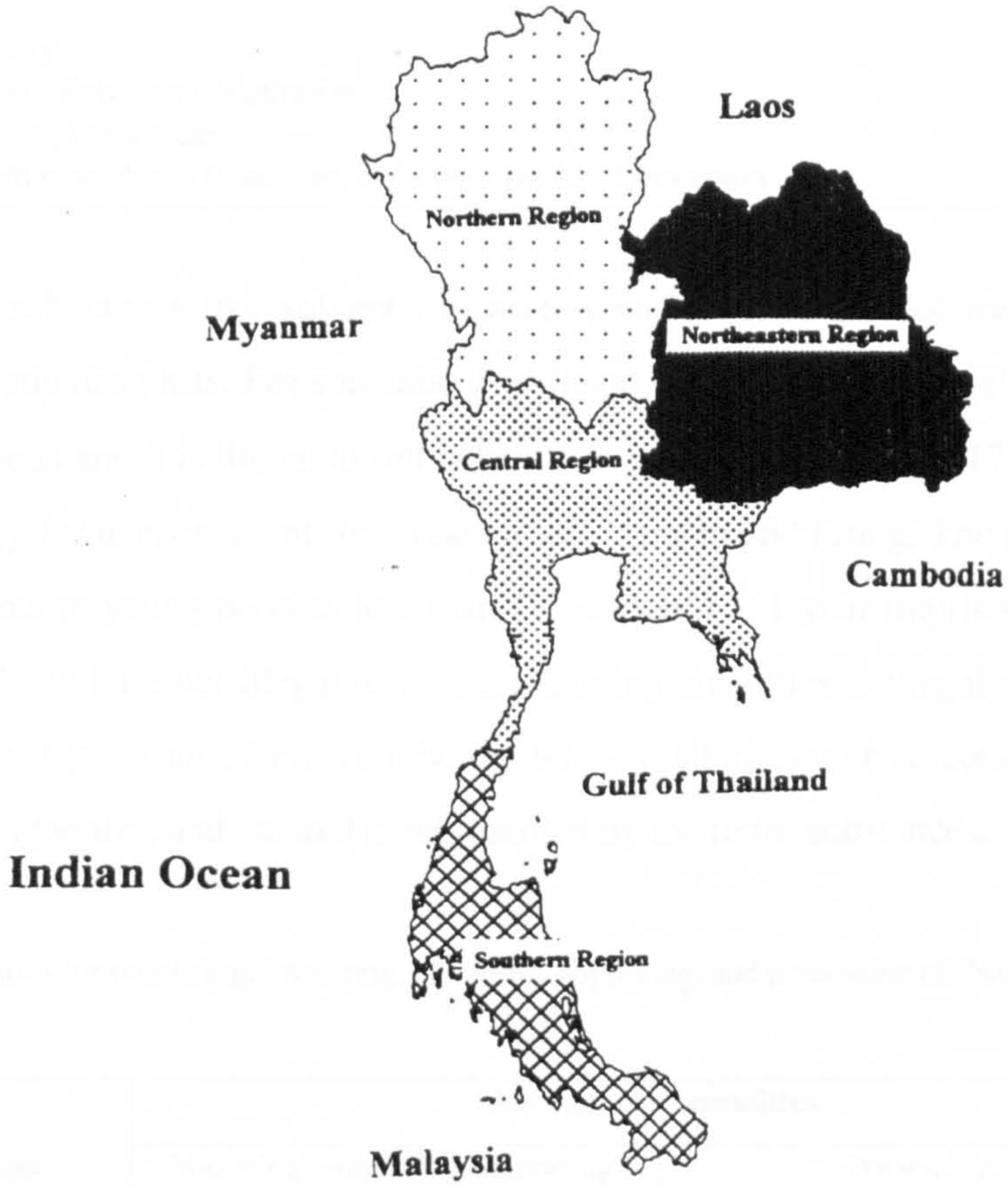
1.2.1 Penalties for Use

There are two kinds of drug categories for drug misuse control in Thai law: Narcotic Drugs Act and Psychotic Drugs Act. The list of controlled narcotic drugs is divided into five classes, 1 to 5. The list of psychotic drugs is divided into four classes. Classes of narcotic and psychotic drugs are grouped by the dangerous and harmful effects of drugs on people. The lists of commonly misused drugs separated by drug class are as shown in Box 1.1.

There are serious legal penalties for the possession, production, or supply of any of these drugs. However, maximum penalties for **producing, importing, exporting, or supplying** class 1 narcotic drugs are life imprisonment and a fine; ten years imprisonment and a fine for class 2

narcotic drugs (morphine, opium, and cocaine will be life imprisonment and fining), 1 and 3 years and fine for class 3 narcotic drugs, 10 years imprisonment and a fine for class 4 narcotic drugs, and 15 years and a fine for class 5 narcotic drugs. The maximum penalties for **possession** of class 1 narcotic drugs is 10 years imprisonment and a fine and 5 years imprisonment and a fine for classes 2, 4, and 5 narcotic drugs.

Map 1: Map of Thailand.



While the maximum penalties for producing, importing, exporting, or supplying class 1 and 2 psychotic drugs are 20 years imprisonment and a fine, 5 years imprisonment and a fine is the penalty for class 3 and 4 of psychotic drugs except with permission from the Thai government. The maximum penalties for possession of class 1 and 2 psychotic drugs are 5 years imprisonment and a fine. These penalties can vary according to the amount of drugs and the

circumstances. The penalties for producing, importing, exporting, supplying, and possessing of any of these drugs are summarised in Table 1.1.

Box 1.1: The lists of commonly misused drugs, categorised as in the narcotic drugs act and psychotic drugs act in Thailand.

Narcotic drugs

Class 1 : Heroin, Amphetamine.
Class 2 : Morphine, Opium, Cocaine, Diphenoxylate.
Class 3 : Combined Class 2 drugs.
Class 4 : Chemical substance for producing drugs ; Acetic anhydrous, Acetic chloride.
Class 5 : Cannabis, Magic mushrooms.

Psychotic drugs

Class 1: LSD, Ecstasy
Class 2: Secobarbital, Ephedrine, Methadone
Class 3: Gluthetimide, Pentazocine
Class 4: Barbital, Phenobarbital, Diazepam, Chlordiazepoxide, Lorazepam.

Other addictive substances like solvents, cigarettes and alcohol are not included in narcotic drugs and psychotic drug acts. For solvents, it is illegal to use solvents for relieving physical or psychological needs and it is illegal to sell solvents to young people under 17 years of age. The maximum penalty for using solvents is 2 years imprisonment and fining. The maximum penalty for selling solvents to young peoples less than 17 years old is 1 year imprisonment and a fine. Cigarettes and alcohol are not illegal to possess. Buying cigarettes is illegal under 18, but it is legal to buy alcohol at any age. In this study, reference to all the above narcotic drugs, psychotic drugs, solvents, cigarettes, and alcohol is represented by the term, substances.

Table 1.1: The penalties for producing, importing, exporting, supplying, and possessing of Narcotic and Psychotic drugs (7).

Drugs	**Maximum penalties**	
	Producing / Importing /Exporting / Supplying	Possessing
Narcotic drugs		
Class 1	Life imprisonment and fining	10 years imprisonment and fining
Class 2	10 years imprisonment and fining	5 years imprisonment and fining
Class 3	1-3 years imprisonment and fining	5 years imprisonment and fining
Class 4	10 years imprisonment and fining	5 years imprisonment and fining
Class 5	15 years imprisonment and fining	5 years imprisonment and fining
Psychotic drugs		
Class 1	20 years imprisonment and fining	5 years imprisonment and fining
Class 2	20 years imprisonment and fining	5 years imprisonment and fining
Class 3	5 years imprisonment and fining	-
Class 4	5 years imprisonment and fining	-

1.2.2 The epidemic of substance misuse in Thailand

The epidemic of substance misuse has become one of the most serious problems facing the Thai people. Previously reported data on solvent misuse from Thailand Development Research Institute (TDRI), estimated that in 1993 (8) there were about 1.2 million drug and solvent users in Thailand, and that about 7 percent of drug and solvent users were young people aged under 25 years old. Approximately 32% of drug and solvent users were reported to use volatile solvents as their main substances, 25.6% used cannabis, 20.3% used amphetamine, 16.8 % used heroin, and 4.9 % were reported to use opiates. Most drug and solvent users were in the North Eastern Region with a prevalence of 21.5 users per 1,000 population in that area. Figures for this and other regions appear in table 1.2. In contrast, the number of drug and solvent users receiving substance addiction treatment in public health service centres was 82,620 in 1993, with a rise to 80,618 in 1994, and a further increase to 90,130 drug and solvent & gas users treated in 1995. In 1996 there was a decrease to 66541 (9).

The substance dependence treatment system provide services for all addicts either through in-patient or out-patient treatment in government health centres, hospitals and drug dependence treatment centres. Referral services are available to refer the patients from any health centre or hospital to drug dependence treatment centres in each area.

Table 1.2: Distribution of drug and solvent (heroin, cannabis, amphetamine, opiate, and solvents) users in various regions of Thailand, 1993.

Region	The number of drug users	Percent (%)	Population	Rate per 1000
North Eastern	433,064	36.4	20,115,000	21.5
Central	402,913	33.9	18,756,424	21.5
North	197,160	16.6	11,748,326	16.8
South	155,311	13.1	7,442,768	20.9
Total	1,188,448	100.0	58,062,518	20.5

Source: The Thailand Development Research institute, 1993.

The Thai government recognises the misuse of substance as one of its greatest health problems that needs effective interventions (including harm minimisation) to decrease and prevent substance misuse and the damage it may cause in every part of Thailand. In particular, the highest prevalence of substance misuse is in the North Eastern Region (see Table 1.2). Police reports also show an increasing total drug arrests in the upper North Eastern area of Thailand

from 1996 to 1997. This actually reflected a substantial increase in amphetamine arrests while other drug arrests were decreasing (see Table 1.3).

Table 1.3: The number of drug arrests in North Eastern Region of Thailand from 1996-1997.

Drug	Drug arrest (Arrested cases)		Captured drugs (Quantity)	
	1996	1997	1996	1997
Solvents	6657	6612	695 litres	658.6 litres
Cannabis	5735	5515	8950 kg	4457 kg
Amphetamine	3958	8470	292132 tabs	552114 tabs
Heroin	170	37	414 g	77 g
Opium	324	321	14 kg	113.5 kg
Total	16844	20955	---	---

Source: Report of upper North Eastern police Region of Thailand (1997) (10)

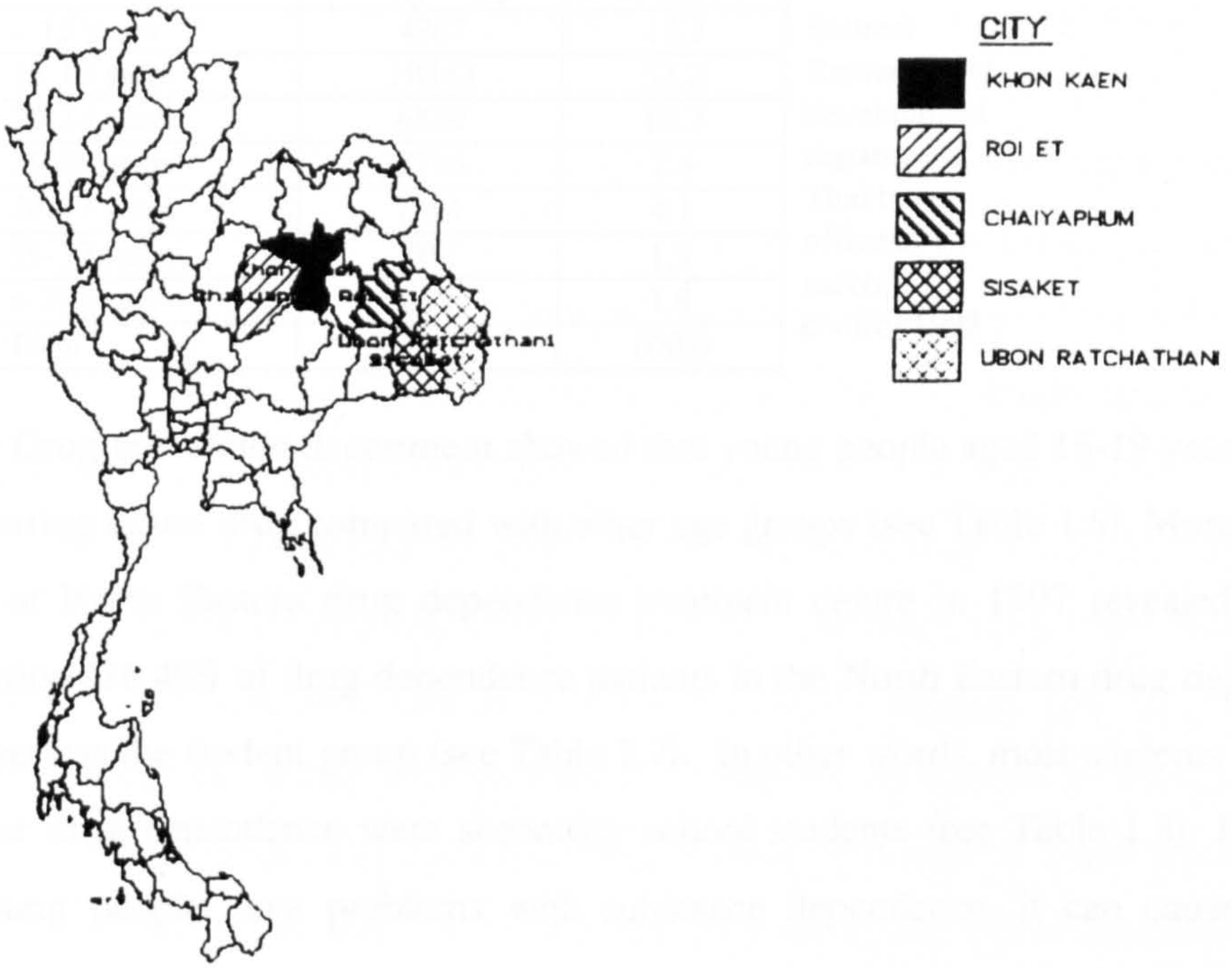
One of the aims contained in the master plan (1997-2001) of the North Eastern Region is substance misuse control since substance use appears to be spreading in the Region especially through young people, labours, farmers, and the elderly group. In particular, the high-risk areas in the North East are Khon Kaen, Si Sa Ket, Chaiyaphum, Roi Et and Ubon Ratchathani province (11). Drugs and solvents are particularly widespread in Khon Kaen, which is the central city of the North Eastern Region. In 1994, reports from the drug control centre of the North Eastern Region showed that the number of drug and solvent users in Khon Kaen was 15,941. This is equivalent to a prevalence of 11.0 per 1,000 population in Khon Kaen (12). Only, 1,019 drug and solvent users were treated in public health service centres across all of Khon Kaen in 1995 and similarly 1,129 drug and solvent users were treated in 1996 (13). A report from the North Eastern drug dependence treatment centre showed that more than a third of drug dependence patients were Khon Kaen residents (Table 1.4), although this treatment centre provided treatment services to all provinces in North Eastern area. The centre also reported amphetamine dependent patients showing substantial increases in number from 1995 to 1997 while heroin users were decreasing (see Table 1.5).

Table 1:4: The number and percentages of drug dependence patients in North Eastern drug dependence treatment centres during 1992-1997.

Year	Number of patient (%)		Total
	Khon Kaen residents	All Other residents	(%)
1992	172 (50.7%)	167 (49.3%)	339 (100.0%)
1993	173 (47.0%)	195 (53.0%)	368 (100.0%)
1994	209 (37.3%)	351 (62.7%)	560 (100.0%)
1995	33 (40.8%)	482 (59.2%)	815 (100.0%)
1996	212 (35.3%)	389 (64.7%)	601 (100.0%)
1997	433 (41.8%)	603 (58.2%)	1036 (100.0%)

Source: North Eastern drug dependence treatment centre (1997) (14)

Map 2: High-risk area of substance use in the North Eastern Region of Thailand.



One of the highest risk groups for substance use is young people because they are vulnerable and often easily influenced by environment forces (15-18). There were about 71,666 students in school or at undergraduate level (1.8% of Thai students) who were reported as drug users in 1996 (8) while the number of students who were receiving dependence treatment in public health service centres were 3090 cases in 1993, 4261 in 1994, 4738 in 1995, 4137 in 1996, increasing to 6542 in 1997 (19).

Table 1.5: The number and percentages of drug dependence patients in North Eastern drug dependence treatment centre by main drug of use.

Substances	Number of drug dependent patients (%)		
	1995	1996	1997
Heroin	498 (61.1)	242 (40.4)	52 (5.0)
Opium	63 (7.7)	39 (6.5)	40 (3.9)
Cannabis	34 (4.2)	18 (3.0)	26 (2.5)
Amphetamine	32 (3.9)	146 (24.3)	678 (65.4)
Solvents	47 (5.8)	51 (8.5)	68 (6.6)
Alcohol	80 (9.8)	65 (10.8)	114 (11.0)
Cigarettes	61 (7.5)	37 (6.2)	46 (4.4)
Others	0 (0.0)	2 (0.3)	12 (1.2)
Total	815 (100.0)	601 (100.0)	1036 (100.0)

Source: North Eastern drug dependence centre (1997) (14)

Table 1.6: The number and percentages of Thai drug dependence patients categorised by age groups

Age	Frequency	Percent (%)
< 15 years	4967	13.3
15-19 years	19843	53.2
20-24 years	6829	18.3
25-29 years	2776	7.4
30-34 years	1511	4.1
35-39 years	704	1.9
> 39 years	662	1.8
Total	37292	100.0

Source: Research and development department, Thai board office of narcotic control 1998

The data from Drug prevention department showed that young people aged 15-19 years were at high risk of starting to use drug compared with other age groups (see Table 1.6). Moreover, the annual report of North Eastern drug dependence treatment centre in 1997 revealed that the highest proportion (36.4%) of drug dependence patients in the North Eastern drug dependence treatment centre was the student group (see Table 1.7). In other words, most students who had been treated for drug dependence were secondary school students (see Table 1.8). If a large number of young people have problems with substance dependence, it can cause serious problems initially to the individual but also to other areas of society. In addition, over the next few years as these young people develop they may also suffer long term disability of a mental or physical type.

Table 1.7: The number and percentage of drug dependence patients in the North Eastern drug dependence centre categorised by patients' occupation (1997)

Patients' occupation	Frequency	Percent (%)
No job	318	22.9
Labours	215	15.5
Farmers	95	6.9
Government/enterprise services	116	8.4
Own businesses	105	7.6
Students	504	36.4
Other	32	2.3
Total	1385	100.0

Source: North Eastern drug dependence treatment centre (1997) (14)

Table 1.8: The number and percentages of drug dependence patients who were students by educational levels.

Academic level	Number of patients(%)		
	1993	1994	1995
Primary school	191 (6.2%)	231 (5.4%)	341(5.9%)
Secondary school	2308 (74.8%)	3357 (79.0%)	4699 (80.8%)
Under graduate	238 (7.8%)	335 (7.9%)	521 (9.0%)
Other	347 (11.2%)	327 (7.7%)	256 (4.4%)
Total	3084 (100.0%)	4250 (100.0%)	5817 (100.0%)

Source: Drug dependence treatment department, Thai board office of narcotic control 1995. (20)

1.3 Epidemiological studies of substance misuse among young people

Thailand is not alone in having significant problems with young people and substance use. Epidemiological studies of young people over the past few years have revealed high levels of substance misuse and it associated problems in a large number of countries. In Japan, a major survey of the prevalence of volatile solvent inhalation among junior high school students in 1993, indicated that 1.5% of students had inhaled solvents (21). The prevalence of tobacco smoking among junior high school students in Japan aged between 12 and 15 years (N = 5,240) in 1994, was 22.2% for ever having smoked (lifetime) and 3.3% for current smokers (22). In Korea, the prevalence of smoking among Korean adolescents in 1995 was 15.4% in boys and 1.28% in girls (23). In South Africa, in 1993, studies across a wide range of high school students in the Cape Peninsula reported that cannabis was the illicit drug most widely used (7.5%); however, 10.9% had ever inhaled solvents, and 0.5% injected (24). In Zimbabwe (1995), the main substances used by secondary school students were alcohol, tobacco, inhalants, amphetamine, and cannabis (25) and in Kenya, from a study of substance abuse among urban and rural secondary schools students (1996), alcohol emerged as the most commonly abused substance (15% in urban and 14% in rural schools) followed by tobacco, cannabis, and inhalants (26).

In the United States of America, a school survey of substance abuse was conducted in a representative sample of 7,611 students in grades 7 through 12 in New York state in 1988 and found that 32% of students have ever used any illicit drug (27). In 1993, a survey of drug abuse in four ethnic and racial groups in sixth and seventh grade in the 48 middle schools of the Greater Miami (Dade county) area (1993), found 5% of pupils were lifetime (i.e. ever) illicit drug users. In addition, 4% were lifetime inhalant users, and 21% of all pupils were lifetime tobacco users (28). Furthermore in 1995, the national institute on alcohol abuse and alcoholism stated that 20% of adolescents aged 14 to 17 years old were problem drinkers (29). In the United Kingdom, the result from a survey of 3,623 adolescents in eight schools in Newcastle Upon Tyne (1995) showed that 21% of adolescents were currently smoking, 11% on a frequent basis, while 75% had used alcohol and 20% drank on a regular basis. Around 1.5% were using illicit substances on a regular basis (30). In addition, a survey of 776 fourteen to fifteen years old in the North West of England (1991) found that six tenths had been offered illegal drugs and 36% had used them (31). Death from volatile substance abuse in young people (under 18 years

old) from 1981 to 1990 accounted for 605 young people in the UK dying. Seventy percent of these deaths occurred between the ages of 14 and 16 (32).

In Spain, severity of adolescents use of substances were obtained from a survey conducted in 1992 in eighth grade students (13-14 years old) representative of school children in Barcelona. Up to 44.1% of these adolescents had ever smoked, 10.9% were regular smokers and 17% drank daily (33). In Switzerland, results of a national survey on adolescents' health in 1992-1993 showed that 3.1% of adolescents had taken heroin or cocaine at least once in their life and 27.7 % had already used cannabis (34). In Hungary, substance use among Hungarian students was surveyed with 234 students from eighth and eleventh grades enrolled in public schools in Gyor during 1991-1992. Here however, students reported little or no substance use other than use of alcohol and tobacco (35).

These world wide results on an epidemic of substance misuse among young people (especially school students) have tended to conclude that young people in school are now at high risk (perhaps the highest ever) of substance misuse. Similarly, Thai students have also been shown to be at high risk. During October 1995 to February 1996, The Department of Medical Sciences, Public Health Ministry surveyed Thai school students for amphetamine use by testing urine sample (n=118,375). The result showed that 1.18% of students had recently used amphetamine in schools (36). Although it is suspected that more schools students may actually have contact with substances in schools.

The Thai government has now become aware of substance misuse problems in schools and alerted to the need for prevention and control of the epidemic. Nevertheless, there is little base line data for the hypothesis of spreading of drug misuse in Thai schools. Current statistical data only represent indirect estimations of drug misuse and may be influenced by the types of agencies reporting the data, access to services and sample selectivity .

A key purpose of this study is to develop instruments and methods that are appropriate and valid to analyse and assess the epidemic of substance misuse in Thai schools, in particular, among Khon Kaen secondary school students. The key instrument developed here is the assessment of substance misuse in Thai schools (ASTS) questionnaire.

1.4 The concepts of substance use among adolescents

The reasons for substance use in adolescents is not explained by any single aetiology applying to all substance use or all adolescent users (37, 38). There are a number of models that explain why people use substances.

Samuel et al (1974) studied the reasons for taking drugs among adolescents aged 13-22 years in Miami and found that curiosity, boredom, and low self-concept were significant causes of drug abuse among adolescents' (39). Huba (1980) used a socialisation model to explain that adolescents used substances because the behavioural norms, values, and beliefs of their primary reference group (peers) encourage drug use behaviour (40). Khantzian (1985) explained a stress/strain model in which adolescents used substances in a maladaptive attempt to cope with internal and external distress (stress/strain) (41). Path analysis models for adolescent drug used by Oetting and Beauvais (1987) and Hay and Revetto (1990) indicated that adolescent drug use was strongly influenced by peer drug associations (16, 42). However, Jessor (1977) put forward a disaffiliation model in which substance use is generated by a lack of ties to conventional social groups, including school, organised religion, and family (43). Walter (1993) reported that the effect of a socialisation model of substance use was more powerful than the stress/strain and disaffiliation models for explaining use of alcohol, cigarettes, and cannabis (44).

McDonald and Towberman (1993) explained that the factors related to adolescent drug use fell into two major categories of externalities and internalities. The externalities (environmental forces e.g., peers, family, school, and community) influence the adolescent's developing self-concept and establish boundaries for behaviour in the direction of socially acceptable behaviour if adolescents are sufficiently bounded to persons or organisations that adhere to normative expectations. Conversely, insufficient bonding and/or bonding with those that do not adhere to normative expectation leads to criminal or aberrant behaviour such as drug use. The internalities are the intrapsychic characteristics and qualities of the individual where behaviour decision are based on personal beliefs, values, attitudes, self-identity, and self-concept (18).

Patton (1995) explained the multiple factors that place adolescents at risk for alcohol and drug abuse were genetic or family influences (ethnic group, substance using parents), peer influences (substance using friends), individual traits (unconventionality, aggressiveness, delinquent

behaviour, and precocious sexual intercourse), societal influences (culture, religion etc), and abuse issues (sexual victimisation) (37).

Rassool (1998) (45) summarised models of substance misuse to understand substance users and misusers behaviour as moral models, medical/disease models, psychological models, and socio-cultural models. First, moral models explained that substance users and misusers are seen as weak willed individuals and individuals are consequently responsible for the initiation and development of substance use. Second, the medical/disease model views substance misuse as the result of genetic or induced biological abnormality of a physiological, structural or chemical nature. Third, the psychological model includes the social learning, family interaction, and personality approaches. Social learning proposes that social behaviour is learnt through observation and modelling such as modelling on parents. The family interaction emphasises the role of parental behaviour in substance misuse through the family and family environment (family tension, rejection, emotional distancing and parental alienation). The personality characteristics such as lack of maturity, interpersonal and intrapersonal conflict, low self-esteem, underlying depression and anxiety, inability to cope with anger, etc., have all been suggested to be the cause of substance use within these models. Fourth, the socio-cultural models explains substance use by the role of culture, beliefs, values, and attitudes held by a community or minority groups in the way individuals will abstain from or take substances. In addition, these models see sociological factors such as unemployment, social deprivation, poor environment, sex, age, religion, ethnicity and socio-economic class etc as having important effects on substance use.

1.5 Substances; information and effects

Descriptions of the substances that are widely used in Thailand and problems of dependence are illustrated in Box 1.2 (a-k) as follows (45, 46-50) .

Box 1.2 a) Alcohol (45, 46, 49, 50)

Scientific name	Ethyl alcohol, Ethanol
Street name	**Thai**: Lao, Sura **English**: Beer (includes lager), Wine (red wine, white wine, champagne etc), Distilled sprits (brandy, whisky, scotch etc), and other spirits (rum, gin, vodka etc).
Actions group	Depressant, alcohol depress the physical functions of the brain and other parts of the central nervous system
Effects and adverse effects	**Effects**: reduced inhibition, merriment, loquacity, risk-taking behaviours, and impair judgement. **Adverse effects**: Acute effects: incoordination, dulled mentation, slurred speech, reduced audio-visual acuity, ataxia, drowsiness, loss of consciousness, respiratory depression leading to death, hypothermia, flushing, diuresis, dehydration, gastritis, nausea, vomiting, oesophageal reflux, haematemesis, sleep apnoea, hypoglycaemia, arrhythmias. **Long term effects**: liver cirrhosis, alcoholic hepatitis, liver cancer, rupture of oesophageal mucosa, pancreatitis, gastric cancer, alcoholic cardiomyopathy, tachyarrhythmias, hypertension, hyperlipidaemia, malnutrition, weight loss, dehydration, muscle weakness, decreased libido, impotence, depression, paranoia, anxiety, memory loss, blackouts. **Physical dependence**: Withdrawal effects; tremors, sweating, anxiety, flushing, confusion, disorientation, vomiting, anorexia, diarrhoea, insomnia, severe hallucination, delirium, severe depression, hyperpyrexia, dehydration, electrolyte abnormalities and convulsions. **Psychological dependence**: intense craving.
Administrations	Oral

Box 1.2 b) Cigarettes (46-49)

Scientific name	Active agent of cigarettes is nicotine
Street name	**Thai**: Ya-soob, Burhi, Ya-zen **English**: Tobacco, Fags, Snout, Cigars
Actions group	Stimulant Nicotine: increased heart rate and blood pressure Tar: comprises a lot of different organic chemicals including carcinogens Carbon monoxide: bind to haemoglobin to form carboxyhaemoglobin, thus reduced amount of haemoglobin available.
Effects and adverse effects	**Effects**: mood stimulation, calm properties (relaxation, decreased anxiety), stimulant effects (arousal, increased concentration, and loss of appetite). **Adverse effects**: long term effects: cancer (lung, mouth, pharynx, larynx, oesophagus, bladder, kidney, pancreas, stomach, liver, cervix, nose, lip), heart disease (myocardial infarction, pulmonary heart disease, aortic aneurysm, ischaemic heart disease, peripheral vascular disease), and respiratory diseases (chronic obstructive airways disease, pneumonia), peptic ulcer, crohn's disease. **Physical dependence**: Withdrawal effects; headache, sleep disturbance, difficulty in concentrating, irritability, and anxiety. **Psychological dependence**: craving for cigarette.
Administrations	Smoking, Oral (chewing tobacco),

Box 1.2 c) Amphetamine and derivatives (46-49)

Scientific name	Amphetamine is used in three form amphetamine, dextroamphetamine and methamphetamine
Street name	**Thai:** Yaba, Yama (price £66/g, £2/tablet) **English:** Amphetamine=Whiz, Uppers, Bennies, Sulphate, White crosses Dextroamphetamine=Black beauties, Cadillacs, Dexies Methamphetamine=Speed, Crank, Ice, crystal, Meth
Actions group	Stimulant agent
Effects and adverse effects	**Effects:** Amphetamine produces mental and physical stimulations. Users feel alert, self-confidence, happy, talkative, energetic, strong, impulsive, increasing stamina. **Adverse effects:** mydriasis, photophobia, nausea, drymouth, headache, abdominal cramps, diarrhoea, sweating, tachycardia, palpitations, tremor, grinding of the teeth, ataxia, chronic exhaustion, fatique, muscular aches, weight loss, jaundice, insomnia Serious effects: unpleasant hallucinations, severe anxiety, agitation, panic attacks, paranoia, hypertension, cardiac arrhythmias, cardiomyopathy, Intercerebral haemorrhage, severe chest pain, severe abdominal cramp, urinary retention, depression (associated with withdrawal), and psychosis. **Physical dependence:** there are no clear evidences but feeling depression, fatique, sleepy, and hunger occurred as abrupt withdrawal effects (may be normal reaction to the lack of sleep and food), and depression at this time may be so severe that suicide is a real risk. **Psychological dependence:** intense craving and exhibit drug-seeking behaviour.
Administrations	Amphetamine:Oral, nasal inhalation, injection, smoking Methamphetamine: Nasal inhalation

Box 1.2 d) Cannabis (47-49)

Scientific name	Active agents of cannabis were cannabinoids especially ▵-9-tetrahydrocannabinol (THC))
Street name	**Thai:** Ganja (price £0.4/g) **English:** Marijuana (dried and crushed flower heads and small leaves), Hashish (cannabis resin), Hash oil (concentrated resin extract), Draw, Dope, Blow, Grass, Rope, Skunk, Wacky, Bob hope, Reefer
Actions group	Hallucinogenic agent
Effects and adverse effects	**Effects:** evoking elation and merriment in the initial stages, followed by relaxation, disinhibitation, and sociability, producing heightened sensory awareness, enhanced imagination and time distortions, illusion or hallucination (high dose). **Adverse effects:** acute effects: anxiety, confusion, drowsiness, panic reactions, psychosis, hallucinations, psychomotor impairment, red eyes, memory loss, tachycardia, palpitations, postural hypotension, flusing, coughing, sore throat, bronchospasm in asthmatic people, abdominal pain, nausea, vomiting **Long term effects:** Bronchitis, decreased libido, insomnia, depression, anxiety, decreased mental performance, **Physical dependence:** irritability, restlessness, decreased appetite, weight loss, and insomnia (the withdrawal syndrome is relatively mild) **Psychlogical dependence:** no evidence
Administrations	Oral, Smoking

Box 1.2 e) Solvents (47-50)

Scientific name	Solvents which may be used: 1.Toluene, xylene, and hexane (in glues, paints, paint thinners, and paint strippers 2.1,1,1-Trichloroethane and trichloroethylene (in correction fluid, plaster remover, dry cleaning fluids, stain removers, degreasers etc. 3.Other chlorinated hydrocarbons such as chloroform, carbon tetrachloride (in Paints, varnishes, paint strippers, dyestuffs, dry cleaning fluids) 4.Ketones such as acetone (in nail varnish removers, polystyrene cements) 5.Esters (in marker pens, adhesives) 6.Propane, butane gas (in cigarette lighter fuel, bottled camping and stove gases, propellant in aerosols) 7.Chlorofluorocarbons (in propellant in aerosols, fire extinguishers) 8.Dimethyl ether in aerosol propellant 9.Nitrous oxide (in propellant in spray) 10.Fuels such as petrol and paraffin 11.Amyl nitrite, butyl nitrite (poppers), and isobutyl nitrite
Street name	**Thai:** Kao, thinner, **English:** Glues, lighter fuel, aerosols, cleaning fluid
Actions group	Depressant
Effects and adverse effects	**Effects:** feeling of intense exhilaration, feeling merry, playful and uninhibited, increasing sociability, euphoria, **Adverse effects:** drunk and hangover feeling, drowsiness, headache, inability to concentrate, hallucination, contact irritation, coughing, vomiting, confusion, dizziness, depression, aggressive, arrhythmia **Long term effects:** decreasing ability to concentrate, insomnia, nightmares, renal failure, hepatoxicity, severe gastrointestinal upset, muscle damage **Physical dependence:** no clear evidences **Psychological dependence:** irritability, headaches
Administration	Nasal inhalation

Box 1.2 f) Opium (47-49)

Scientific name	Opium itself is obtained from the opium poppy (Papaver somniferum), crude opium contains a number of chemical compounds called alkaloids (the major alkaloids are morphine, codeine, noscapine, papaverine, and thebaine)
Street name	**Thai:** Fin (price £2/g) **English:** Nepenthe, Gee's linctus
Actions group	Depressant
Effects and adverse effects	**Effects:** potent analgesic, feeling of intense pleasure, feeling of warmth, relaxation, happiness, high dose produces sedation or a pleasant light sleep, **Adverse effects:** common: nausea, vomiting, constipation, drowsiness, mental confusion Infrequent: sweating, facial flusing, pruritus, dry mouth, hallucinations, dysphoria, urinary retention, headache Rare: Thrombocytopenia, rashes, uticaria, vertigo, palpitations, postural hypotension **Overdose:** dysphoria, hallucination, heavy sedation, miosis, hypothermia, respiratory depression, pulmonary oedema, hypotension, bradycardia, arrhythmias secondary to hypoxia **Physical dependence:** Withdrawal effects: anxiety, restlessness, insomnia, mild tachypnoea, yawning, coughing, sneezing, craving, lacrimation, perspiration, rhinorrhoea. followed by tremors, aches, myalgia, arthralgia, muscle twitching, chills, piloerection, hot flushes, anorexia, abdominal pains, mydriasis, insomnia, headache Severe effects: tachycardia, hypertension or hypotension, nausea, vomiting, diarrhoea, fever, dehydration, tachypnoea, agitation **Psychological dependence:** severe and accounts for the desire and craving for drugs that eventually disrupts the addict's life. Psychological dependence does not end when physical dependence has been achieved.
Administrations	Oral, nasal inhalation, injection

Box 1.2 g) Heroin (47-49)

Scientific name	Heroin, Diamorphine (made from morphine by chemical process called acetylation)
Street name	**Thai:** Phongkhao (price £30/g) **English:** H, Junk, Skag, Gear, Boy, Dragon, Jack, Horse
Actions group	Depressant
Effects and adverse effects	**Effects:** potent analgesic, feeling of intense pleasure, feeling of warmth, relaxation, happiness, high dose produces sedation or a pleasant light sleep, **Adverse effects:** common: nausea, vomiting, constipation, drowsiness, mental confusion Infrequent: sweating, facial flusing, pruritus, dry mouth, hallucinations, dysphoria, urinary retention, headache Rare: Thrombocytopenia, rashes, uticaria, vertigo, palpitations, postural hypotension **Overdose:** dysphoria, hallucination, heavy sedation, miosis, hypothermia, respiratory depression, pulmonary oedema, hypotension, bradycardia, arrhythmias secondary to hypoxia **Physical dependence:** Withdrawal effects: anxiety, restlessness, insomnia, mild tachypnoea, yawning, coughing, sneezing, craving, lacrimation, perspiration, rhinorrhoea. Followed by tremors, aches, myalgia, arthralgia, muscle twitching, chills, piloerection, hot flushes, anorexia, abdominal pains, mydriasis, insomnia, headache Severe effects: tachycardia, hypertension or hypotension, nausea, vomiting, diarrhoea, fever, dehydration, tachypnoea, agitation **Psychological dependence:** severe and accounts for the desire and craving for drugs that eventually disrupts the addict's life. Psychological dependence does not end when physical dependence has been achieved.
Administrations	Oral, nasal inhalation, sniffing, injection

Box 1.2 h) Magic mushroom (45, 47-48)

Scientific name	Psilocybe semilanceata contains psilocybin and psilocin (active ingredients)
Street name	**Thai:** Hedkekuy **English:** Mushies, Liberties
Actions group	Hallucinogenic agent
Effects and adverse effects	**Effects:** feeling of relaxation, mild euphoria, hallucination. **Adverse effects:** flushing, tachycardia, dry mouth, drowsiness, sleepy, panic reactions, severe agitation, acute psychosis, hallucination, vomiting, abdominal cramps, ataxia, convulsion
Administrations	Oral, sniffing, smoking, injection

Box 1.2 i) Ecstasy (47-50)

Scientific name	3,4,methylene-dioxymethamphetamine (MDMA)
Street name	**Thai:** Ya-E, Ecstasy (price £25/tablet) **English:** Ecstasy, E, XTC, Adam, MDE, Dove, Love doves, Big brownies, California sunrise, Disco biscuit, New Yorker, M and Ms, Burgers
Actions group	Stimulant
Effects and adverse effects	**Effects:** Users feel peace, less defensive, more interested in interacting with others, energetic (less potent than amphetamine) **Adverse effects:** Similar side-effects to amphetamine, some individuals feel sick, headache, grinding of the teeth and uncomfortable rigidity of the jaw muscle (more than amphetamine), **Serious effects:** Overexercise lead simply to dehydration and progress to skeletal muscle breakdown and hyperpyrexia, renal failure, endogenous depression, mood disorder,
Administrations	Oral, nasal inhalation, injection

TEXT BOUND INTO

THE SPINE

Box 1.2 j) Cocaine (47-50)

Scientific name	Cocaine is an alkaloid prepared from the leaves of coca bush (Erythroxylum coca) as cocaine hydrochloride
Street name	**Thai:** Cocaine (price £25-35/g) **English:** Cocaine, Crack (ready-made free base cocaine), Speedball (mixed injection of cocaine and heroin), Cocaine hydrochloride (injected form), C, Coke, Dust, Snow, White
Actions group	Stimulant agent
Effects and adverse effects	**Effects:** exhilaration, feeling of euphoria, alertness, excitement, rapid flow of thought, increase confidence, talkativeness, increase capacity to do work, great physical strength, mental supremacy, inducing heightened sexual interest. **Adverse effects:** tachycardia, mydriasis, sweating, tremor, flushing, reduced appetite, headaches, nausea and vomiting, chest pain, black sputum, wheezing, shortness of breath, respiratory arrest, hypertension, palpitations, tachyarrhymias, myocarditis, cardiomyopathy, cardiac arrest, stroke, convulsions, rhabdomyolysis, anxiety, hallucination (after large dose), paranoid psychosis, panic reaction, depression, dysphoria, mania. **Physical dependence:** cocaine withdrawal by users who habitually consume large doses, the symptoms include lethargy, depression, apathy, tremor, muscle pain, and disturbances of eating and sleeping **Psychological dependence:** cause severe psychological dependence with craving and drug-seeking behaviour
Administrations	Oral, injection (cocaine hydrochloride) , sniffing (cocaine hydrochloride), smoking (crack)

Box 1.2 k) LSD (47, 50-51)

Scientific name	Lysergic acid diethylamide
Street name	**Thai:** LSD **English:** Lysergide, Acid, Trips, Stars, Sugar, Drop, Tab, Cheer, Hawk, Micro, Lightning flash, Four ways, Penquins, Smiles
Actions group	Hallucinogenic agent
Effects and adverse effects	**Effects:** euphoria, peaceful, becoming depersonalised and detached from reality, delusions, **Adverse effects:** flusing, hypertension, dry mouth, tachycardia, mydriasis, sweating, tremor, exhaustion, headaches, inability to concentrate, prolonged panic attack, dysphoria, acute depression, psychosis.
Administrations	Oral, nasal inhalation, injection

1.6 Aims and objectives of research

This research study is an applied piece of research. The main aim of the study is to provide the information and technical basis to establish a program of assessment of substance misuse in Thai schools for assessing the epidemic of substance misuse, analysing the causes of substance misuse, and identifying indicative factors for substance misusers. The assessment method developed should be a valid, reliable and efficient tool, which can be used rapidly to assess substance misuse among Thai school students. Furthermore, this program will assist education administrators and public health authorities endeavouring to design appropriate strategies to

prevent and control substance misuse problems in Thai schools. Within this general aim are a number of objectives.

1. To develop a tool to measure substance use in secondary school students in Thailand
2. To identify appropriate sample sizes for the use of the tool so that levels of drug use could be identified within realistic confidence intervals
3. As action research to perform the first assessment of the epidemic of substance use among secondary school students (15-19 years old) in Khon Kaen, Thailand
4. To identify and analyse reasons for substance use among Khon Kaen secondary school students
5. To identify indicative factors related to substance use among school students so that individuals or groups at risk of using substances can be identified from even a partial dataset generated by the survey tool.

Consequently, the expectations of this thesis were to provide research tools for assessment of substance use in schools and undertake the first study of Assessment of Substance Use in Thai Schools which is valid, reliable, and efficient.

CHAPTER 2: METHODS

Decisions about the methods for this study including study population, sampling frame, field work preparation and research tool development, and the method of data collection had to be made at an early stage, before data collection. These decisions were informed by a pilot study (Chapter 3). The final design methodology is described in this chapter.

2.1 Study population

The target population were students of secondary schools (15-19 years old) in Khon Kaen city, North Eastern Region, Thailand. In this Region, there are 89 schools that are graded secondary education of both academic and vocational school types (75 academic schools, 14 vocational schools). The total number of secondary school students is 56,459 with 30,681 students in academic schools and 25,778 students in vocational schools. The number of classrooms is 1,403; 758 in academic schools, 645 in vocational schools (see Table 2.1).

Table 2.1: The number of schools, classrooms, and school students of secondary schools in Khon Kaen (51)

Secondary schools	Number of Schools	Number of classrooms	Number of Students
Academic schools	75	758	30,681
Vocational schools	14	645	25,778
Total	89	1,403	5,6459

Source: Provincial Educational Office, Ministry of Education, Khon Kaen, Thailand 1997

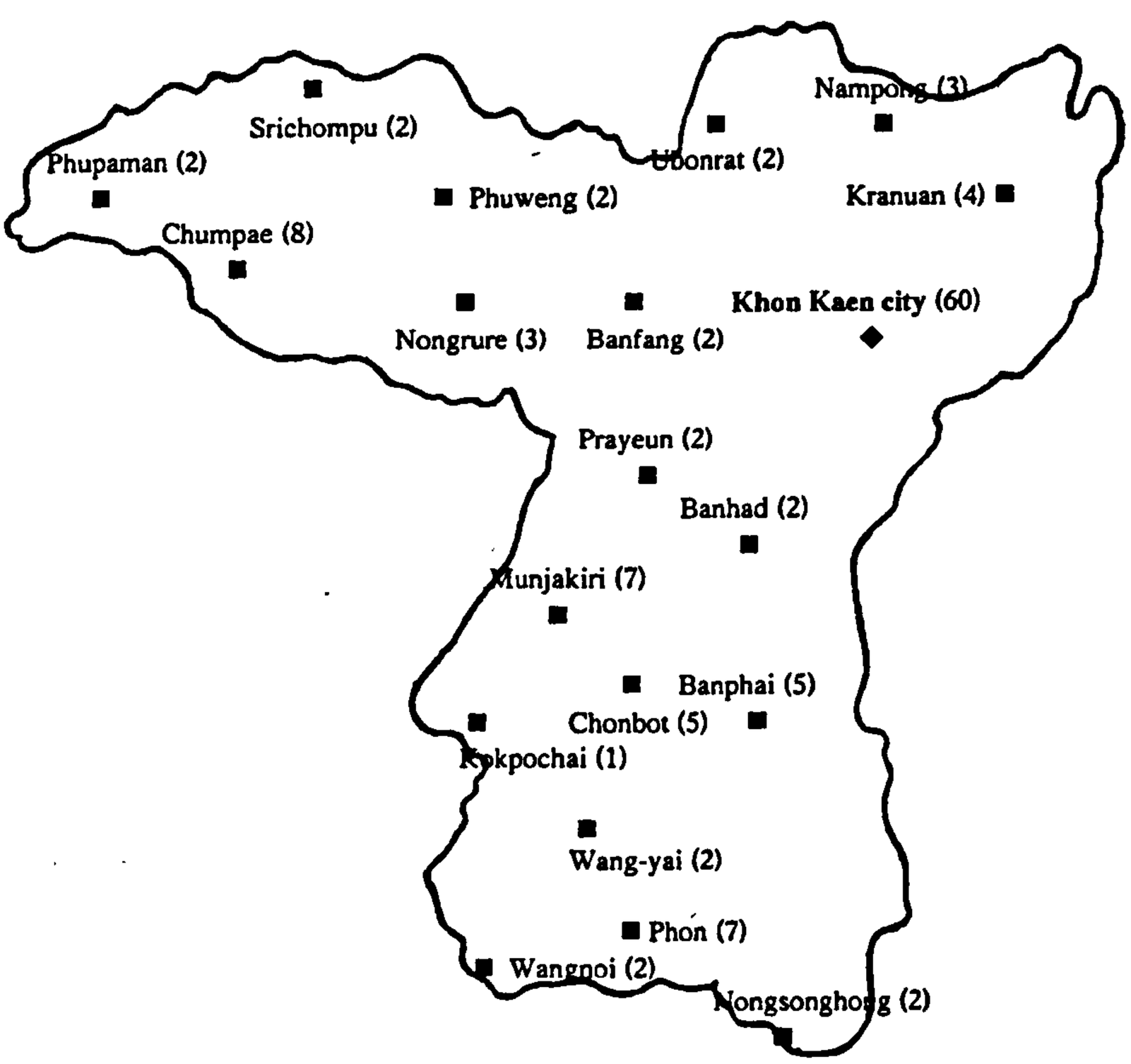
2.2 Sampling

The preferred method for random sampling in this type of survey is single stage cluster random sampling (52-53) with here, classrooms as the sampling unit. All classrooms in secondary schools in Khon Kaen are listed as the sampling frame and classrooms are selected by simple random sampling techniques (random number generation). All the students in selected classrooms are then included in the study. However, to calculate the appropriate sample size for number of students, some approximate information is needed on the levels of use for each substance amongst the target group. Therefore, the appropriate sample size for estimating proportions (here prevalence of substance use) was calculated on the basis on pilot study data. The results and discussion of the pilot survey are described in Chapter 3. Furthermore, this pilot also served to refine the ASTS tool from the perspective of question design. The pilot study on

the assessment of substance use in Thai schools was carried out during November 1997 to January 1998 (second educational semester, 1997). The data collection period for the main study was from June 1998 to August 1998 (first educational semester, 1998). Because there were no previous data on prevalence of substance use amongst Khon Kaen secondary school students, prevalence from the pilot study were used to determine a suitable sample size. Sample size calculations revealed that at least 98 classrooms (~3,420-3,930 students) should be used to estimate the prevalence of substance use among Khon Kaen secondary school students (see Chapter 3). Consequently, the project surveyed students in 123 classrooms (4,217 students) in Khon Kaen secondary schools. Random numbers for sampling (from a table of random digits) were used to select study samples and the selected classrooms were marked on the map (see Map 3). All students in selected classrooms were asked to complete the questionnaire.

Map 3: Selected samples (number of classrooms) in Khon Kaen province

◆ Represents inner city of Khon Kaen
■ Represents district area of Khon Kaen



2.3 Fieldwork preparation and research tool development

The following sections deal with the major components of the preparatory process for initiating the survey. A summary listing of these preparations are given in Box 2.1.

Box 2.1: Outline of process of field work and research tool development

Field work preparation- co-ordinating with the authorities

Co-ordinating with: -

- Thai Educational Authority Office
- Drugs Control Office
- Public Health Office
- Police Office

Developing the research tool

Establishing the tool for assessment of substance use in Thai schools

- Review of substance use problems in schools and their possible connections
- Identifying research variables
- Identifying eligible targets
- Question design
- Attitude scaling development

Pilot study and testing for validity, reliability, and efficiency of the tools in secondary schools.

Preparation and refinement of research tools and guidelines for researcher

- Questionnaire Production
- Taped Instructions for questionnaire completion
- The guidelines for researcher on administering the questionnaires

2.3.1 Fieldwork preparation

Substance use among school students means not only dealing with school matters but also the need for understanding and an integrated and co-ordinated approach from the drug control office, public health office, drug independence treatment centre, and the police office. Khon Kaen educational office is the administrative office that provides educational support to all schools in Khon Kaen province. Within its policy and strategies the ministry of education (54) set substance misuse among school students as the important problem. Every provincial education office and school is encouraged to develop prevention programs on substance misuse among school students. It was therefore important in doing this research in Khon Kaen schools that the study was first permitted and then supported by the Khon Kaen educational office. These were important for the researchers in order that they received collaboration from school staff. Schoolmasters were asked for permission to do research in each school after which teachers were then asked to collaborate with the researchers. The North Eastern drug dependence centre was asked to provide information of the number of substance dependence

patients in the North Eastern region of Thailand. The North Eastern narcotic control office was asked to provide their information on the epidemic of substance misuse in the North Eastern region of Thailand. In addition, the Khon Kaen public health office was asked to provide information on the epidemic of substance misuse in Khon Kaen province from existing surveys or other pieces of local work. Finally, the head quarters of Khon Kaen police office was asked to provide information on arrests for substance and substance misuse in area of Khon Kaen province. Such information was essential in framing the types of question necessary to measure substance use in the school going populations.

2.3.2 Developing the tools and sample size for assessment of substance use in Thai schools

The questionnaire had to be capable of measuring a wide range of variables in order to allow the data to be used across various models of substance use (see Section 1.4). Furthermore, the objectives of the study dictated that, for those instances when not all data could be collected, sub sets of the data should be capable of identifying groups at high risk of substance use.

Substance use (alcohol, cigarettes, and illegal drugs) among school students is associated with various factors including family, school, peer, health, and personal behavioural /psychological factors (refer to alcohol Table 5.2 and 5.5, cigarettes Table 6.2 and 6.5, illegal drugs Table 7.3 and 7.5). Because of the absence of previous studies any of these variables may be associated with substance use among Khon Kaen secondary school students and so all such variables were measured in the research study and incorporated in the questionnaire tool. The research variables consisted of dependent variables and independent variables. Dependent variables were alcohol, cigarette, and illegal drug use among Khon Kaen secondary school students. Independent variables were socio-demographic factors, family factors, school factors, peer factors, health factors, behavioural factors, psychological factors and attitude toward alcohol, cigarette, and illegal drug use. Within these groups, subsets of questions were generated for the ASTS. These are listed in the following box (Box 2.2) using the format of variable then, in italics, the list of possible answers for closed questions. In addition, a four-point response format ranging from 0 to 4 was used to quantify the student's attitude toward substance misuse.

Box 2.2 Basic Questionnaire Structure

Socio-Demographic variables*

- Sex (*Male, Female*)
- Age (Age of Thai secondary school students)
- School type (*Academic, vocational school*)
- Fathers' education (official educational degree of fathers (type of educational institution last attended); *no degree, primary school, secondary school, first degree, and higher than first degree*)
- Fathers' occupation (fathers' main occupation, as stated by students, *no job, labourers, farmers, private office employees, government / enterprise services, and own business*)

*To this socio-demographic data were added information on the area in which the school was located i.e. School zone *(district area, inner city).*

Family variables

- Cigarette smoking parent (father or mother was cigarette users, *yes, no*)
- Alcohol drinking parents (father or mother was alcohol users *yes, no*)
- Financial problem in family (shortage of money and in debt, *no problem, some problems or many problems*)
- Conflicts among family members (fighting among family members, *never, sometimes or several times*)
- Restrictions of parents (restriction that parents place on students, *not at all, a little, a lot or all the time*)
- Run away from home (students' experience of running away from home, *yes, no*)
- Parents were staying together (father was staying together with mother, *yes, no*)
- Student was staying with parent (student was staying with *father, mother, or both parents*)

School performance variables

- Average grade (Average grade in the last set of exams, *D or F, C, and A or B*)
- Attention difficulty (students found it difficult to pay attention for long period in school, *no, sometimes or regularly*)
- Truancy (students played truant in the last 12 months, *never, up to five times, six to twelve times, or more than twelve times*)

Peer variables

- Close friends were alcohol users
  (close friends in school or outside school were alcohol users, *yes/no/do not know*)
- Close friends were cigarette users
  (close friends in school or outside school were cigarette users, *yes/no/do not know*)
- Close friends were illegal drug users (close friends in school or outside school were illegal drug users, *yes/no/do not know*)
- Students were staying with friends (students were staying with their friends in place of abode, *yes/no*)

Health variables**

- Having a small appetite
  (students had a small appetite in the last three months, *never, occasional, and often*)
- Having a cough
  (students had a cough in the last three months, *never, occasional, and often*)
- Having chest pains
  (students had chest pains in the last three months, *never, occasional, and often*)
- Having a cold
  (students had a cold in the last three months, *never, occasional, and often*)
- Wheezy
  (students had a wheeze in the last three months, *never, occasional, and often*)
- Having a sore throat
  (students had a sore throat in the last three months, *never, occasional, and often*)
- Having a sore nose
  (students had a sore nose in the last three months, *never, occasional, and often*)

**Three months was chosen as a reasonable period of time over which to recall health problems.

Box 2.2 – continued

Personal behavioural variables

- Cigarette smoking (students were current cigarette users, *users and non-users*)
- Alcohol drinking (students were current alcohol users, *users and non-users*)
- Illegal drug using (students were current illegal drug users, *users and non-users*)
- Going out for fun at night-time (frequencies of going out for fun at night-time in the last 12 months, *never, less than once a week, one to two times a week, three to four times a week, and more than four times a week*)
- Having sex early (students had experienced sexual intercourse, *yes/no*)
- Hurting oneself (students had ever hurt oneself, *yes/no*)
- Stealing (students had experience of stealing, *yes/no*)

Psychological variables

- Aggressive (self-identified aggressive characteristic, as stated by student, *yes/no*)
- Depressive (self-identified depressive characteristic, as stated by student, *yes/no*)
- Risk-taking (self-identified risk taking characteristic, as stated by student, *yes/no*)

All individuals within the sampled classes were eligible. However, this set certain limitations on the questionnaire in its design. The words used in the questions had to be of a suitable reading age such that even the youngest expected students could correctly interpret each question. The pilot study helped address these concerns (Chapter 3). A number of design features were built into the methodology to make questions valid and reliable. Because questions about substance misuse are sensitive and need to be anonymous (such as not giving name or even clues through hand writing), most questions were closed (i.e. one answer from a series was selected by means of a tick). In some cases closed question were combined with an open-ended option (usually other) in order that answers at the extreme of the population could still be recorded. Closed questions also had the additional advantage of keeping the time taken to fill in the questionnaire to a minimum. The questionnaire took only around 15 minutes to complete and this assisted both with teacher co-operation and that of the students.

Questionnaire design also tried to include only precise and unambiguous questions by adding a reasonable dimension of time to each question and defining any ambiguous words. For example,

- How often did you have rows or fights with your family's member (parents, brothers, or sisters) in the last 12 months?
- Have you ever stayed away without permission from school in the last 12 months?
- Have you ever stolen money from your parents, brothers, or sisters in the last 12 months?

Further steps to construct the questionnaire included deciding on the precise question format with appropriately worded, meaningful questions for respondents and a logical sequence of the questions. Wording the questions was developed from several sources, including reviewing literature, expert opinion, and pilot study. Based on the secondary school curriculum, the students have been taught about substance education including alcohol, cigarette, and illegal drugs (55) and from this words and phrases were chosen which were not difficult for secondary school students to understand including terms for substance such as alcohol, cigarette, and illegal drugs in the Thai language.

Because students may be reluctant to admit substance use or other socially unacceptable behaviours, it was important to emphasise that the questionnaire was confidential and anonymous at every stage including in the introduction to each class by the researcher. It was also thought that the response to some questions might depend on who else was present when the questionnaires were filled out. As a result, teachers were always asked to be absent when students answered the questionnaires. This also further emphasised the anonymity and confidentiality.

The sequence of the questions began with easy questions to answer (such as general questions; sex, age, etc) to difficult questions to answer such as sensitive questions (sexual intercourse, misbehaviours, etc.). The questionnaire opened with requests for information on general socio-demographic data, and moved on to family and school related, and then gradually into experiences of personal behaviours, psychological characteristics, and health problems. The core questions on substance use, covering alcohol, cigarettes, and illegal drug use occupied the central section of the questionnaire. Peer-related and attitude questions were placed towards the end of the questionnaire. Therefore, subjects could answer their own experiences before the point at which a moral judgement on behaviour was requested of them. In addition, pictures were used in questionnaires in order to prevent boredom of respondents and lighten the experience. Questionnaires were designed to be self-administered. In addition to anonymity self administered questionnaires can be administered to many school students simultaneously such as in a classroom of school students and therefore reduce labour costs and time expenditure.

The attitude scale was used in order to explore how attitudes towards substance use corresponded with substance use behaviour. The attitude scale (see construction in Box 2.3) in this study applies particularly to the use of Likert-type scales (56, 57) in which subjects are asked to place themselves on a four-point scale for each statement (running from "strongly agree" (score 4) to "agree" (score 3), "uncertain" (score 2), "disagree" (score 1), and "strongly disagree" (score 0)) which provide a means of quantifying attributes. The responses are scored and added together to give a score indicating the person's attitude towards the alcohol, cigarette, and illegal drug use. The numerical value indicates the weight attached to the response. The total score for the subject is the sum of the values which the subject has attached to all the statements on that issue.

Box 2.3. Construction of attitude scale toward substance use

(1) A great number of opinion statements whether they indicate positive or negative attitude toward alcohol, cigarette, and illegal drug use were collected. Statements are sensitive to important criteria such as they are as brief as possible, can be endorsed or rejected in accordance with their agreement or disagreement with the attitude of the readers.

(2) Ambiguous opinion statements or those indicating a neutral attitude are discarded.

(3) Responses to each opinion statement are scored from 0 to 4. Strong agreement with positive items are given a score of 4, strong disagreements a score of 0. Scoring is reversed for negative statements.

(4) The attitude score is obtained by summing across all the subject's item scores. The higher the score the more positive the attitude towards alcohol, cigarette, and illegal drug use.

After establishing the tools, draft versions of structured questionnaires were tested in a small-scale field test by drug dependent patients in North Eastern drug dependence treatment centre for street names of drugs and meanings of substance wording. Further similar pilot studies were used for validity, reliability, and efficiency of the questionnaires. Targeted pilot samples were selected from different characteristic school (district and inner-city students, academic and vocational school students, etc.) in order to test research tools in samples which were similar to those in the study population (representing different types of school students in the population.). Following the pilot, the questionnaire was amended in accordance with the results (Chapter 3). The questionnaire was developed in the English language and translated into Thai language for Thai school students. 4,500 copies of questionnaires were made for use in this study.

In order to present the same introduction to all respondents in every school for understanding the objectives of questionnaires and how to answer the questionnaire, a tape recording of how to fill in the questionnaire was made and used as a standard introduction in this research. The following guidelines were made for the researcher to consistently administer the ASTS questionnaire (see Box 2.4).

Box 2.4 Steps of administration

Step 1. The classrooms, which are selected by random sampling method, are listed in each school.
Step 2. The school authorities are informed in advance which classrooms will be surveyed.
Step 3. The researcher brings the ASTS questionnaires directly to each classroom.
Step 4. The teachers are asked to leave the classroom.
Step 5. The researcher ask the teacher to fill out the absentee students in questionnaire-form A in order to monitor the number of students missing through absenteeism.
Step 6. All students in classrooms are given an ASTS questionnaire with an envelope and a pen.
Step 7. The researcher gives the details of ASTS questionnaire by playing a tape recording to the students. The messages in the tape recorder explain the following to the students.
7.1. Asks for co-operation about answering the ASTS questionnaire and thanks the students.
7.2. The purpose of this questionnaire -to study the life experiences and opinions of students about personal, family, and school matters.
7.3. The importance of confidentiality
- This questionnaire is anonymous and there is no need for students' names or anything to identify them.
- Any answer given will be strictly confidential.
- After finishing answers, the questionnaire will be sealed in the given envelope by yourself and put in the metal box.
- Please feel comfortable to answer honestly.

7.4. About answering the questionnaire
- Please follows the instructions of questionnaire.
- Students are not forced to answer any question. But, please answer as many questions as possible.
- The student is told "Take your time to answer the questions. Don't be in a hurry."
- If students do not understand a word or a question, ask the researchers (if students wish to).

7.5. After completion
- Please seal the questionnaire in the envelope and then put this envelope in the metal box.

7.6. Once again, thank all students.
Step 8. Students are signalled to answer the ASTS questionnaire.
Step 9. After finishing, researcher(s) collect the boxes and questionnaires.

All questionnaire contents, question designs, standard guidelines for administration of the questionnaires, and suitable sample size for population representative, reflected the objective of the research study, in particular the need to maintain the validity and reliability of research tools and to produce an acceptable study population.

2.4 Method for data collection – Main Survey

Having established confidentiality, the self-completed anonymous ASTS questionnaires were used to assess the epidemic of substance misuse in Thai schools. The questionnaire (see Appendix 1) was divided into three parts: Socio-demographic and other risk variables; substance use and social aspects; and attitude toward substance use. The first part requested general information, socio-demographic, family, school, peer, health, risk behavioural and psychological data. The second part examined substance use and social aspects. This part provided data of substance use (alcohol, cigarettes, amphetamine, cannabis, solvents, opium, heroin, ecstasy, cocaine. magic mushroom, and LSD) and social aspects such as age of first use, reasons of using the first time, reasons of use the further times, effects of use, pattern of use, and places of use for each substance. The third part provided an attitude scale towards alcohol, cigarette, and illegal drug use.

The questionnaires were completed by students in their classrooms during normal class sessions. Collecting of data started immediately following the successful preparation of research tools and appropriate co-ordination through the Khon Kaen educational office and school staff. All data collection was completed by August 1998.

2.5 Data analysis:

Completed questionnaires were subjected to a coding stage before the data were keyed to computer. Once keying in data was finished, data analysis processed. The SPSS program was the statistic package used for analysing the data. Data analysis was undertaken using descriptive statistics and inferential statistics for describing, estimating, and comparing the epidemic of substance use among Khon Kaen secondary school students. Logistic regressions were used as the main multivariate analysis to assess indicative factors for substance use. Risk variables were entered into the logistic regression analysis if they were theoretically or empirically related to substance use.

CHAPTER 3: PILOT STUDY

A pilot study was used in order to field test the data collection tools and consequently identify any defects in study design before the final survey was initiated. The pilot was also a small-scale test of the methods and various practical preparations to be used on the larger scale. In addition, data from the pilot study were useful for the calculation of an appropriate sample size for roughly estimating the prevalence for use of alcohol, cigarette, and illegal drugs in schools.

3.1 Pilot sample

It was essential that the students understand the terms used in the questionnaire and in particular the names of the various drugs. There are various names for substances (i.e. street names) in the Thai language and therefore drug dependence patients (n=12) of North Eastern drug dependence treatment centre were asked for street names for all drugs and their meaning. After incorporating the street name of the substances in the questionnaire, the pilot study was undertaken in five schools in Khon Kaen (inner city area = 2 and district area = 3) in November 1997. One classroom was selected to pilot the study from each school. A total of 218 students (male=113, female=105) completed the questionnaires in confidential and anonymous conditions (see Methods).

3.2 Pilot Methods

The survey was based on self-completed anonymous questionnaires. In the pilot individuals were asked to answer the questionnaires while the researcher observed responses and timing. After finishing answering questionnaires, the researcher encouraged participants to discuss any points with which they had difficulty or any meanings that were difficult to understand making it awkward to respond to questions. Data analysis was undertaken using descriptive statistics and inferential statistics for estimating, comparing, and describing the levels of substance misuse.

3.3 Response rate of answering each question

The response rate of each question was considered to be the number of students who responded to the question divided by the number of students who were potential respondents. Most of questions produced a satisfactory response rate (>95%). However, the response rates

were lower than 95% in some questions (shown in Table 3.1). Low response rates can arise for various reasons such as misunderstanding of a question, misunderstanding of routing instructions on a question, or objecting to a particular question. Each poorly answered question was examined and either excluded from the final questionnaire or the format and/or position changed. Typical changes to questions are shown in Table 3.1.

Table 3.1: Response rate of selected questions and subsequent questions' correction based on pilot study.

Questions	Selected respondents (cases)	Response (cases)	Response rate (%)	Correction
What are your main reasons for using illegal drug the first time?	218	163	74.8%	Separated to each illegal drug: What are your main reasons for using amphetamine the first time? What are your main reasons for using solvents the first time? etc.
What are your main reasons for using illegal drug the further times?	218	156	71.6%	Separated to each illegal drug: What are your main reasons for using amphetamine the further times? What are your main reasons for using solvents the further times, etc.
Do any of your close friends use substances?	218	157	72.0%	Separated substances to illegal drugs, cigarettes, and alcohol. Do any of your close friend (friends in school or friends outside school) use illegal drugs? Do any of your close friend (friends in school or friends outside school) use cigarettes? Do any of your close friend (friends in school or friends outside school) use alcohol ?
Where do you usually use illegal drugs?	218	154	70.6%	Separated to each illegal drug use: Where do you usually use amphetamine? Where do you usually use solvents? etc.

3.4 Validity and Reliability

Internal consistencies were measured to estimate reliability of attitude scales. Cronbach's alpha was used to test the 10-item attitude scale. Carmines et al (1995) suggested that reliability coefficients of well-constructed tests should be 0.80 or higher for widely used scales because correlations are attenuated very little by random measurement error (58). The results revealed that the attitude scale of alcohol, cigarettes, and illegal drug had high internal consistencies (alpha coefficient > 0.80) (see Table 3.2).

Table 3.2: Internal consistency reliability coefficient of attitude scales (n=218).

Scale	Number of items	Highest score	Alpha coefficient
Attitude towards alcohol	10	40	0.81
Attitude towards cigarette	10	40	0.83
Attitude towards illegal drugs	10	40	0.82

3.5 Efficiency

Respondents took an average of 17 (+/-2.7, SE) minutes to answer all questions. Task difficulties in any process of collecting data were observed and solutions developed to solve the problems. Most of these were of a logistic nature. For example, a map of the targeted sample had to be found and prepared in order to easily find the targeted schools. A schedule of appointments between the researcher and schools had to be well prepared, for practical matters, well in advance of data collection. Similarly, accommodation, equipment, and transportation have to be arranged to facilitate the survey.

3.6 Preliminary data

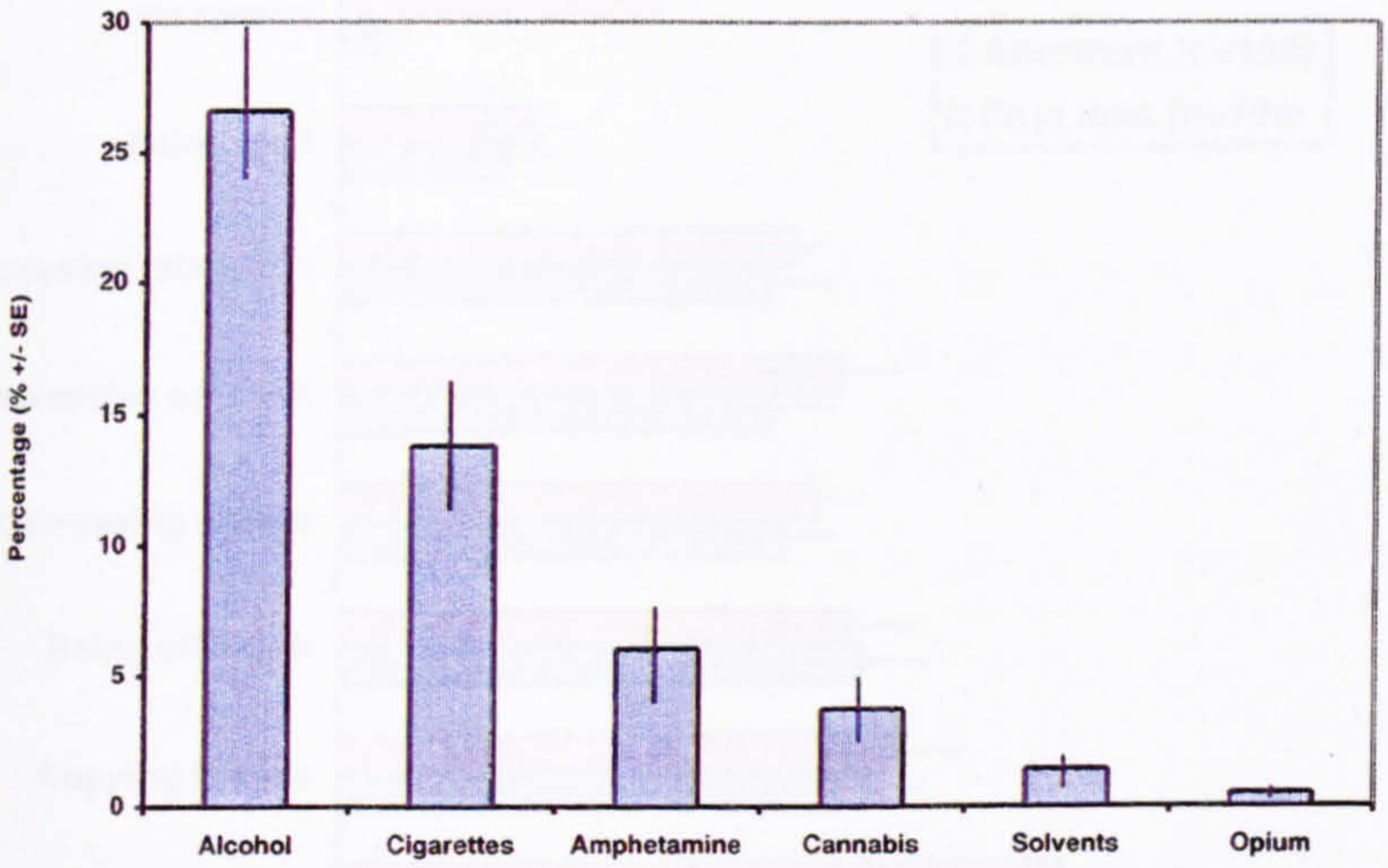
3.6.1 Epidemiology of substance use:

From the pilot study, preliminary data were analysed which showed that 26.6% of students were currently drinking alcohol (male=47, female=11), 13.8% were currently smoking cigarettes (male=28, female=2), 6% using amphetamine (male=13, female=0), 3.7% using cannabis (male=7, female=1), 1.4% using solvents (male=3, female=0), and 0.5 % using opiates (male=1, female=0) (see Figure 3.1).

3.6.2 Social aspects of substance use

The three most common reasons for smoking cigarettes for the first time were "being curious to try it", "copying friends" and "just for fun". Those who continued to smoke indicated that the reasons for continued smoking were "copying friends", "decreasing nerves", and "increasing relaxation" (see Figure 3.2). Similarly, the three most common reasons for drinking alcohol for the first time were "being curious to try it", "just for fun", and "copying friends". The three main reasons for continuing to drink alcohol were "just for fun", "copying friends" and "just because it was offered" (see Figure 3.3).

Figure 3.1: Percentage of students using different substances in Khon Kaen secondary schools (Pilot Study)



In the case of drug use, the three most common reasons for using drugs for the first time were "being curious to try it", "just for fun", and "just because they were offered". While the three most common reasons for continuing to use drugs were "just for fun", "just because they were offered", and "increasing relaxation" (see Figure 3.4).

Figure 3.2: Percentage users by reasons for smoking for first time and afterwards (Pilot Study)

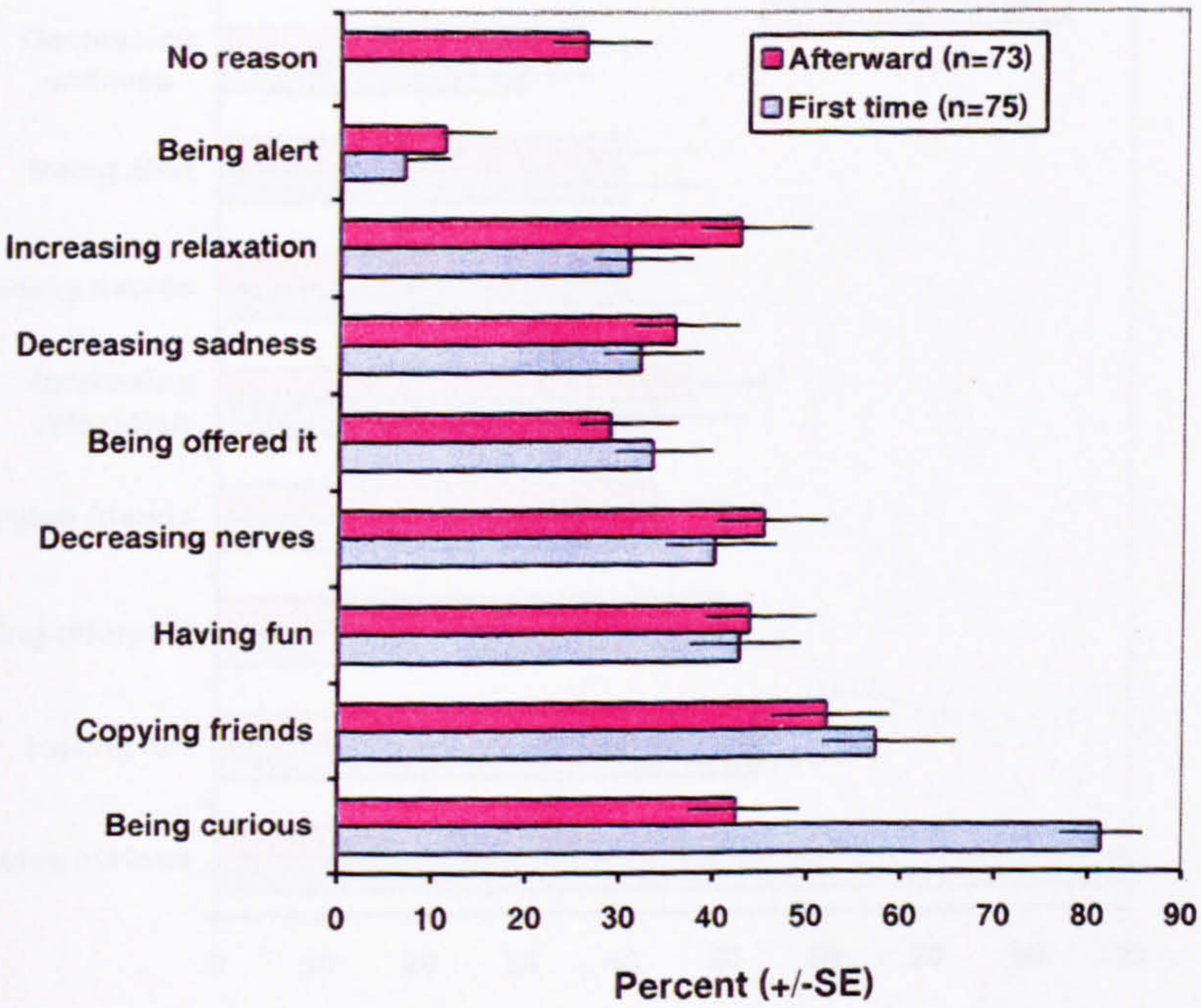


Figure 3.3: Percentage of users by reasons of drinking alcohol for the first time and afterward.

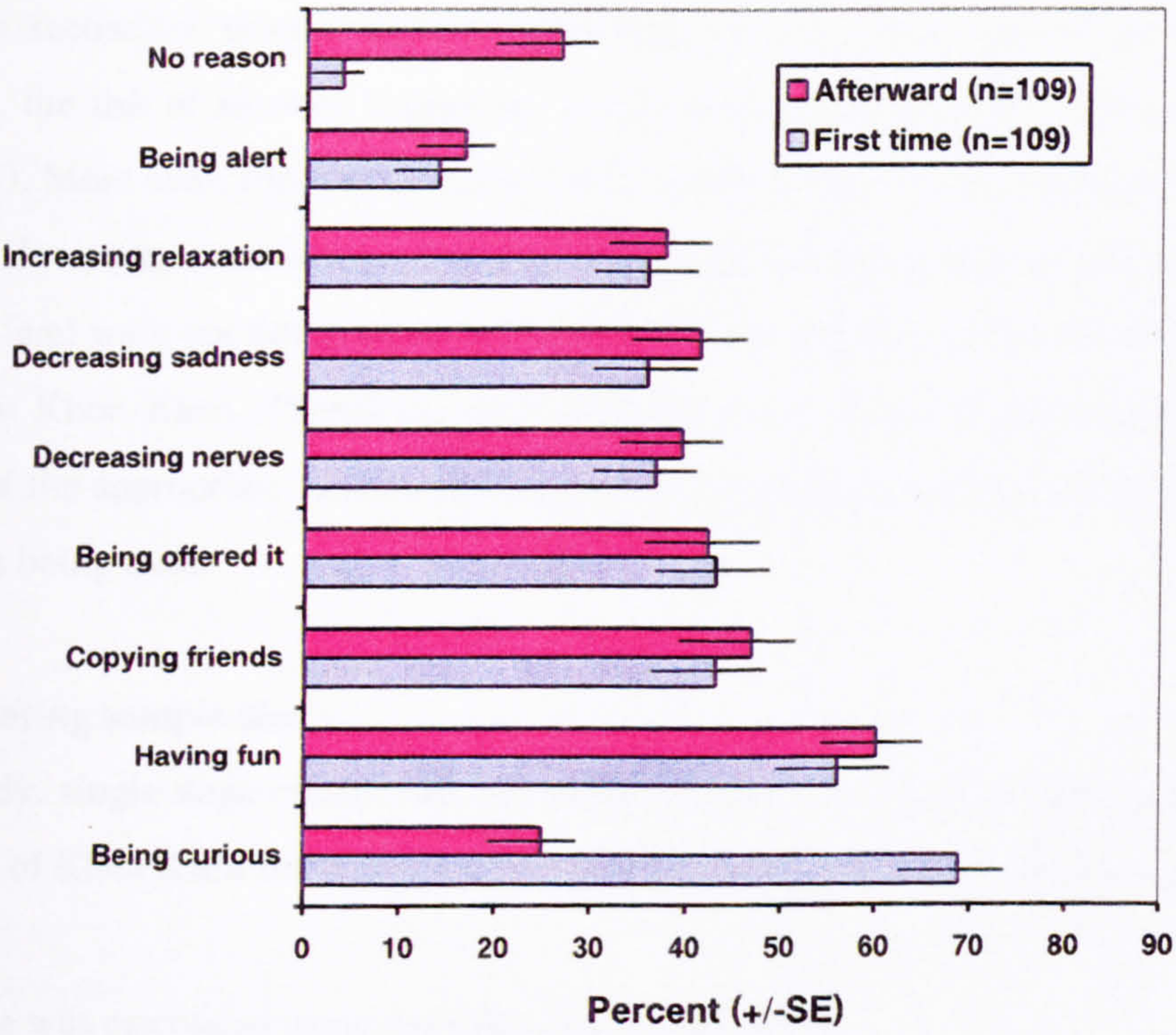
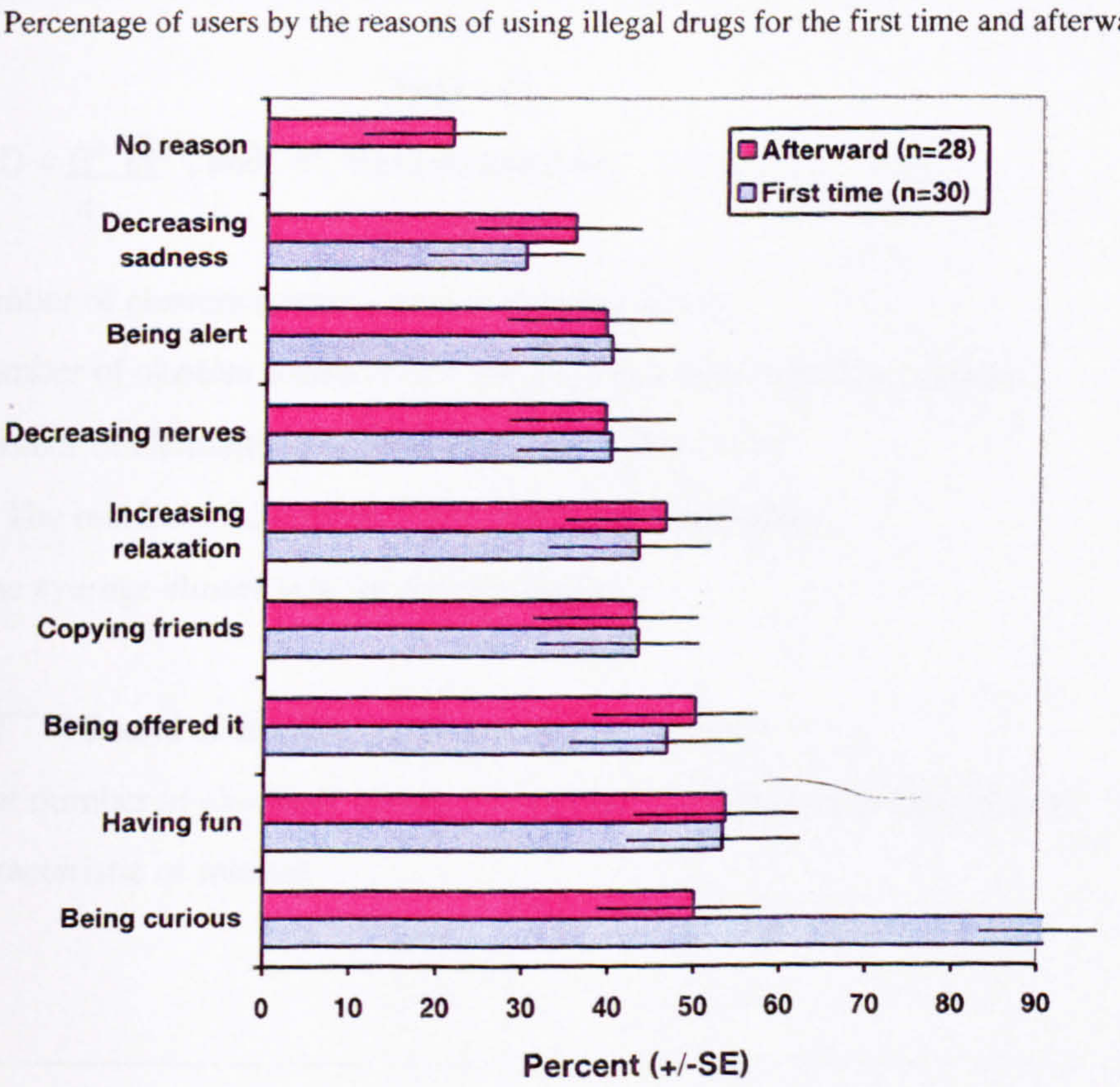


Figure 3.4: Percentage of users by the reasons of using illegal drugs for the first time and afterward.



3.7 Conclusion

The pilot study confirmed that there were measurable and substantial levels of substance misuse in secondary school students attending the five pilot schools in Khon Kaen. In particular, the use of alcohol, cigarettes, amphetamine, and cannabis were above 3 % (see Figure 3.1). More over, there were several factors that related to the substance misuse of these students. However, associations and prevalence of substance use in pilot study were not sufficient (and were not designed to be) to relate to the whole population of secondary school students in Khon Kaen. Therefore, the remaining issues from the pilot were to provide an estimate of the appropriate sample size necessary to measure population rates of the different substances being used.

3.8 Calculating sample size

In this study, single stage cluster random sampling was to be used to select samples from the population of Khon Kaen secondary schools with the sampling unit as the classroom.

Sample size was calculated using the following equation (53).

$$n = \frac{N\delta_c^2}{N D + \delta_c^2}$$

Where $D = \frac{B^2}{4}\bar{M}^2$, and δ_c^2 was estimated by $S_c^2 = \frac{\sum (a_i - p\, m_i)^2}{n - 1}$

N = The number of clusters (classrooms) in the population

n = The number of clusters (classrooms) selected in a simple random sample

m_i = The number of elements (students) in cluster I, I=1, ..., N

$M = \sum m_i$ = The number of elements (students) in the population

$\bar{M} = \frac{M}{N}$ = The average cluster size for the population

$B = 2\sqrt{V(p)}$ = Bound of B units on the error of estimation

a_i = The total number of elements (students) in cluster i (classroom i) that possess the characteristic of interest

$p = \frac{\sum a_i}{\sum m_i}$

The pilot study was conducted in five classrooms from different area in Khon Kaen province and the data on number of current substance users in each classroom were presented in Table 3.3.

Table 3.3: Number of students who were substance users in each classroom in pilot study.

Cluster (classroom)	Number of students (m_i)	Substance users					
		Alcohol ($a1_i$)	Cigarette ($a2_i$)	Ampheta-mine ($a3_i$)	Cannabis ($a4_i$)	Solvents ($a5_i$)	Opium ($a6_i$)
1	39	12	3	3	0	2	0
2	41	11	11	3	4	0	1
3	46	9	3	1	0	0	0
4	54	10	5	0	0	0	0
5	38	16	8	6	4	1	0
Total	218	58	26	13	8	3	1

Using these data therefore we can construct sample size calculations for each substance. The following represents examples using alcohol and opium.

Example 1: Using data from pilot study (see Table 3.3) to calculate the sample size of Khon Kaen secondary school students that should be taken for estimating prevalence of alcohol use.

The best estimate of δ^2_c is S^2_c, which is calculated using data from Table 3.3:

$$\sum (a1)_i = 58 \quad \sum (m)_i = 218 \quad \sum (a1)_i^2 = 702 \quad \sum (m)_i^2 = 9678 \quad \sum (a1)_i (m)_i = 2481$$

$$p = \frac{\sum a_i}{\sum m_i} = 58/218 = 0.27$$

$$\begin{aligned} \sum (a_i - p\, m_i)^2 &= \sum (a1)_i^2 - 2p \sum (a1)_i (m)_i + p^2 \sum (m)_i^2 \\ &= 702 - (2)(0.27)(2481) + (0.27)^2 (9678) \\ &= 67.79 \end{aligned}$$

$$S^2_e = \frac{\sum (a_i - p\, m_i)^2}{n - 1} = 67.79/4 = 16.95$$

$\bar{M}$ is estimated by $m = (\sum (m)_i) / n = 218/5 = 43.6$

$B = 0.027$

Where $D = \frac{B^2 \bar{M}^2}{4} = (0.027)^2 (43.6)^2 / 4 = 0.35$

The number of classrooms in the population = 1403, then

$$n = \frac{1403\,(16.95)}{(1403)\,(0.35) + 16.95}$$

$$= 46.81 = 47 \text{ classrooms}$$

Thus, a minimum sample size of 47 classrooms (~ 1,885 students) should be sampled to estimate the proportion of alcohol users amongst Khon Kaen secondary school students with a 0.027 error estimation.

Example 2: Using data from pilot study (see Table 3.3) to calculate the sample size of Khon Kaen secondary school students that should be taken for estimating prevalence of opium use*

The best estimate of δ^2_c is S^2_c, which is calculated using data from Table 3.3:

$$\sum (a6)_i = 1 \quad \sum (m)_i = 218 \quad \sum (a6)_i^2 = 1 \quad \sum (m)_i^2 = 9678 \quad \sum (a6)_i (m)_i = 41$$

$$p = \frac{\sum a_i}{\sum m_i} = 1/218 = 0.005$$

$$\sum (a_i - p\, m_i)^2 = \sum (a6)_i^2 - 2p \sum (a6)_i (m)_i + p^2 \sum (m)_i^2$$
$$= 1 - (2)(0.005)(41) + (0.005)^2 (9678)$$
$$= 0.83$$

$$S^2_c = \frac{\sum (a_i - p\, m_i)^2}{n - 1} = 0.83/4 = 0.21$$

$\bar{M}$ is estimated by $m = (\sum (m)_i) / n = 218/5 = 43.6$

$B = 0.002$

Where $D = \frac{B^2 \bar{M}^2}{4} = (0.002)^2 (43.6)^2 / 4 = 0.002$

The number of classrooms in population = 1403, then

$$n = \frac{1403\ (0.21)}{(1403)\ (0.002) + 0.21}$$

$$= 97.6 = 98 \text{ classrooms}$$

*Because the proportion of opium use is the lowest, the sample size in this study was ultimately determined by the opium data.

Thus, a minimum sample size of 98 clusters (classrooms) should be sampled to estimate the proportion of opium users among Khon Kaen secondary school students with a 0.002 error estimation.

3.9 Summary

The sample size calculation revealed that at least 98 classrooms (~ 3,930 students) should be used to estimate proportion of substance use among Khon Kaen secondary school students in order that valid population estimations for students could be made at least for behaviours as rare as opium use. This was therefore adopted for the final study along with the identified changes to the questionnaire design and the logistical arrangements for questionnaire distribution and study execution.

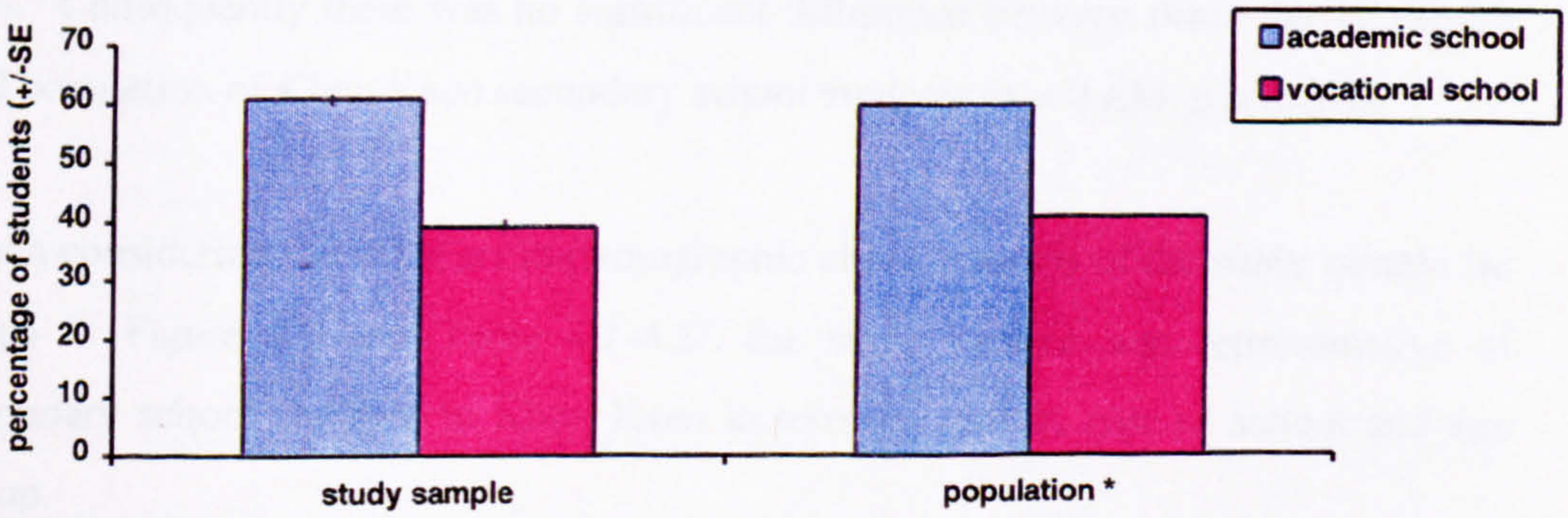
CHAPTER 4: SOCIO-DEMOGRAPHIC DATA

Data were collected in Khon Kaen, Thailand from June 1998 to August 1998 with a province-wide random sample of 4,217 respondents. All were secondary school students aged 15-19 years in their tenth, eleventh and twelfth school years. The average rate of absentees on the day of data collection was 2.2 percent and the participation rate of students present was 100 percent (for further details see Methods in Chapter 3). The general population sample was randomly selected from secondary school students in Khon Kaen (See Methods). Particular concern was taken to ensure that the socio-demographic data of the sample would be similar to that of the population in order that the study sample would be representative (see Section 4.1-4.4).

4.1 School types

There are two types of Secondary School in Thailand, academic school and vocational schools (see Section 2.1). The number of respondents who were from academic schools and vocational schools were 2,562 (60.8 % of whole study samples) and 1,655 (39.2 % of whole samples) respectively (see Figure 4.1). Comparison between study sample characteristic and the population of secondary school students showed that the distribution of the study sample in each school type did not differ significantly from the population of Khon Kaen secondary school students (see Figure 4.1 $x^2=2.78$, $p=0.095$).

Figure 4.1: Percentage (+/-95%, CI) of students in each type of school sample, compared with whole population of Khon Kaen secondary school students*



* Source, Khon Kaen Provincial Educational Office, Ministry of Education, Thailand 1998.

4.2 Gender distribution of the study sample

The number of male and female students in academic and vocational school are illustrated in table 4.1 both for each school type alone and for school types combined. There was no significant difference between the gender distribution of the study samples and the population of Khon Kaen secondary school students either for academic schools ($x^2 = 3.23$, $p = 0.072$), vocational schools($x^2 = 0.55$, $p = 0.458$) or both types of schools combined ($x^2 = 1.60$, $p = 0.206$).

Table 4.1: Number and percentage of students in academic school and vocational schools by gender for study sample and Khon Kaen secondary school population*

Type of School	Male	Female	Total
Sample			
Academic School	1021 (39.9%)	1541(60.1%)	2562(100%)
Vocational School	967 (58.4%)	688 (41.6%)	1655 (100%)
Overall	1988 (47.1%)	2229 (52.9%)	4217 (100%)
Population *			
Academic School	15732 (41.7%)	21995 (58.3%)	37727 (100%)
Vocational School	14766 (57.5%)	10914 (42.5%)	25680 (100%)
Overall	30498 (48.1%)	32909 (51.9%)	63407 (100%)

* Source, Khon Kaen Provincial Educational Office, Ministry of Education, Thailand 1998.

4.3 Age distribution of the study sample

Based on the classification of school class level in Thailand (see Chapter 2), the ages of secondary students in 10th, 11th and 12th school year are normally 15 to 19 year olds. Similarly, in this study, the majority of students in 10th-12th school year were between ages 15-19. In the study sample, there were a small number of students aged under 15 years (early schooling) and above 19 years (late schooling or repeating classes: Table 4.2). The mean age of respondents was 16.8 years (SD = 1.1); the same mean age as the total population of Khon Kaen secondary schools (16.8 years; SD = 1.5). Consequently there was no significant difference between mean age of sample and population of Khon Kaen secondary school students ($z = 0.434$, $p = 0.667$).

When considering the main socio-demographic characteristics of the study sample (as given in Figure 4.1 and Table 4.1-4.2), the study sample was representative of secondary school students in Khon Kaen in term of gender, type of school and age group.

Table 4.2: Distribution of student age group in the study sample.

Age	Frequency	Percent
14 years or less	15	0.4
15 years	502	11.9
16 years	1262	30.0
17 years	1297	30.9
18 years	924	22.0
19 years	138	3.3
20 years or more	65	1.5
TOTAL	**4203**	**100.0**

* Fourteen individuals (0.4%) did not provide this information

4.4 Socio-economics of the study sample

Within the questionnaire, the socio-economics of the study sample were described in terms of classification of occupation and education. Secondary school students are still relatively young and the father is official head of the household in Thai families (59). Therefore, the fathers' occupation and fathers' highest achieved level of education were used as measures of socio-economic status. Such a system of classification has been successfully used in previous studies (60, 61).

The fathers' education (the highest level attained) was graded into five levels; i.e. none, primary school, secondary school, first degree, and higher than first degree. These educational levels were classified following the Thai educational level system (54). The distributions of fathers' education are shown in table 4.3. The majority of fathers' had achieved a primary school education only, while the smallest group of fathers (0.9%) had received no formal educational.

Table 4.3: Percentage of students classified by fathers' education.

Highest Education Level	Frequency	Percent
None	36	0.9
Primary	2757	66.8
Secondary	691	16.7
First degree	573	13.9
Higher than first degree	70	1.7
Total	**4127**	**100.0**

* Ninety individuals (2.1%) did not provide this information

Similarly, fathers' occupation was classified into six groups; i.e. unemployed, labourers, farmers, government/enterprise services, private office employees, and own business. These occupational groups were classified according to the usual occupation

of students' father following the occupational classification (60) commonly used in Khon Kaen.

Table 4.4: Percentage of students by Fathers' occupation.

Father's occupation	Frequency	Percent
Unemployed	51	1.3
Labourer	509	12.8
Farmer	1984	49.8
Private office employee	146	3.7
Govt/Enterprise services	798	20.0
Own business	492	12.4
Total	3980	100.0

* 237 individuals (5.6%) did not provided this information

As shown in Table 4.4, the largest proportion of students had fathers whose occupation was farmers; the smallest proportion had fathers who were unemployed.

CHAPTER 5: ALCOHOL - PART 1
EPIDEMIOLOGY, ASSOCIATIONS AND PREDICTIVE MODELS

5.1 Problems associated with Alcohol Use

Although legal, alcohol is a cause of considerable adolescent morbidity and mortality (62). Furthermore, numerous researchers have found associations between alcohol use and drug use across a range of countries. In Greece, Madianos et al (1995) studied factors affecting illicit and licit drug use among 2,448 adolescents aged 12-17 years. Alcohol use was one of the factors associated with illicit drug use (63). In the USA, Black and Ricardo (1994) also examined relationships involving drug use among 192 African-American males age 9-15 years from ten recreation centres and schools in low income, urban communities. Again, they found that alcohol use was associated with drug use (64). Equally, for Anabolic Steroids, Durant et al (1994) examined the relationships between their use and use of other substances among a nationally representative sample of US high school students age 15-19 years (n = 12,272). They reported that frequency of anabolic-steroid use was associated with the use of alcohol (65). Other studies have also confirmed that adolescents who used alcohol were more likely to use other substances (66-69) establishing alcohol use as a potential risk factor for the use of other substances.

As well as an association with the use of other substances, alcohol has other well-recognised health and educational effects. Young alcohol users are also more likely to be impulsive, have an attention deficiency, and have accidents (70-71). Alcohol consumption results in diminished judgement and increased impulsiveness due to its inhibition-reducing effects on the central nervous system (CNS). Both of these changes can lead to increase in risk-taking behaviours and recklessness (72). To examine this O'Malley et al (1995) used data from the "Monitoring the future Survey"; a series of studies that began in 1975 providing consistent reporting of trend of substances used among young people in the United States. The data indicated that five or more alcohol drinks, particularly for young drinkers, would almost certainly lead to inebriation and diminished capacity to make reasoned judgements (73). Accidental injury remains the leading cause of mortality and morbidity among adolescents (74). Moreover, Yamada et al (1996) studied the impacts of alcohol consumption on high school graduation using the data from the National Longitudinal

Survey of Youth and found that there were significant adverse effects of alcohol use on high school graduation (75). Therefore, for significant health and educational reasons, the epidemiological study of alcohol use among Thai school students was included in the questionnaire.

5.1.1 Prevalence of alcohol use among Khon Kaen secondary school students

The students were asked questions regarding their experiences of alcohol use. The questions: "Have you ever drunk alcohol?" was used to assess if students had never, ever or currently drank alcohol and "How often do you drink alcohol?" was used to assess frequency of alcohol use among Khon Kaen secondary school students. (See Appendix 1 for full details of questionnaire).

Overall, the crude prevalence of current alcohol use among Khon Kaen secondary school students was 25.5 percent (+/- 1.4, 95% CI). Over a quarter (28.4% (+/- 1.4, 95% CI)) were former alcohol drinkers with nearly half (46.1% (+/- 1.5, 95% CI)) of students having never used alcohol. Current alcohol users ranged from occasional to daily users (see Table 5.1). The highest proportion of current alcohol users was occasional use. Former alcohol users were categorised as students who either tried drinking alcohol once or twice, drank a few times, or drank several times in their past. The highest proportion of former alcohol users had just tried alcohol once or twice. Further analyses concentrate primarily on current users as these are likely to represent the most immediate health risk.

5.1.2 Tendency towards alcohol use among Khon Kaen secondary school students through 10th-12th school year

Current alcohol users were analysed to determine the size of the alcohol use problems among Khon Kaen secondary school students in different school years. There was a significant increase in the proportion of current alcohol users as students progressed through 10th, 11th, and 12th school years with 20.2%, 24.3%, and 32.2% respectively currently using alcohol in each school year (see Figure 5.1).

Table 5.1: Drinking among Khon Kaen secondary school students in categories of frequency of use

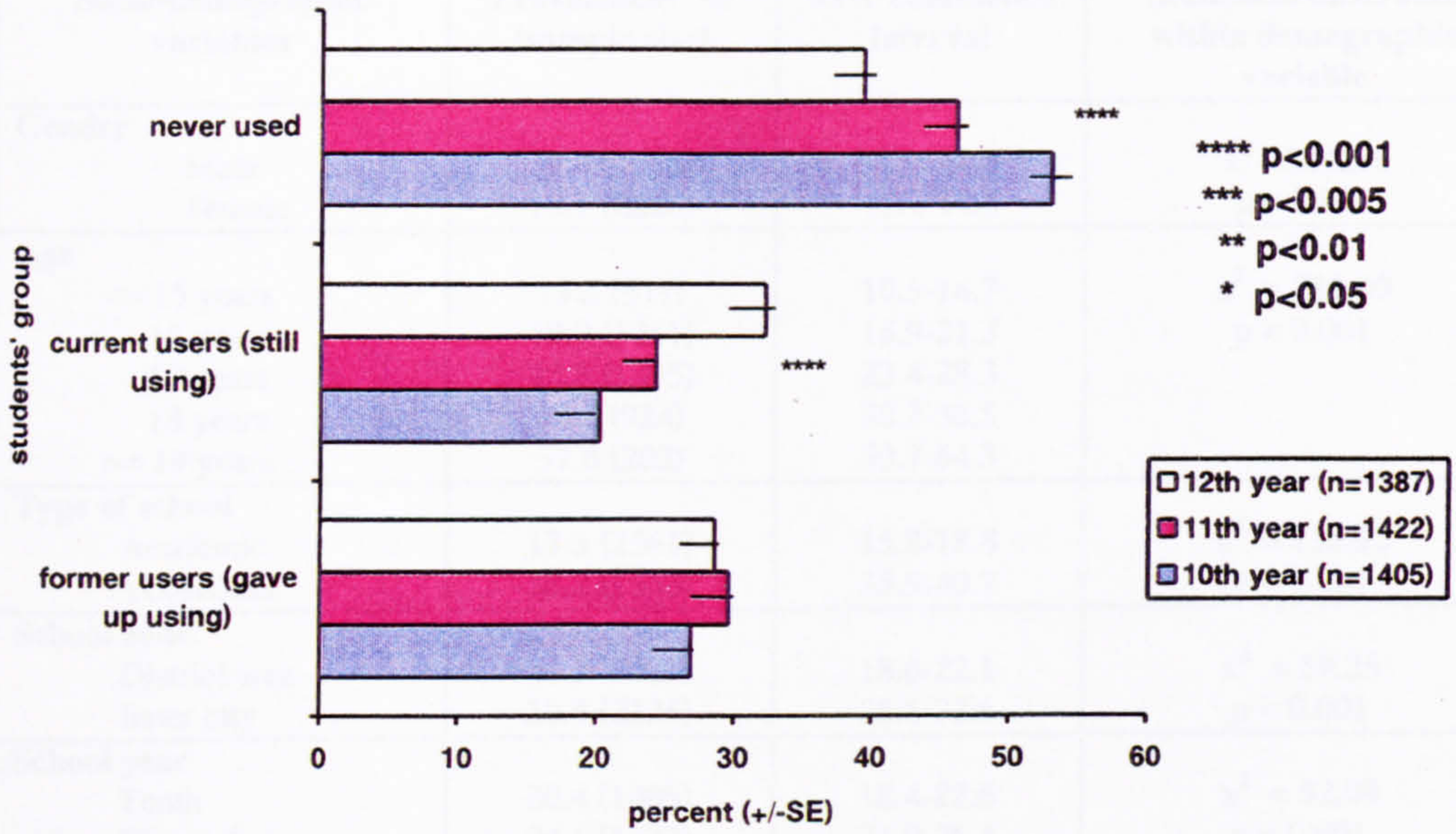
Students	Frequency	Percent
Current alcohol users		
Daily drinkers	26	2.4
Weekly drinkers	148	13.7
Monthly drinkers	221	20.6
Occasionally drinkers	680	63.3
Total current alcohol users	1075	100.0
Former alcohol users		
Tried once or twice	694	58.0
Drank a few times	393	32.9
Drank several times	109	9.1
Total former alcohol users	1196	100.0
Students who have never used alcohol		
Never used alcohol	1943	100.0

The proportion of former users and students who never used alcohol were also analysed to identify any tendency towards alcohol use through 10th, 11th, and 12th school year. While there were no significant increases in the proportion of the former users who had given up using alcohol in the 10th, 11th, and 12th school year (x^2 = 2.56 p = 0.278) the proportion of students who never used alcohol significantly decreased (52.9%, 46.0%, and 39.2% in 10th, 11th, and 12th school year, respectively). This indicates that there was progressive move towards alcohol use among Khon Kaen secondary school students with increasing school year with more individuals being recruited into the drinking population as year increased.

5.2 Association between Socio-demographic variables and alcohol use

The following section examines the relationship between alcohol use in Khon Kaen secondary school students and socio-demographic variables. For all analyses, first associations have been tested on bivariate analyses and then multivariate logistic regression analyses have been used to control for potential confounding factors and explore relationships in more depth. Adjusted odd ratios are used to express the strength of associations after allowing for effects of all other interrelated variables.

Figure 5.1: Percentage of students who were current alcohol users, former alcohol users, and who never used alcohol by each school year.



Using bivariate analysis (chi-square test), alcohol use among secondary school students in Khon Kaen was shown to be significantly associated with socio-demographic characteristics of gender, age, school year, type of school, school zone, and father's occupation but not associated with father's education (see Table 5.2): although the relationship approached significance ($p = 0.057$). Male students were more likely to use alcohol than female students and the rate of frequent alcohol use was three times as high in males as in females. Vocational school students reported a higher prevalence of alcohol use than academic school students. Students in inner city areas were more likely to use alcohol than students in district areas. There was a linear trend in the prevalence of alcohol use with age ($x^2_{(\text{for a trend})} = 189.84$, $p < 0.001$); older students being more likely to use alcohol. Similarly, there was a linear trend in the prevalence of alcohol use with school year ($x^2_{(\text{for a trend})} = 53.20$, $p < 0.001$), the prevalence of alcohol use in higher school year being higher than those in lower school year. These two factors are closely linked and their independent effects are addressed in Section 5.2.1 and 5.2.2.

Table 5.2: Prevalence, 95% CI and statistical comparison for alcohol use according to measured socio-demographic variables

Socio-demographic variables	Prevalence* % (sample size)	95% confidence interval	Statistical difference within demographic variable
Gender			
Male	39.4 (1988)	37.2-41.6	x^2 =381.34
Female	13.1 (2226)	11.7-14.6	p < 0.001
Age			
<= 15 years	13.2 (517)	10.5-16.7	x^2 = 210.00
16 years	19.0 (1261)	16.9-21.3	p < 0.001
17 years	25.8 (1295)	23.4-28.3	
18 years	33.3 (924)	30.3-36.5	
>= 19 years	57.6 (203)	50.7-64.3	
Type of school			
Academic	17.3 (2561)	15.8-18.8	x^2 = 233.92
Vocational	38.3 (1653)	35.9-40.7	p < 0.001
School zone			
District area	20.3 (2089)	18.6-22.1	x^2 = 59.25
Inner city	30.6 (2125)	28.6-32.6	p < 0.001
School year			
Tenth	20.4 (1405)	18.4-22.6	x^2 = 52.09
Eleventh	24.1 (1422)	21.9-26.4	p < 0.001
Twelfth	32.1 (1387)	29.8-34.8	
Father's occupation			
No job	29.4 (51)	17.9-44.0	x^2 = 20.41
Increasing Laborer	21.4 (509)	18.0-25.3	p < 0.005
Income Farmer	23.6 (1983)	21.7-25.5	
Private Office Employee	27.4 (146)	20.5-35.5	
Govt./Enterprise	27.3 (798)	24.3-30.6	
Own business	31.7 (492)	27.6-36.0	
Father's education			
No	30.6 (36)	16.9-48.3	x^2 = 9.16
Primary school	24.8 (2756)	23.2-26.4	p = 0.057
Secondary school	27.2 (691)	23.9-30.7	
First degree	22.2 (573)	18.9-25.8	
Higher than first degree	35.7 (70)	24.9-48.1	

*The prevalence of alcohol use in these analyses refers to the prevalence of individuals who were current alcohol users.

There was also a significant association between alcohol use and father's occupation (see Table 5.2). In general, level of having used alcohol increased with higher fathers' occupation. However, the exception was those students whose father had no job (29.4% drank alcohol). Thus, while the highest prevalence of alcohol use was 31.7% in students whose fathers' ran their own businesses and the lowest was 21.4 % in students whose fathers were labourers (the poorest paid profession); students whose fathers were unemployed ranked second most likely to drink. A similar pattern was observed in relation to level of fathers' education. Highest levels of alcohol use were observed in children of fathers had either no education or a higher first degree.

5.2.1 Multivariate logistic regression analysis for alcohol use and Socio-Demographic factors

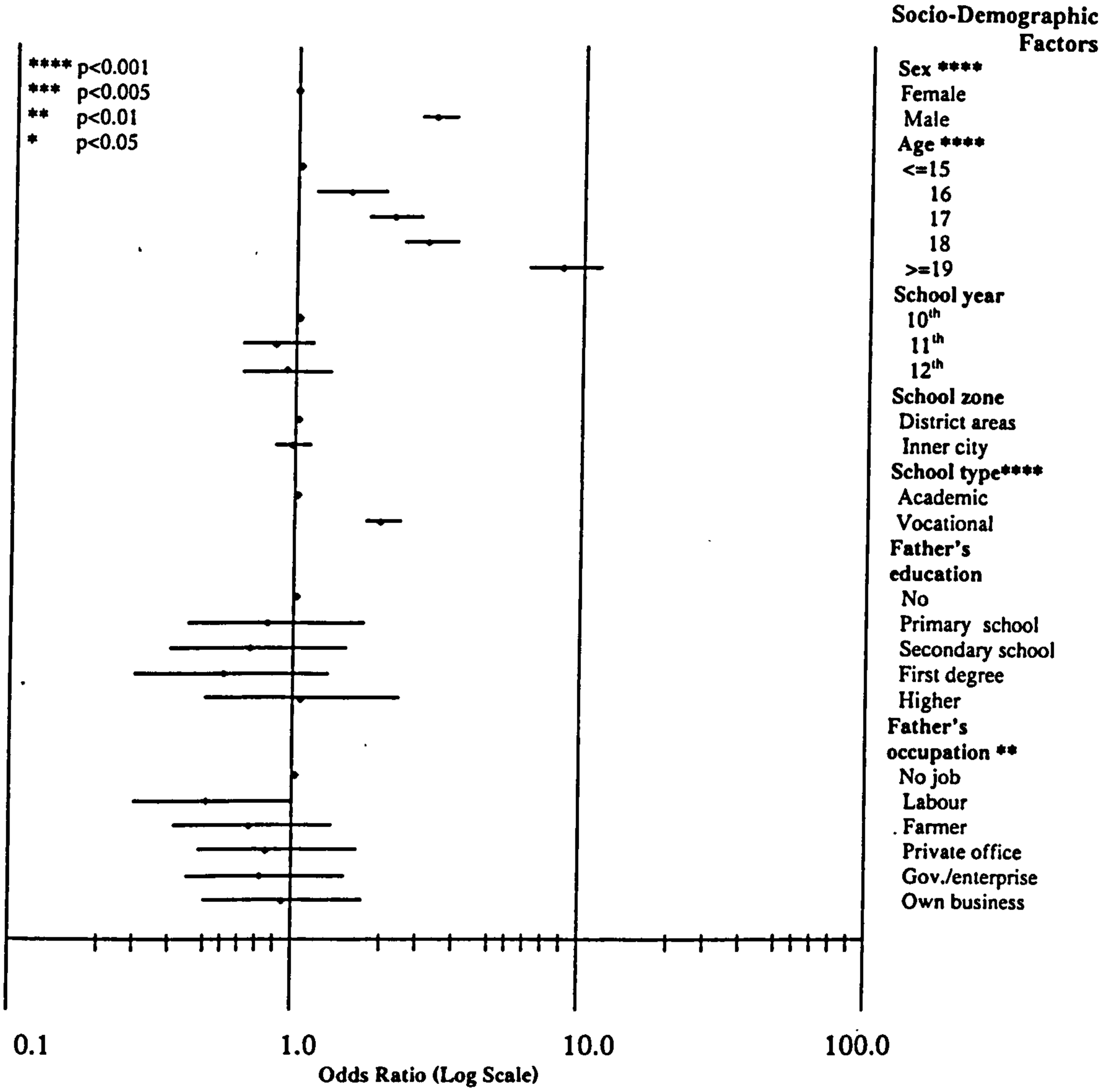
The effects of socio-demographic factors on the likelihood of alcohol use were explored further by using logistic regression analysis. Here, the results of the logistic regression are shown as adjusted odds ratios and their 95 % confidence interval after adjustment for all other factors in the model (see Figure 5.2). Using the 0.05 level, four of the coefficients were significant; gender, age, type of school, and father's occupation. Male students remained more likely to use alcohol than female students, older students were more likely to use alcohol than younger students. Vocational school students were more likely to use alcohol than academic school students. The association between higher fathers' occupational income and higher alcohol use was also apparent in the logistic regression analysis and still showed an additional increase in alcohol use amongst the no job category. However, alcohol use was not significantly associated with school zone (inner city or district area), school year, and fathers' education in the logistic regression model.

5.2.2 Associations with school year and school zone by different sub-groups of socio-demographic variables

Although, bivariate analysis revealed significant associations between alcohol use and school year and school zone, multivariate analysis did not support relationships between alcohol use and school year and school zone. However, the nature of multivariate analysis may hide relationships in some sub groups. Therefore, this following section additionally examines whether there are different relationships in different sub-groups according to socio-demographic variables.

The higher school year students were more likely to use alcohol than the lower school year students in both genders, in both types of school, in both school zones, and in students whose fathers were farmers, government/enterprise services, and running their own business (see Table 5.3). However, the association between alcohol use and school year was not found in students whose fathers were unemployed, labourers, and private office employees. Conversely, the lower school year students were more likely to use alcohol than the higher school year students in all age group, except for age groups 15 and 16 years, which had no students in year 12th school year (see also discussion in section 5.3.7).

Figure 5.2: Adjusted odds ratios with 95 % confidence intervals for alcohol use among Khon Kaen secondary school students.



Note: The above figure shows the adjusted odds ratios for current alcohol use according to each socio-demographic factor. Odds ratios were calculated using logistic regression analysis and significant relationships are identified by asterisks.

Both male and female students in inner cities were more likely to use alcohol than those in district areas (see Table 5.4). Similarly, inner city students were more likely to use alcohol than district students in every school year level and all age groups, except for 15 year olds. Vocational school students who studied in inner city were more likely to use alcohol than vocational school students who studied in district area. In contrast, the prevalence of alcohol use among academic school students in district area was significantly higher than academic students in inner cities (see also

Discussion in Section 5.3.7). These factors indicate that fathers' occupation and age group mainly effected the association between alcohol use and school year. Similarly, association between alcohol use and school zone was confounded by school type, age group, and fathers' occupation. In effect, these analyses confirm that school year and school zone variables were not both consistently and independently associated with alcohol use and consequently the significant association did not appear in multivariate analysis.

Table 5.3: Prevalence of alcohol use according to school years (10^{th}, 11^{th}, and 12^{th} school year) categorised by different sub-groups of each socio-demographic variable associated with alcohol use (by bivariate analysis).

Demographic variables	Prevalence % (sample)			Statistical difference within sub-group of each demographic variable
	10^{th}	11^{th}	12^{th}	
Sex				
Male	32.6 (642)	37.0 (681)	48.4 (665)	$x^2 = 36.91$ $p < 0.001$ $x^2_{\text{for a trend}} = 34.61$ $p < 0.001$
Female	10.2 (763)	12.3 (741)	17.0 (722)	$x^2 = 15.79$ $p < 0.001$ $x^2_{\text{for a trend}} = 14.99$ $p < 0.001$
Age				
15 years	12.7 (502)	26.7 (15)	---	Fisher exact test $p = 0.121$
16 years	18.8 (781)	19.4 (480)	---	$x^2 = 0.06$ $p = 0.808$
17 years	50.7 (69)	23.7 (822)	25.7 (404)	$x^2 = 24.25$ $p < 0.001$ $x^2_{\text{for a trend}} = 4.09$ $p < 0.05$
18 years	68.4 (19)	46.3 (80)	31.3 (825)	$x^2 = 18.11$ $p < 0.001$ $x^2_{\text{for a trend}} = 17.86$ $p < 0.001$
19 years	83.3 (30)	59.1 (22)	52.3 (151)	$x^2 = 9.88$ $p < 0.01$ $x^2_{\text{for a trend}} = 9.08$ $p < 0.005$
Type of school				
Academic	13.9 (863)	15.4 (853)	22.6 (845)	$x^2 = 25.86$ $p < 0.001$ $x^2_{\text{for a trend}} = 22.51$ $p < 0.001$
Vocational	30.8 (542)	37.3 (564)	46.9 (542)	$x^2 = 29.94$ $p < 0.001$ $x^2_{\text{for a trend}} = 29.53$ $p < 0.001$
School zone				
District area	13.9 (626)	18.8 (706)	26.9 (757)	$x^2 = 37.48$ $p < 0.001$ $x^2_{\text{for a trend}} = 36.74$ $p < 0.001$
Inner city	25.7 (779)	29.3 (716)	38.3 (630)	$x^2 = 26.81$ $p < 0.001$ $x^2_{\text{for a trend}} = 25.25$ $p < 0.001$
Father's occupation				
No job	24.0 (25)	33.3 (15)	36.4 (11)	$x^2 = 0.72$ $p = 0.698$ $x^2_{\text{for a trend}} = 0.66$ $p = 0.417$
Labour	19.9 (196)	22.3 (157)	22.4 (156)	$x^2 = 0.44$ $p = 0.804$ $x^2_{\text{for a trend}} = 0.35$ $p = 0.552$
Farmer	17.1 (532)	21.9 (695)	29.7 (754)	$x^2 = 29.22$ $p < 0.001$ $x^2_{\text{for a trend}} = 28.62$ $p < 0.001$
Private office employee ...	21.2 (52)	27.5 (51)	34.9 (43)	$x^2 = 2.23$ $p = 0.328$ $x^2_{\text{for a trend}} = 2.21$ $p = 0.137$
Govt./enterprise Service.....	23.1 (316)	25.0 (268)	36.4 (214)	$x^2 = 12.54$ $p < 0.005$ $x^2_{\text{for a trend}} = 10.51$ $p < 0.005$
Own business	25.8 (198)	27.9 (140)	42.9 (154)	$x^2 = 13.04$ $p < 0.005$ $x^2_{\text{for a trend}} = 11.10$ $p < 0.005$

Table 5.4: Prevalence of alcohol use according to school zone categorised by different sub-groups of each socio-demographic variable associated with alcohol use (by bivariate analysis).

Demographic variables	Prevalence % (sample)		Statistical difference within
	District area	Inner city	sub-group of each demographic variable
Sex			
Male	34.2 (886)	43.6 (1102)	$x^2 = 18.02$ $p < 0.001$
Female	10.1 (1203)	16.7 (1023)	$x^2 = 21.50$ $p < 0.001$
Age			
15 years	10.6 (188)	14.6 (329)	$x^2 = 1.64$ $p = 0.201$
16 years	14.0 (637)	24.2 (624)	$x^2 = 21.39$ $p < 0.001$
17 years	20.2 (659)	31.6 (636)	$x^2 = 22.06$ $p < 0.001$
18 years	28.9 (544)	39.3 (380)	$x^2 = 11.91$ $p < 0.005$
19 years	40.0 (55)	64.2 (148)	$x^2 = 9.61$ $p < 0.005$
Type of school			
Academic	18.4 (1761)	14.8 (800)	$x^2 = 5.13$ $p < 0.05$
Vocational	30.5 (328)	40.2 (1325)	$x^2 = 10.55$ $p < 0.005$
School year			
10^{th}	13.9 (626)	25.7 (779)	$x^2 = 29.61$ $p < 0.001$
11^{th}	18.8 (706)	29.3 (716)	$x^2 = 21.38$ $p < 0.001$
12^{th}	26.9 (757)	38.3 (630)	$x^2 = 20.17$ $p < 0.001$
Father's occupation			
No job	18.2 (22)	37.9 (29)	$x^2 = 2.35$ $p = 0.125$
Labour	19.8 (278)	23.4 (231)	$x^2 = 0.97$ $p = 0.325$
Farmer	19.3 (1335)	32.5 (646)	$x^2 = 42.46$ $p < 0.001$
Private office employee	20.0 (50)	31.3 (96)	$x^2 = 2.09$ $p = 0.148$
Govt./enterprise service	21.5 (191)	29.2 (607)	$x^2 = 4.33$ $p < 0.05$
Own business	27.0 (111)	33.1 (381)	$x^2 = 1.45$ $p = 0.229$

5.3 Established associations between alcohol use and risk variables

Risk variables, which were selected from the research literatures (see Table 5.5) including psychological characteristics, personal risk behaviours, health problems, peer contexts, family problems, and school activities, were tested by bivariate analysis to investigate which variables were associated with alcohol use of Khon Kaen secondary school students. These following section deal with these bivariate analyses.

In addition to the references in table 5.5, Fuller and Cavanaugh (1995) (15) stated that adolescents with physical signs or symptoms were attributable to the effects of alcohol or substance use, such as cough, chest pain, nasal irritation, cold or allergies, wheezing etc. Consequently, these factors were also included in the analyses.

Table 5.5: Summary of studies which identify risk variables associated with alcohol use among adolescents.

Risk variables associated with alcohol use among adolescents	Country's study (sample size)	Authors	Year
Friends were using alcohol	-USA, Miami, Dade county (535 adolescents) -USA, New York city public school (757 school students) -USA, (1028 school students) -Taiwan, Kaohsiung city,	-Yarnold (76) -Epsein et al (77) -Urberg (78) -Yang et al (79)	1992 1995 1997 1998
Students were not staying with parents	- UK (7722 secondary school students)	-Miller (80)	1997
Conflict among family's members	-USA, Adolescent	-Fuller and Cavanaugh (15)	1995
Alcohol drinking parent	- Spain, Secondary school students in town of Lugo (805 students)	-Martinez et al (81)	1996
Poor school performance (average grade)	- UK, (7722 secondary school students)	-Miller and Plant (82)	1995
Truancy	- Switzerland, (3420 secondary school students)	-Michaud et al (83)	1998
Using illegal drugs	-France, Paris (233 high school students)	-Menaree et al (68)	1990
Using cigarette	-USA, California (1936 High school students) - Spain, Barcelona and Lleida (1816 students) -Japan, (14438 high school students)	-Sussman et al (84) -Ariza and Nebot (85) -Matsushita et al (86)	1997 1995 1996
Premature sexual activity	-USA, in North America (8321 High school students) -USA, Western New York, (1167 high school students)	-Weinbender and Rossignol (87) -Tubman et al (88).	1996 1996
Depression	-USA, (497 high school senior students)	-Casper et al (89)	1996
Aggressiveness	-USA -UK (7722 secondary school students)	-Fuller and Cavanaugh(15) -Miller (80)	1995 1997
Risk-taker	-USA, Miami, Dade county (535 adolescents)	-Yarnold (76)	1992

5.3.1 Association between alcohol use and psychological characteristics

Students were asked to self-evaluate whether they were aggressive, depressive, or taking risk persons (see questions in Appendix 1). The results showed that students who reported being aggressive, depressive, and risk taking persons were more likely to use alcohol than those who did not (see Table 5.6).

Table 5.6: Prevalence of alcohol use according to psychological characteristics.

Variables	Prevalence % (sample size)	Statistical difference within variable
Aggressive		
No	23.2 (3115)	$x^2 = 46.08$
Yes	34.0 (993)	$p<0.001$
Depressive		
No	23.0 (2671)	$x^2 = 29.42$
Yes	30.7 (1464)	$p<0.001$
Risk taking		
No	21.2 (2902)	$x^2 = 138.25$
Yes	39.1 (1160)	$p<0.001$

Both male and female students who reported being aggressive, depressive, and risk taking persons were more likely to use alcohol (Table 5.7). The associations between alcohol use and these characteristics were examined across each age group (Table 5.8). Students age 18 years or under who had aggressive or depressive characteristics were more likely to use alcohol. This significant relationship was not found in the age group for 19 years or over. In all age groups students who identified a risk-taking characteristic were more likely to use alcohol.

Table 5.7: Prevalence of alcohol use according to psychological characteristics categorised by male and female students.

Variables	Male		Female	
	Prevalence % (sample)	Statistical difference within variable	Prevalence % (sample)	Statistical difference Within variable
Aggressive				
No	36.3 (1491)	$x^2= 37.93$	11.2 (1624)	$x^2= 21.64$
Yes	52.6 (445)	$p < 0.001$	19.0 (548)	$p < 0.001$
Depressive				
No	36.4 (1311)	$x^2= 19.32$	10.1 (1359)	$x^2= 29.77$
Yes	46.8 (641)	$p < 0.001$	18.2 (823)	$p < 0.001$
Risk taking				
No	35.0 (1321)	$x^2= 49.68$	9.6 (1581)	$x^2= 81.32$
Yes	52.0 (612)	$p < 0.001$	24.8 (548)	$p < 0.001$

5.3.2 Association between alcohol use and personal risk behaviours

Students were also asked their experiences of personal risk behaviours including: cigarette use, illegal drugs use, having sex early, hurting oneself, going out for fun at night time, and stealing (see Appendix 1). Students who were current cigarette users or illegal drug users had a significantly higher percentage of alcohol use (see Table 5.9). Similarly, students who reported having ever had early sexual intercourse, having hurt themselves, and having stolen were more likely to use alcohol. Those who reported a higher frequency of going out for fun at night time were also more likely to use alcohol.

Table 5.8: Prevalence of alcohol use according to psychological characteristics categorised by current age groups.

Variables	<=15 years		16 years		17 years		18 years		>=19 years	
	Prevalence % (sample)	Statistical difference	Prevalence % (sample)	Statistical difference	Prevalence % (sample)	Statistical difference	Prevalence % (sample)	Statistical difference	Prevalence % (sample)	Statistical difference
Aggressive										
No	10.8 (362)	x^2= 7.95	16.5 (924)	x^2= 19.01	24.4 (965)	x^2= 6.20	29.6 (706)	x^2= 27.42	56.1 (148)	x^2= 0.96
Yes	20.3 (143)	p < 0.01	27.7 (310)	p < 0.001	31.6 (294)	p < 0.05	49.7 (193)	p < 0.001	64.0 (50)	p = 0.327
Depressive										
No	9.0 (322)	x^2= 14.75	16.8 (814)	x^2= 8.73	23.5 (821)	x^2= 7.40	30.4 (575)	x^2= 7.48	58.9 (129)	x^2= 0.12
Yes	21.1 (185)	p < 0.001	23.8 (429)	p < 0.005	30.5 (442)	p < 0.01	39.3 (333)	p < 0.01	56.3 (71)	p = 0.724
Risk taking										
No	9.8 (346)	x^2= 16.45	15.1 (897)	x^2= 46.60	22.2 (890)	x^2= 29.40	28.1 (631)	x^2= 34.80	50.8 (128)	x^2= 7.61
Yes	23.8 (143)	p < 0.001	32.7 (321)	p < 0.001	37.3 (354)	p < 0.001	48.5 (266)	p < 0.001	70.8 (72)	p < 0.01

Table 5.9: Prevalence of alcohol use according to personal risk behaviours

Variables		Prevalence % (sample size)	Statistical difference within variable
Cigarette smoking	No	19.3 (3779)	$x^2 = 748.07$
	Yes	79.7 (434)	p<0.001
Illegal drug use	No	22.3 (3992)	$x^2 = 412.33$
	Yes	83.3 (222)	p<0.001
Having sex early	No	20.9 (3742)	$x^2 = 388.55$
	Yes	64.0 (444)	p<0.001
Hurting oneself	No	23.9 (2668)	$x^2 = 38.68$
	Yes	36.5 (525)	p<0.001
Going out for fun at night			
	No	6.9 (1333)	$x^2 = 558.70$
	< 1 time/week	26.4 (1776)	p<0.001
	1-2 times/week	43.4 (808)	x^2 (for a trend) = 557.80
	> 2 times/week	62.9 (245)	p<0.001
Stealing	No	22.2 (3303)	$x^2 = 88.32$
	Yes	37.6 (900)	p<0.001

These significant relationships may be confounded by sex and therefore associations between alcohol use and risk behaviours were examined by different genders. Both male and female students who reported higher frequencies of each behaviour were more likely to use alcohol (see Table 5.10). Similarly, both male and female students who had experienced sex early, hurting oneself, and stealing were more likely to use alcohol.

Table 5.10: Prevalence of alcohol use according to personal risk behaviours categorised by sex

Variables		Male		Female	
		Prevalence% (sample)	Statistical difference within variable	Prevalence % (sample)	Statistical difference within variable
Cigarette use	No	28.7 (1580)	$x^2 = 367.92$	12.5 (2199)	$x^2 = 59.58$
	Yes	80.8 (407)	p < 0.001	63.0 (27)	p < 0.001
Illegal drug use	No	34.2 (1790)	$x^2 = 203.28$	12.6 (2202)	Fisher exact test
	Yes	86.4 (198)	p < 0.001	58.3 (24)	p < 0.001
Going out for fun at night					
	No	12.2 (376)	$x^2 = 238.14$	4.8 (957)	$x^2 = 135.81$
	<1time/week	36.4 (869)	p < 0.001	16.8 (906)	p < 0.001
	1-2time/week	52.9 (535)	x^2 (for a trend) =	24.9 (273)	x^2 (for a trend) =
	>2time/week	71.4 (182)	234.89, p<0.001	38.1 (63)	134.29, p<0.001
Having sex early	No	32.7 (1604)	$x^2 = 163.43$	12.0 (2138)	$x^2 = 55.83$
	Yes	68.9 (366)	p < 0.001	41.0 (78)	p < 0.001
Hurting oneself	No	37.3 (1779)	$x^2 = 31.67$	11.3 (1889)	$x^2 = 35.51$
	Yes	57.6 (203)	p < 0.001	23.3 (326)	p < 0.001
Stealing	No	35.9 (1524)	$x^2 = 32.69$	10.4 (1779)	$x^2 = 55.96$
	Yes	50.8 (459)	p < 0.001	23.8 (441)	p < 0.001

The strength of each relationship was tested within age groups. Students in all age groups who reported higher frequencies of going out for fun at night time, being cigarette users, and being illegal drug users were more likely to use alcohol (see Table 5.11).

Table 5.11: Prevalence of alcohol use according to cigarette use, illegal drug use, and frequencies of going out for fun at night categorised by current age groups.

Variables	<=15 years		16 years		17 years		18 years		>=19 years	
	Prevalence % (sample)	Statistical difference within variable	Prevalence % (sample)	Statistical difference within variable	Prevalence % (sample)	Statistical difference within variable	Prevalence % (sample)	Statistical difference within variable	Prevalence % (sample)	Statistical difference within variable
Cigarette use		Fisher's exact test								
No	11.9 (504)	$p < 0.001$	15.1(1179)	$x^2 = 182.18$	20.3(1164)	$x^2 = 182.96$	24.7 (794)	$x^2 = 189.94$	43.0 (128)	$x^2 = 30.52$
Yes	66.7 (12)		75.6 (82)	$p < 0.001$	74.8 (131)	$p < 0.001$	86.2 (130)	$p < 0.001$	82.7 (75)	$p < 0.001$
Illegal drug use		Fisher exact test								
No	12.4(507)	$p < 0.01$	16.4(1212)	$x^2 = 138.24$	22.9(1229)	$x^2 = 102.05$	29.5 (863)	$x^2 = 84.29$	50.3 (169)	$x^2 = 22.26$
Yes	50.0 (10)		83.7 (49)	$p < 0.001$	78.8 (66)	$p < 0.001$	86.9 (61)	$p < 0.001$	94.1 (34)	$p < 0.001$
Going out for fun at night										
No	3.8 (237)	$x^2 = 41.03$	7.0(472)	$x^2 = 114.77$	7.1(381)	$x^2 = 149.08$	7.8 (218)	$x^2 = 143.29$	25.0 (24)	$x^2 = 23.17$
<1time/week	18.3(175)	$p < 0.001$	20.3(516)	$p < 0.001$	27.9(585)	$p < 0.001$	30.3(406)	$p < 0.001$	50.6(87)	$p < 0.001$
1-2times/week	26.7(75)	x^2 (for a trend) = 39.48	34.3(207)	x^2 (for a trend) = 114.03	40.9(247)	x^2 (for a trend) = 146.50	53.4(221)	x^2 (for a trend) = 142.15	67.3(52)	x^2 (for a trend) = 22.46
>2times/week	33.3(21)	$p < 0.001$	52.9(51)	$p < 0.001$	63.2(68)	$p < 0.001$	68.7(67)	$p < 0.001$	81.6(38)	$p < 0.001$

5.3.3 Association between alcohol use and health problems

Students were asked about their health problems in the last three months including: having a small appetite, coughing, having chest pains, having a cold, having a sore throat, having a sore nose, and being wheezy (see Appendix 1). There was a linear association between prevalence of alcohol use and having a small appetite: the greater the problems with appetite, the more the chance of drinking alcohol (see Table 5.12).

Table 5.12: Prevalence of alcohol use according to health problem in the last three months.

Variables	Prevalence % (sample size)	Statistical difference within variable
Small appetite		$x^2 = 26.82$
Never	22.3 (2432)	p<0.001
Occasional	27.6 (1427)	$x^2_{\text{(for a trend)}} = 26.76$
Often	33.7 (309)	p<0.001
Cough		$x^2 = 29.10$
Never	20.1 (1371)	p<0.001
Occasional	27.0 (2492)	$x^2_{\text{(for a trend)}} = 28.69$
Often	31.7 (268)	p<0.001
Chest pains		$x^2 = 27.35$
Never	21.7 (2258)	p<0.001
Occasional	28.3 (1526)	$x^2_{\text{(for a trend)}} = 25.60$
Often	30.5 (351)	p<0.001
Cold		$x^2 = 1.72$
Never	24.4 (951)	p=0.424
Occasional	25.1 (2711)	$x^2_{\text{(for a trend)}} = 1.39$
Often	27.5 (487)	p=0.238
Wheezy		$x^2 = 0.09$
Never	24.8 (3304)	p=0.954
Occasional	25.0 (648)	$x^2_{\text{(for a trend)}} = 0.07$
Often	25.9 (174)	p=0.789
Sore throat		$x^2 = 3.12$
Never	23.2 (1313)	p=0.210
Occasional	25.7 (2487)	$x^2_{\text{(for a trend)}} = 2.85$
Often	26.4 (333)	p=0.091
Sore nose		$x^2 = 10.06$
Never	22.9 (2798)	p<0.01
Occasional	27.6 (1199)	$x^2_{\text{(for a trend)}} = 7.45$
Often	24.6 (114)	p<0.01

Similarly, there were linear associations between prevalence of alcohol use and coughing, having chest pains, and having a sore nose problem in the last three months. However, there were no significant differences in prevalence of alcohol use between students reporting having a cold, having a sore throat, and being wheezy when compared with those reporting no problems. These significant relationships were examined for each sex. For both male and female students, there were positive associations between alcohol use and appetite problem, coughing, chest pains, and having a sore nose; (see Table 5.13).

Table 5.13: Prevalence of alcohol use according to frequencies of small appetite, cough, chest pains, and sore nose categorised by male and female students.

Variables	Male		Female	
	Prevalence% (sample)	Statistical difference within variable	Prevalence % (sample)	Statistical difference within variable
Small appetite		$x^2 = 66.72$		$x^2 = 11.93$
Never	32.4 (1164)	$p < 0.001$	11.0 (1238)	$p < 0.005$
Occasional	43.8 (633)	x^2 (for a trend) = 64.61 $p<0.001$	14.7 (794)	x^2 (for a trend) = 11.92 $p<0.005$
Often	63.3 (158)		18.8 (181)	
Cough		$x^2 = 40.78$		$x^2 = 9.84$
Never	31.4 (589)	$p < 0.001$	10.5 (772)	$p < 0.01$
Occasional	39.7 (1192)	x^2 (for a trend) = 36.41 $p<0.001$	13.6 (1273)	x^2 (for a trend) = 9.92 $p<0.005$
Often	58.8 (160)		19.3 (145)	
Chest pains		$x^2 = 39.90$		$x^2 = 37.99$
Never	33.5 (1107)	$p < 0.001$	8.7 (1129)	$p < 0.001$
Occasional	42.7 (679)	x^2 (for a trend) = 38.82 $p<0.001$	16.6 (845)	x^2 (for a trend) = 36.14 $p<0.001$
Often	57.7 (149)		19.9 (226)	
Sore nose		$x^2 = 8.39$		$x^2 = 6.47$
Never	36.4 (1360)	$p < 0.05$	11.3 (1438)	$p < 0.05$
Occasional	43.7 (513)	x^2 (for a trend) = 6.83 $p<0.01$	15.2 (686)	x^2 (for a trend) = 4.91 $p<0.01$
Often	40.4 (47)		13.4 (67)	

Smoking cigarettes and using illegal drugs possibly confounded the associations between alcohol use and appetite, cough, chest pains, and sore nose problem. These associations were then examined by cigarette use status (cigarette smokers or cigarette non-smokers) and illegal drug use status (illegal drug users or illegal drug non-users). There were significant associations between alcohol use and appetite, cough, and chest pain problem in both cigarette smokers and cigarette non-smokers (Table 5.14) and in both illegal drug users and illegal drug non-users (see Table 5.15). Among cigarette users and illegal drug users, there were significant associations between alcohol use and having a sore nose but this effect was not found among cigarette non-smokers and illegal drug non-users respectively.

Table 5.14: Prevalence of alcohol use according to frequencies of having a small appetite, cough, chest pains, and a sore nose categorised by cigarette smokers and non-smokers.

Variables	Cigarette smokers		Non-smokers	
	Prevalence % (sample)	Statistical difference within variable	Prevalence % (sample)	Statistical difference within variable
Small appetite		$x^2 = 6.36$		$x^2 = 13.36$
Never	76.8 (220)	$p < 0.05$	16.9 (2211)	$p < 0.005$
		x^2 (for a trend) =		x^2 (for a trend) =
Occasional	80.3 (157)	5.24	21.1 (1270)	13.06
		$p < 0.05$		$p<0.001$
Often	93.3 (45)		23.5 (264)	
Cough		$x^2 = 7.66$		$x^2 = 6.34$
Never	69.5 (95)	$p < 0.05$	16.5 (1276)	$p < 0.05$
		x^2 (for a trend) =		x^2 (for a trend) =
Occasional	80.2 (289)	7.60	19.8 (2202)	7.76
		$p < 0.05$		$p<0.01$
Often	89.2 (37)		22.5 (231)	
Chest pains		$x^2 = 7.10$		$x^2 = 14.58$
Never	75.6 (201)	$p < 0.05$	16.5 (2056)	$p < 0.001$
		x^2 (for a trend) =		x^2 (for a trend) =
Occasional	82.6 (178)	6.98	21.1 (1348)	13.59
		$p < 0.01$		$p<0.001$
Often	92.5 (40)		22.5 (311)	
Sore nose		$x^2 = 8.63$		$x^2 = 5.03$
Never	76.1 (268)	$p < 0.05$	17.6 (2519)	$p = 0.081$
		x^2 (for a trend) =		x^2 (for a trend) =
Occasional	87.7 (130)	8.34	20.8 (1069)	3.79
		$p < 0.005$		$p = 0.052$
Often	92.3 (13)		18.8 (101)	

5.3.4 Association between alcohol use and family problems

Respondents were questioned whether their fathers or mothers were alcohol users and were also asked whether their fathers or mothers were cigarette users (see Appendix 1). The proportion of current alcohol use in students whose fathers or mothers were alcohol users or cigarette users were significantly higher than that of students whose fathers or mothers were not (Table 5.16).

Respondents were also questioned as to whether their parents were staying together and whether they were staying with their parents. Students whose parents were not staying together were more likely to use alcohol. In addition, students who did not stay (i.e. live) with their parents were more likely to use alcohol (Table 5.16).

Table 5.15: Prevalence of alcohol use according to frequencies of having a small appetite, cough, chest pains and a sore nose categorised by illegal drug users and non-users.

Variables	Illegal drug users		Non-users	
	Prevalence % (sample)	Statistical difference within variable	Prevalence % (sample)	Statistical difference within variable
Small appetite		$x^2 = 7.31$		$x^2 = 9.98$
Never	75.8 (95)	$p < 0.05$	20.1 (2337)	$p < 0.01$
		$x^2_{\text{(for a trend)}} = 13.73$		$x^2_{\text{(for a trend)}} = 10.15$
Occasional	87.4 (95)	$p<0.001$	23.3 (1332)	$p<0.005$
Often	93.5 (31)		27.0 (278)	
Cough		$x^2 = 7.08$		$x^2 = 11.91$
Never	70.7 (41)	$p < 0.05$	18.6 (1330)	$p < 0.005$
		$x^2_{\text{(for a trend)}} = 6.61$		$x^2_{\text{(for a trend)}} = 10.98$
Occasional	85.4 (151)	$p<0.05$	23.2 (2341)	$p<0.001$
Often	92.9 (28)		24.6 (240)	
Chest pains		$x^2 = 7.38$		$x^2 = 11.19$
Never	75.3 (85)	$p < 0.05$	19.7 (2173)	$p < 0.005$
		$x^2_{\text{(for a trend)}} = 6.80$		$x^2_{\text{(for a trend)}} = 35.38$
Occasional	88.0 (108)	$p<0.01$	23.8 (1418)	$p<0.001$
Often	92.6 (27)		25.3 (324)	
Sore nose		$x^2 = 7.12$		$x^2 = 2.64$
Never	76.8 (125)	$p < 0.05$	21.0 (2673)	$p = 0.267$
		$x^2_{\text{(for a trend)}} = 6.25$		$x^2_{\text{(for a trend)}} = 0.31$
Occasional	90.4 (84)	$p < 0.05$	22.9 (1115)	$p = 0.577$
Often	90.9 (11)		17.5 (103)	

There was also a linear association between prevalence of alcohol use and fighting among family members: the more the fighting in family, the more the chance that students used alcohol. In contrast, there was a negative association between prevalence of alcohol use and restrictions placed on students by parents: the more the restrictions from parents, the less the students use alcohol (see Table 5.16).

Students were asked about their experiences in running away from home. Students who reported having ever run away from home were more likely to use alcohol Financial problems of students' families were also examined but only by asking students their impression of their own families financial status (see Table 5.16). There was no significant difference in alcohol use between students whose family had financial problems and students whose family had no financial problem ($p > 0.05$).

Table 5.16: Prevalence of alcohol use according to family problem variables.

Variables	Prevalence % (sample size)	Statistical difference within variable
Cigarette smoking parent		
No	22.8 (1906)	$x^2 = 12.87$
Yes	27.7 (2276)	p<0.001
Alcohol drinking parent		
No	20.6 (1374)	$x^2 = 25.59$
Yes	27.9 (2800)	p<0.001
Financial problem in family		$x^2 = 0.23$
No problem	24.9 (469)	p=0.892
Some problems	25.3 (2838)	x^2 (for a trend) = 0.22
Many problems	26.1 (721)	p=0.642
Fighting among family members		$x^2 = 14.94$
Never	23.6 (713)	p<0.005
Sometimes	25.0 (3090)	x^2 (for a trend) = 9.99
Several	33.5 (391)	p<0.005
Restrictions of parents		
Not at all	33.2 (217)	$x^2 = 14.36$
A little	26.0 (2994)	p<0.005
A lot	23.6 (593)	x^2 (for a trend) = 12.67
All the time	20.1 (389)	p<0.001
Run away from home		
No	22.7 (3611)	$x^2 = 105.47$
Yes	42.8 (573)	p<0.001
Parents were staying together		
No	29.8 (739)	$x^2 = 8.51$
Yes	24.6 (3465)	p<0.005
Student was staying with parent		
No	32.8 (1078)	$x^2 = 40.45$
Yes	23.0 (3125)	p<0.001

The significant associations between alcohol use and family problems were examined for confounding effects of age and sex. Bivariate analyses by age groups revealed that there was a linear association between restrictions of parents and prevalence of alcohol use in those aged 16 years or under (see Table 5.17). However, this significant relationship was not found in age group 17 years and over. Students in all age groups, whose fathers or mothers were alcohol users, were more likely to use alcohol. Similarly, student in all age groups, who were not staying with their parents were more likely to use alcohol. Prevalence of alcohol use among students whose parents were not staying together was consistently higher. There were significant associations between alcohol use and conflict among family members in all age group; the more the fighting among family members, the more chance to use alcohol.

Table 5.17: Prevalence of alcohol use according to family variables which are associated with alcohol use categorised by current age groups.

Variables		<= 16 years		17 years		>= 18 years	
		Prevalence (sample)	Statistical difference within variable	Prevalence (sample)	Statistical difference within variable	Prevalence (sample)	Statistical difference within variable
Alcohol drinking parent	No	11.8 (591)	x^2= 18.60	21.9(397)	x^2= 4.38	32.7 (382)	x^2= 5.92
	Yes	20.1 (1165)	p < 0.001	27.4(893)	p < 0.05	40.2 (732)	p < 0.05
Parents stay together							
	No	21.2 (321)	x^2= 4.01	33.1 (217)	x^2= 5.84	44.9 (198)	x^2= 5.21
	Yes	16.5 (1454)	p < 0.05	25.2 (1074)	p < 0.05	36.3 (926)	p < 0.05
Students stay with parent							
	No	24.4 (422)	x^2= 19.10	32.3 (353)	x^2= 10.45	44.4 (295)	x^2= 7.68
	Yes	15.2 (1351)	p < 0.001	23.5 (938)	p < 0.01	35.3 (830)	p < 0.01
Conflict among family members			x^2= 9.09 p < 0.05		x^2= 9.29 p < 0.05		x^2= 10.29 p < 0.01
	Never	12.9 (287)	x^2 (for a trend)	28.2 (216)	x^2 (for a trend)	31.7 (205)	x^2 (for a trend)
	Sometimes	17.5 (1287)	= 8.97	24.1 (964)	= 0.79	37.7 (832)	= 9.02
	Several times	23.5 (196)	p < 0.005	37.0 (108)	p= 0.373	51.8 (85)	p < 0.005
Restriction by parents			x^2= 7.73		x^2= 3.39		x^2= 6.90
	Not at all	24.1 (79)	p = 0.051	27.0 (74)	p = 0.336	40.6 (58)	p = 0.070
	A little	18.5 (1240)	x^2 (for a trend)	26.9(929)	x^2 (for a trend)	38.9 (819)	x^2 (for a trend)
	A lot	16.9 (271)	= 6.93	23.4(175)	= 3.03	32.9 (146)	= 1.21
	All the times	11.3 (177)	p < 0.01	19.6(112)	p= 0.082	29.0 (99)	p = 0.271

When analysed by sex, both male and female students whose fathers or mothers were alcohol users were more likely to use alcohol (see Table 5.18). Female students whose parents were not staying together were more likely to use alcohol. However, this significant association was not found in male students. Conflicts between members of students' family were significantly related to levels of alcohol use in both sexes (see Table 5.18). Similarly, both male and female students who reported having ever run away from home were more likely to use alcohol. There were no significant association between alcohol use and restrictions placed on students by their parents in both male and female students; although the relationship approached significance (p=0.059 for males, p=0.088 for females).

5.3.5 Association between alcohol use and peer variables

Students were asked whether their close friends were using alcohol (see question in Appendix 1). Students whose close friends were alcohol users had a significantly higher prevalence of alcohol use (see Table 5.19). Students were also asked whether they were currently staying with their friends. Significantly higher rate of frequent alcohol use was found in students who were staying with their friends.

Table 5.18: Prevalence of alcohol use according to family problem variables categorised by sex.

Variables	Males		Females	
	Prevalence % (sample size)	Statistical difference within variable	Prevalence % (sample size)	Statistical difference within variable
Cigarette smoking parent				
No	35.4 (942)	$x^2 = 11.92$	10.6 (964)	$x^2 = 9.64$
Yes	43.0 (1029)	$p<0.005$	15.1 (1247)	$p<0.005$
Alcohol drinking parent				
No	32.0 (669)	$x^2 = 23.20$	9.8 (705)	$x^2 = 9.75$
Yes	43.2 (1299)	$p<0.001$	14.6 (1501)	$p<0.005$
Conflicts among family members		$x^2 = 12.48$ $p<0.005$		$x^2 = 41.37$ $p<0.001$
Never	33.6 (446)	x^2 (for a trend) =	6.7 (267)	x^2 (for a trend) =
Sometimes	40.5 (1394)	12.34	12.3 (1696)	37.07
Several	49.3 (138)	$p<0.001$	24.9 (253)	$p<0.001$
Restrictions of parents				
Not at all	48.8 (128)	$x^2 = 4.52$	18.0 (89)	$x^2 = 4.05$
A little	39.8 (1424)	$p = 0.210$	13.5 (1570)	$p = 0.255$
A lot	39.5 (263)	x^2 (for a trend) =	10.9 (330)	x^2 (for a trend) =
All the time	32.3 (161)	3.57 $p = 0.059$	11.4 (228)	2.91 $p = 0.088$
Run away from home				
No	35.8 (1617)	$x^2 = 42.17$	12.0 (1994)	$x^2 = 23.10$
Yes	54.3 (357)	$p<0.001$	23.6 (216)	$p<0.001$
Parents were staying together				
No	43.4 (355)	$x^2 = 2.86$	17.2 (384)	$x^2 = 6.66$
Yes	38.5 (1627)	$p = 0.091$	12.3 (1838)	$p<0.05$
Student was staying with parent				
No	45.8 (559)	$x^2 = 13.43$	18.9 (519)	$x^2 = 19.33$
Yes	36.9 (1427)	$p<0.001$	11.4 (1698)	$p<0.001$

Table 5.19: Prevalence of alcohol use according to peer variables.

Variables	Prevalence % (sample size)	Statistical difference within variable
Close friends drinking alcohol		
No	8.2 (1616)	$x^2 = 411.06$
Yes	36.4 (2496)	$p<0.001$
Students stay with friends		
No	23.9 (3832)	$x^2 = 66.06$
Yes	43.1 (371)	$p<0.001$

The significant associations between alcohol use and peer variables (including "close friends were alcohol users" and "students were staying with friends") were examined by different sex. Both male and female students whose close friends were alcohol users were more likely to use alcohol (Table 5.20). Similarly, both male and female students who were staying with their friends were more likely to use alcohol.

Table 5.20: Prevalence of alcohol use according to peer variables categorised by sex.

Variables	Males		Females	
	Prevalence % (sample size)	Statistical difference within variable	Prevalence % (sample size)	Statistical difference within variable
Close friends drinking alcohol				
No	8.2 (1616)	$x^2 = 411.06$	8.2 (1616)	$x^2 = 411.06$
Yes	36.4 (2496)	$p<0.001$	36.4 (2496)	$p<0.001$
Students stay with friends				
No	23.9 (3832)	$x^2 = 66.06$	23.9 (3832)	$x^2 = 66.06$
Yes	43.1 (371)	$p<0.001$	43.1 (371)	$p<0.001$

5.3.6 Association between alcohol use and school activity variables

Students were questioned about their average grade in school class (see question in Appendix 1). There was a linear association between average grade and alcohol use; students who had higher than average grades were less likely to use alcohol (see Table 5.21). Students were also asked whether they had attention difficulty in their school class. Consistently, students who had self-assessed attention difficulty were also more likely to use alcohol. In addition, there was a linear association between prevalence of alcohol use and students' truancy: the higher the number of truancy episodes, the higher the prevalence of alcohol use.

Table 5.21: Prevalence of alcohol use according to school activity variables.

Variables		Prevalence % (sample size)	Statistical difference within variable
Average grade	D, F	29.9 (1292)	$x^2 = 26.84$
	C	24.9 (2303)	$p<0.001$
	A, B	19.0 (596)	$x^2_{\text{(for a trend)}} = 26.73$, $p<0.001$
Attention difficulty	No	22.8 (2307)	
	Yes	28.7 (1890)	$x^2 = 18.91$, $p<0.001$
Truancy	Never	15.8 (2700)	$x^2 = 431.89$
	1-5 times	38.9 (1189)	$p<0.001$
	6-12 times	54.9 (175)	$x^2_{\text{(for a trend)}} = 418.00$, $p<0.001$
	> 12 times	64.4 (132)	

The associations between alcohol use and average grade, attention difficulty, and truancy were consistent across sexes (Table 5.22) but not ages. The associations between alcohol use and average grade were found only in age groups 17 years and under (Figure 5.3). This relationship was not found in age over 17 years. In all age groups, there were linear associations between prevalence of alcohol use and students' truancy (Figure 5.4).

Table 5.22: Prevalence of alcohol use according to school activity variables categorised by sex.

Variables	Males		Females	
	Prevalence % (sample size)	**Statistical difference within variable**	**Prevalence % (sample size)**	**Statistical difference within variable**
Average grade		$x^2 = 11.12$		$x^2 = 5.88$
D, F	43.1 (673)	$p<0.005$	15.5 (619)	$p < 0.05$
C	39.2 (1053)	x^2 (for a trend) $= 10.29$	12.8 (1250)	x^2 (for a trend) $= 5.88$
A, B	31.1 (251)	$p<0.005$	10.1 (345)	$p<0.05$
Attention difficulty				
No	36.5 (1150)	$x^2 = 9.26$	9.2 (1157)	$x^2 = 31.14$
Yes	43.3 (834)	$p<0.005$	17.1 (1056)	$p<0.001$
Truancy				
Never	27.1 (1065)	$x^2 = 166.47$	8.4 (1635)	$x^2 = 152.73$
1-5 times	50.1 (702)	$p<0.001$	22.8 (487)	$p<0.001$
6-12 times	65.2 (115)	x^2 (for a trend) $= 154.24$	35.0 (60)	x^2 (for a trend) $= 152.21$
> 12 times	68.4 (95)	$p<0.001$	54.1 (37)	$p<0.001$

Figure 5.3: Prevalence of alcohol use according to different school performances (average grade) categorised by current age groups.

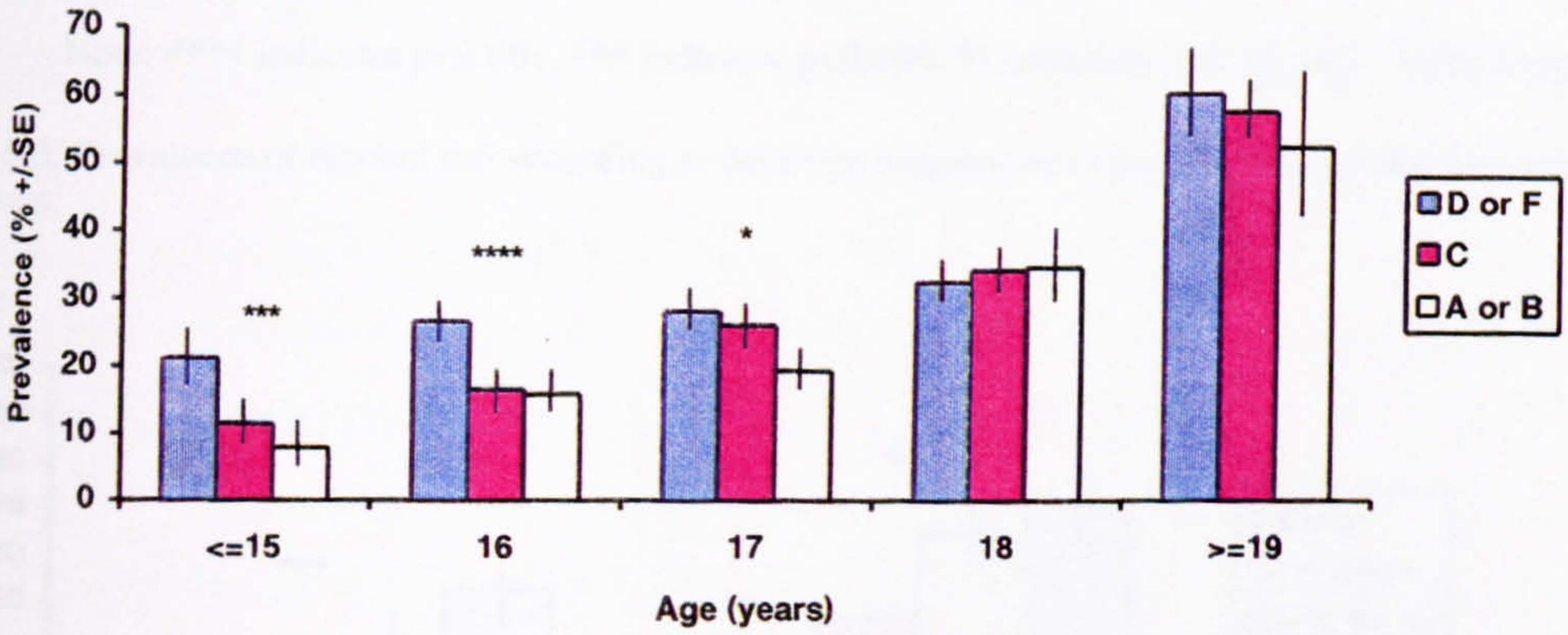
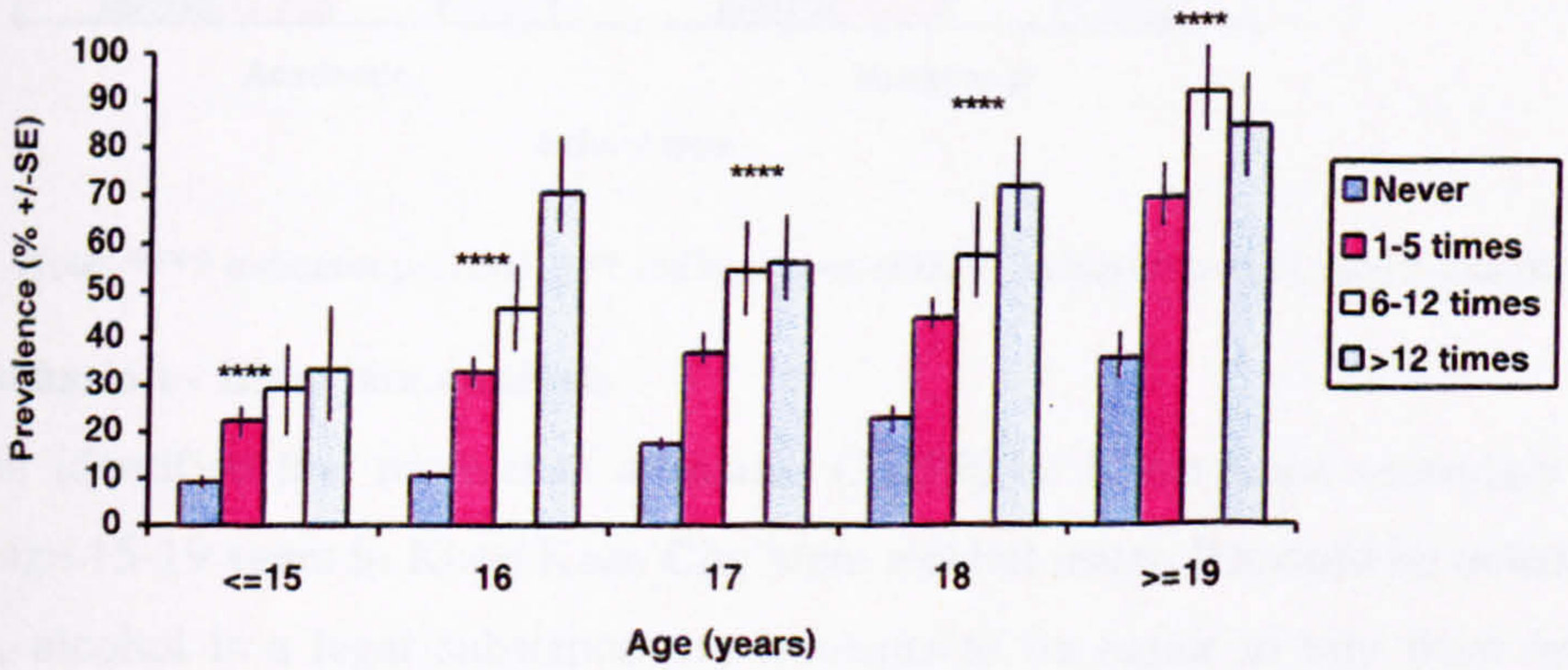


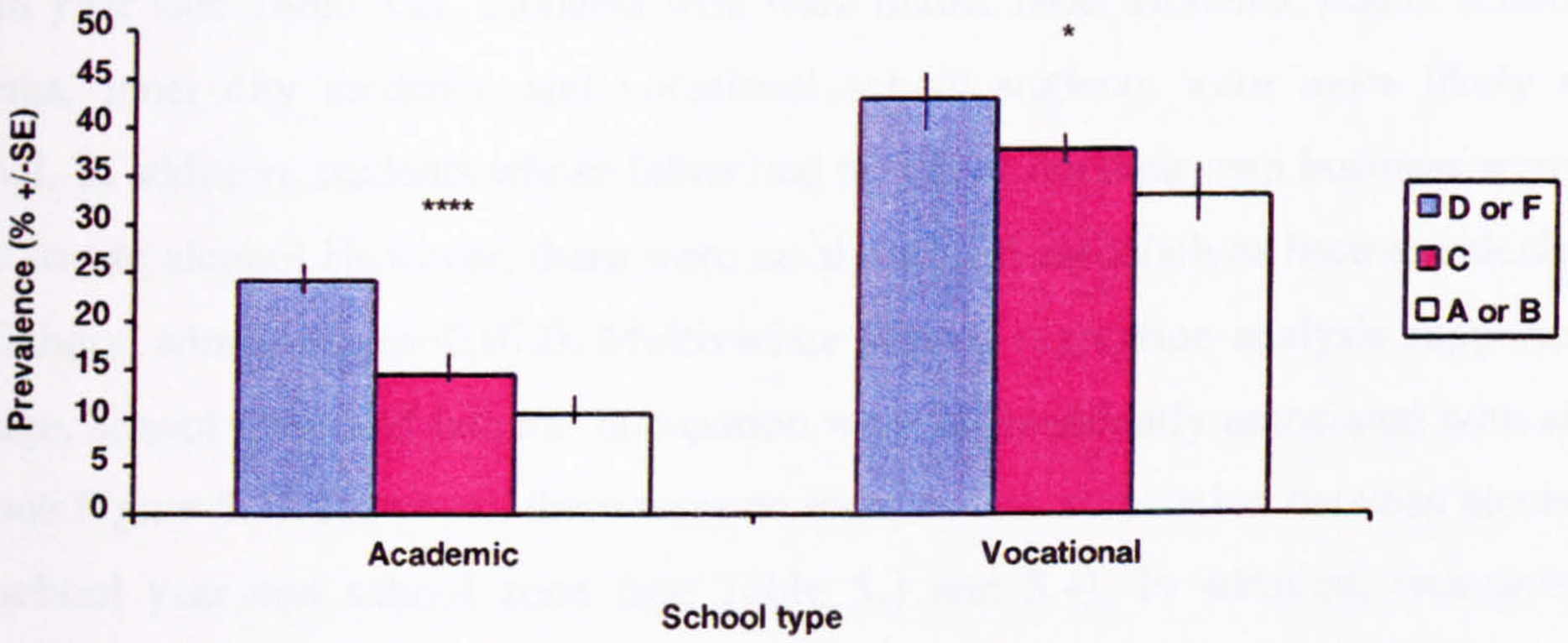
Figure 5.4: Prevalence of alcohol use according to different frequencies of truancy categorised by current age groups.



Note: **** indicates $p<0.001$, *** indicates $p<0.005$, ** indicates $p<0.01$, and * indicates $p<0.05$

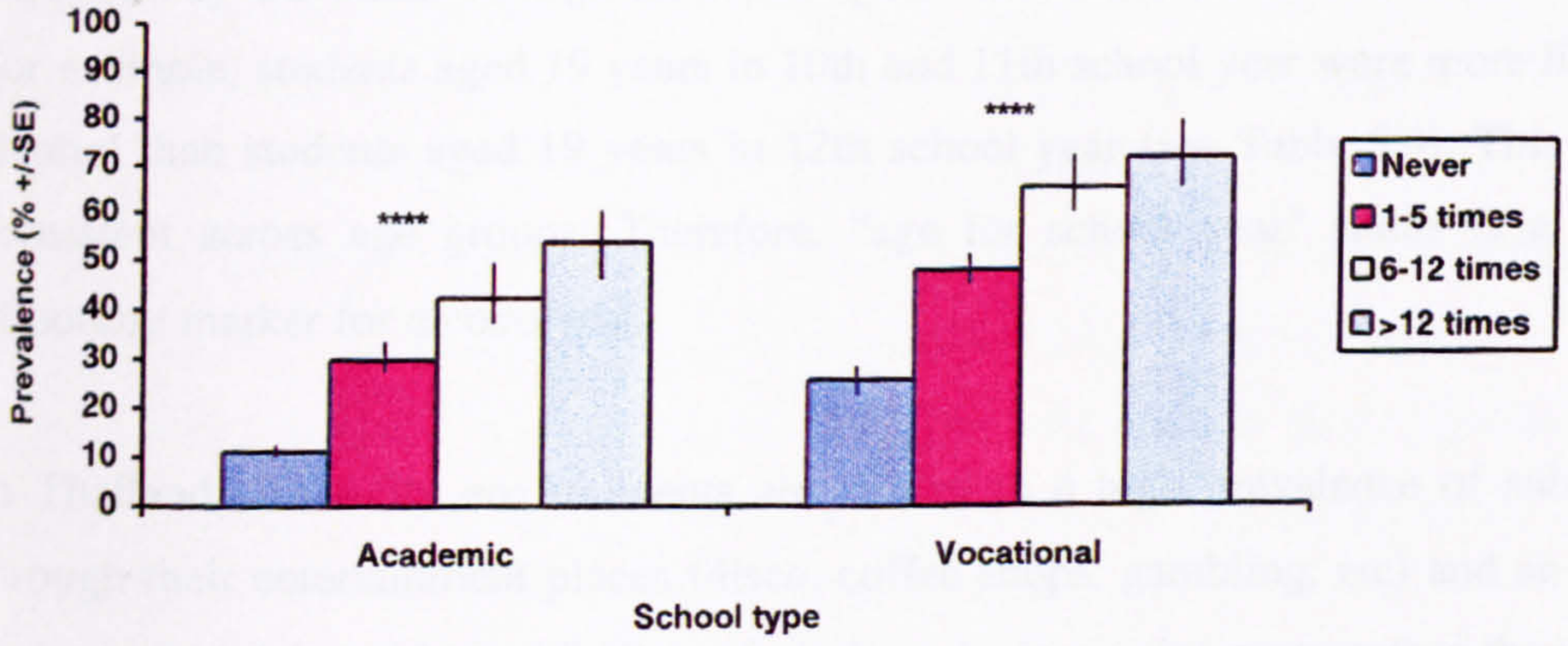
There were significant associations between alcohol use and average grade in both academic and vocational school students (see Figure 5.5). Similarly, the significant association between alcohol use and students' truancy was apparent both school types (see Figure 5.6).

Figure 5.5: Prevalence of alcohol use according to different school performances (average grade) categorised by school type.



Note: **** indicates p<0.001, *** indicates p<0.005, ** indicates p<0.01, and * indicates p<0.05

Figure 5.6: Prevalence of alcohol use according to different frequencies of truancy categorised by current age groups.



Note: **** indicates p<0.001, *** indicates p<0.005, ** indicates p<0.01, and * indicates p<0.05

5.3.7 Discussion - Bivariate analysis

The result identified that more than a quarter (25.5%) of Khon Kaen secondary school students age 15-19 years in Khon Kaen City were alcohol users. It should be noted that in Thailand, alcohol is a legal substance and it seems to be easier to buy from inside or outside school compared with other substances because there is no age restriction for

buying alcohol (90). Partly as a result Khon Kaen secondary schools are facing an epidemic of alcohol use among students which may lead to problems with health, school performance, violent behaviour, and associated morbidity and mortality (62).

The bivariate analysis revealed that alcohol use among Khon Kaen secondary school students was associated with sex, age, school type, school zone, fathers' occupation, and school year (see Table 5.2). Students who were males, older students, higher school year students, inner city students, and vocational school students were more likely to use alcohol. In addition, students whose father had no job or ran their own business were more likely to use alcohol However, there were no significant associations between alcohol use and fathers' education; (p=0.072). Multivariate logistic regression analysis supported that sex, age, school type, and fathers' occupation were independently associated with alcohol use (see Figure 5.2). However, there were no independent association between alcohol use and school year and school zone (see Table 5.3 and 5.4). In addition, examining the associations between alcohol use and school year in different sub-groups of other socio-demographic variables revealed the significant negative associations between alcohol use and school year; the likelihood of alcohol use of students in lower school year tended to be higher than in the higher school year in each age group (see Table 5.3). This can be explained by the effect of "age for school year" (i.e. older students in each school year). For example, students aged 19 years in 10th and 11th school year were more likely to use alcohol than students aged 19 years in 12th school year (see Table 5.3). This effect was consistent across age groups. Therefore, "age for school year" status is a potentially important marker for alcohol use.

In Thailand, inner-city environments are related to a high prevalence of substance use through their entertainment places (disco, coffee shops, gambling, etc) and an associated variety of social problems (6). School students in inner city areas rather than in district areas seem to be more exposed to alcohol. Surprisingly however, the prevalence of alcohol use among academic school students in district area was significantly higher than academic school students in inner-city area (see Table 5.4). A possible reason for this is that currently academic schools in the inner city have more teachers, budget and intervention programs to deal with substance use among school students when compared with academic schools in district area (51). However, further studies would be needed to

establish whether a causal relationship between such programmes and lower alcohol use exists

The risk-taking characteristic was strongly associated with alcohol use in all age groups and both sexes (see Table 5.7 and 5.8). Risk-taking people seem to be less concerned about the risk-benefit of what they do (91), and are more likely to engage in substance use. Furthermore, alcohol use causes diminished judgement and may in itself lead to increases in risk-taking behaviours such as violent behaviours and the use of other substances. The results also revealed that alcohol use was strongly associated with other risk behaviour including cigarette use, illegal drug use, going out for fun at night, having sex early, hurting oneself, and stealing (see Table 5.9). The associations between alcohol use and these behaviours were consistent in different sex and age groups (see Table 5.10 and 5.11). Although, alcohol is a legal substance many studies have also confirmed that adolescents who used alcohol were more likely to use other substance (66-69), especially in young alcohol users who are more likely to be impulsive, have attention deficiency, and accidents (70-71). It is important to set alcohol use among school students as one of the serious problem for the youth of Khon Kaen.

The results revealed that there were associations between alcohol use and appetite problems, coughing, chest pains, and having a sore nose; the greater the use of alcohol, the more the chance of each (Table 5.12). However, the association between alcohol use and having a sore nose was confounded by cigarette use and illegal drug use. There were significant associations between alcohol and a sore nose only in illegal drug users and (Table 5.14 and 5.15) cigarette users. It is reasonable to hypothesise that alcohol use is not independently associated with having a sore nose problem but that cigarette smoking, using illegal drugs, or both may be the cause and alcohol only increases the effects.

When analysed by age group the linear associations between restrictions by parents and prevalence of alcohol use by students remained significant in those aged 16 years or under (Table 5.17). This may indicates that restrictions by parents placed on students are effective at stopping students using alcohol probably only at younger ages (<=16 years). Parental restriction placed on their children age over 16 years may be not enough to stop alcohol use and alternative strategies such as counselling should be additionally used. Furthermore, female students whose parents were not staying together were more likely to

use alcohol (see Table 5.18) while this association was not found in males. Whether this means that females are more susceptible to family problems than males needs further investigation. From the aspect of peer pressure, alcohol use by students was strongly associated with alcohol use by their close friends (see Table 5.19). Thus, both male and female students whose close friends were alcohol users were more likely to use alcohol than those whose close friends were not (Table 5.20).

Equally, playing truant was strongly associated with alcohol use (Table 5.21) and this association was consistent in all age and sex group (Figure 5.4 and Table 5.22). However, as well as such indirect relationships with school performance alcohol use was also found to be directly associated with school grades attained. There was a linear association between average grade and alcohol use; students who had higher than average grades were less likely to use alcohol (Table 5.21). It should be noted that both alcohol use and low average grade could be causes and effects. Alcohol as a depressant produces psychological disturbance such as attention deficiency (47, 48) but students who had low average grade may feel unhappy in their school performance and elsewhere and consequently, may use alcohol for recreational or escape purposes. Educational counselling programs or educational advising programs should target students who have lower average grades. These programs can help low school performance students who are or are not alcohol users to greater educational success and perhaps be happier studies.

The above bivariate analyses are powerful in identifying relationships between various factors and the use of alcohol. They can be used in various school settings to identifying groups of students most at risk of use. However, such analyses do not necessarily identify the best predictors nor do they help uncover confounding effects such as interrelations between alcohol use and having a sore nose in conjunction with cigarette and illegal drug use (see Table 5.14 and 5.15). In order to identify key variables that were independently associated with alcohol use, multivariate analyses were used in the next section.

5.4 Indicative factors for alcohol use among Khon Kaen secondary school students

In order to identify significant predictors of alcohol use among Khon Kaen secondary school students, a series of logistic regression analyses were performed to examine which risk variables remained potentially associated with alcohol use.

Seven logistic regression models were developed as predictor models for alcohol use;

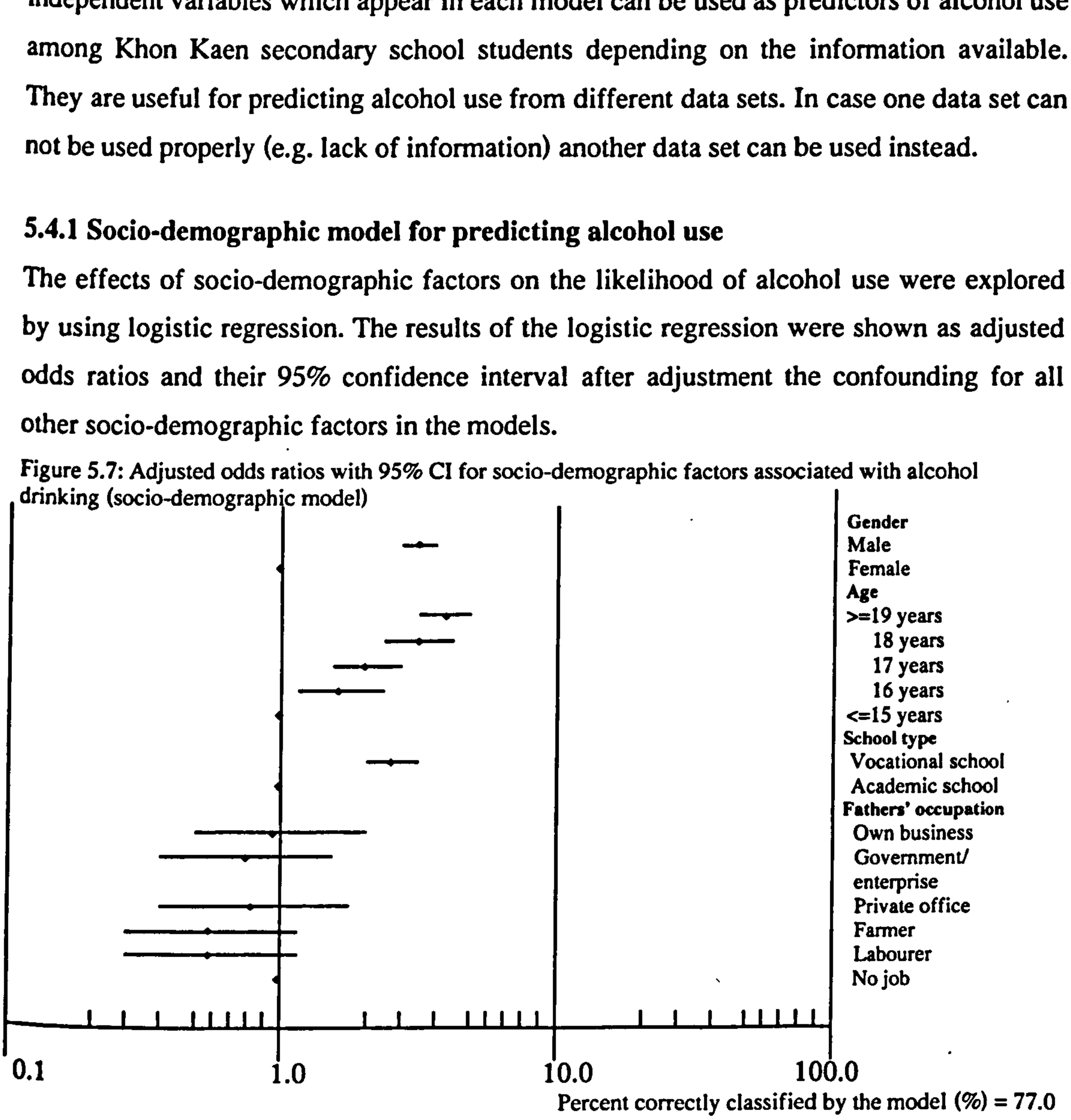
- Socio-demographic model,
- family model,
- school performance model,
- peer model,
- health model and,
- behavioural/psychological model.
- Overall model

Backward stepwise elimination was used to determine those variables that were independently associated with alcohol use and to remove confounding factors (92). Those independent variables which appear in each model can be used as predictors of alcohol use among Khon Kaen secondary school students depending on the information available. They are useful for predicting alcohol use from different data sets. In case one data set can not be used properly (e.g. lack of information) another data set can be used instead.

5.4.1 Socio-demographic model for predicting alcohol use

The effects of socio-demographic factors on the likelihood of alcohol use were explored by using logistic regression. The results of the logistic regression were shown as adjusted odds ratios and their 95% confidence interval after adjustment the confounding for all other socio-demographic factors in the models.

Figure 5.7: Adjusted odds ratios with 95% CI for socio-demographic factors associated with alcohol drinking (socio-demographic model)

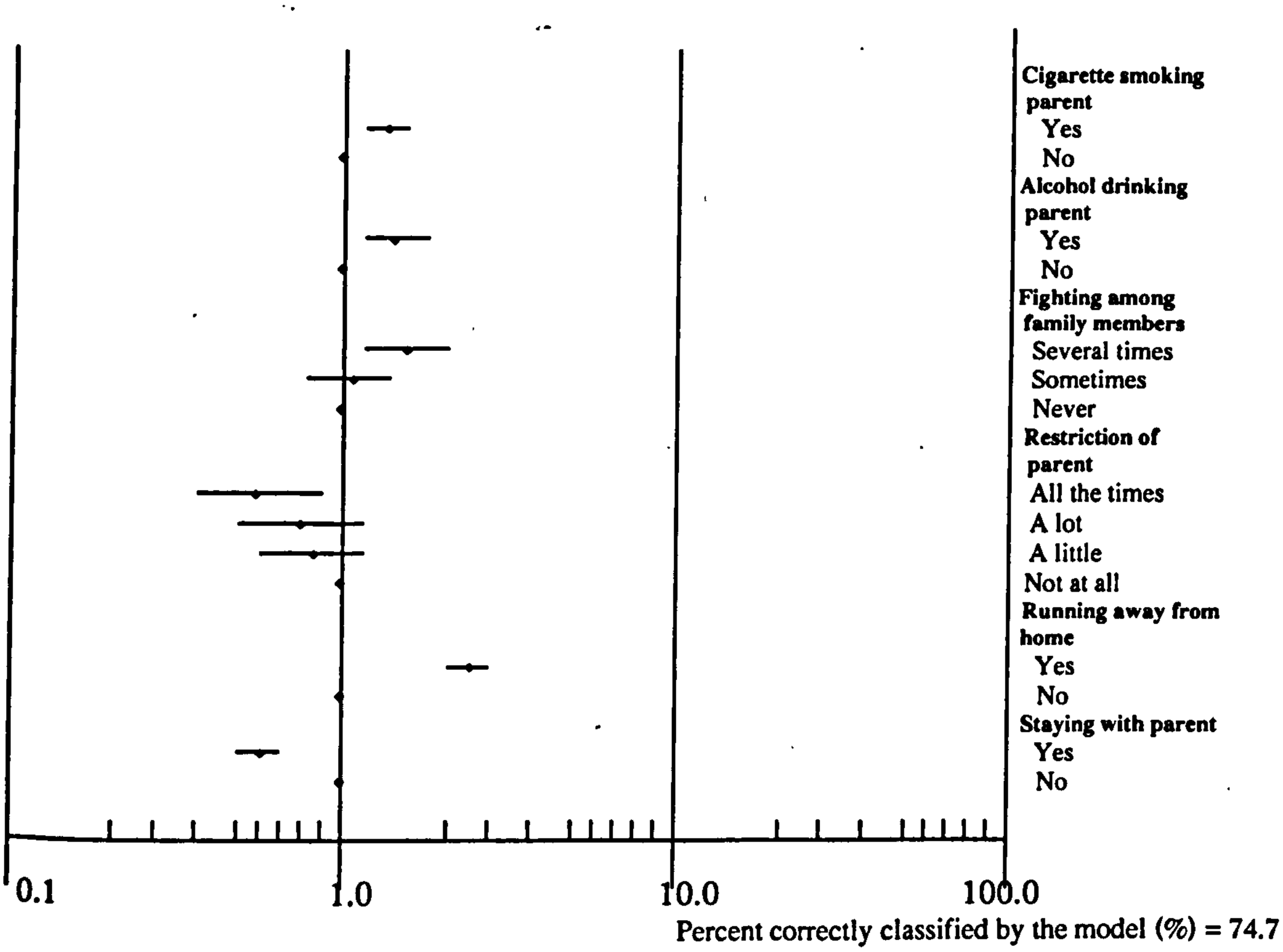


Multivariate logistic regression analysis revealed that four key predictors for alcohol drinking remained in the model (see Figure 5.7). The statistical significance of all other variables disappeared in the model. These four key predictors are all independently associated with alcohol use in socio-demographic model. Based on adjusted odds ratios, being male, older, a vocational school student, and students whose fathers had no job or run their own businesses identified students with high odd of using alcohol. Comparison between multivariate analysis and bivariate analysis, reveals that school year and school zone were significantly associated with alcohol use in bivariate analysis (see Table 5.2) but did not appear in the logistic regression.

5.4.2 Family model for predicting alcohol use

Using multivariate logistic regression analysis, there were six key predictors for alcohol use remaining in the final regression equation for the family model (Figure 5.8).

Figure 5.8: Adjusted odds ratios with 95% confidence interval for family factors associated with alcohol drinking (family model).

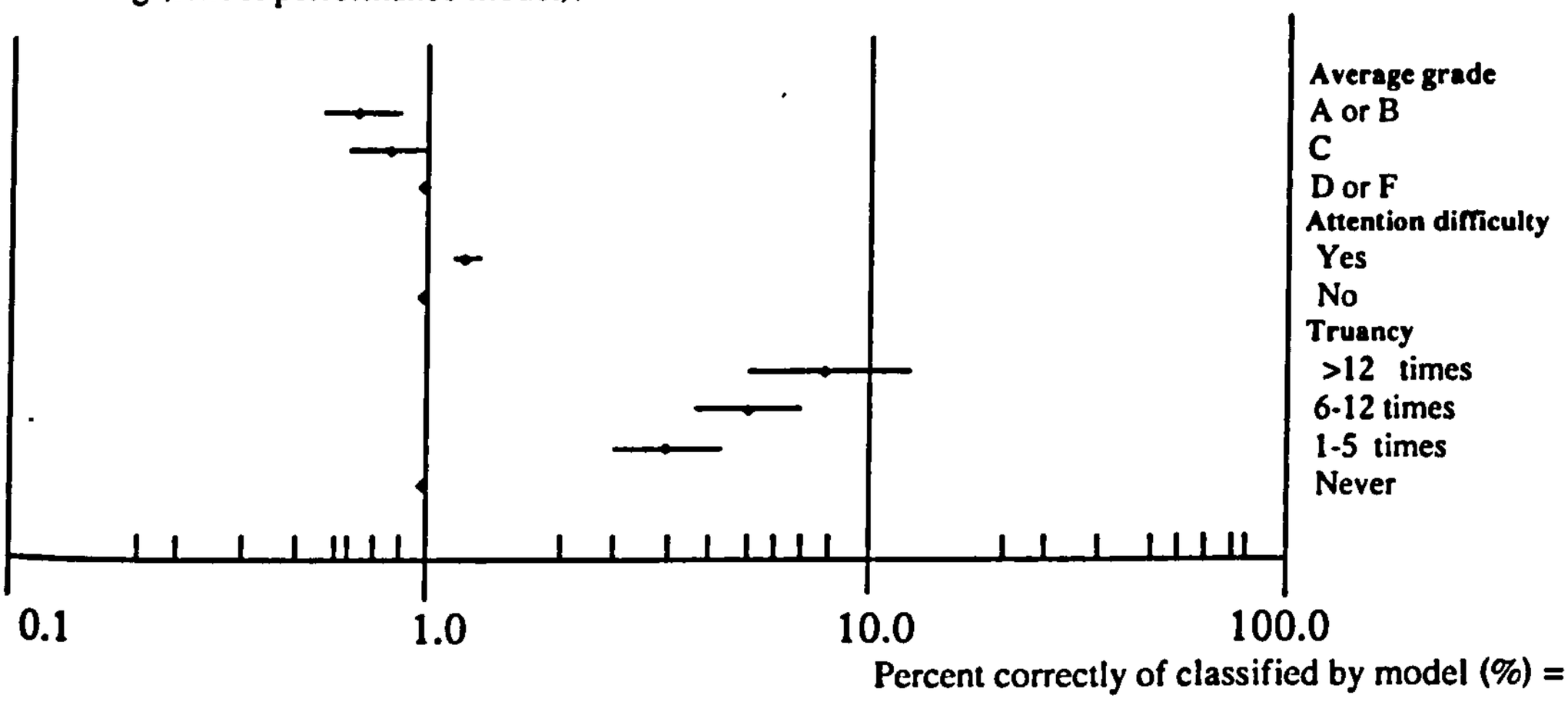


These six key predictors are all independently associated with alcohol use in family model. Comparison between multivariate analysis and bivariate analysis showed, "parents were staying together" to be significant in the bivariate analysis (Table 5.16) but not in the logistic analysis.

5.4.3 School performance model for predicting alcohol use

The multivariate logistic regression analysis of school performance model revealed three key predictors for alcohol use in the final regression equation (Figure 5.9).

Figure 5.9: Adjusted odds ratios with 95% confidence interval for school factors associated with alcohol drinking (school performance model).

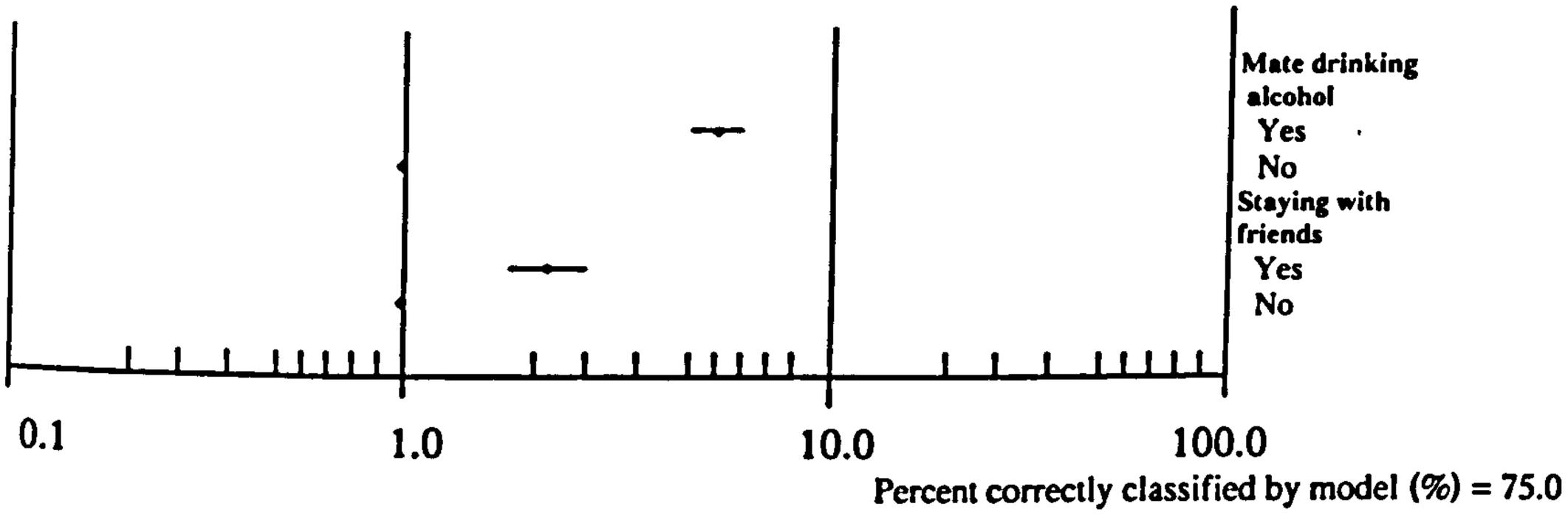


These three key predictors are all independently associated with alcohol use in school. "Average grade", "attention difficulty", and "truancy" which all appeared significant in the bivariate analyses disappeared in the multivariate analyses (see Table 5.21).

5.4.4 Peer model for predicting alcohol use

The peer model revealed two key predictors for alcohol use in the final regression equation (see Figure 5.10). Based on adjusted odds ratios, both of these, students whose close friends were alcohol users and students who were staying with their friends (not staying with their family), had high odds for alcohol use.

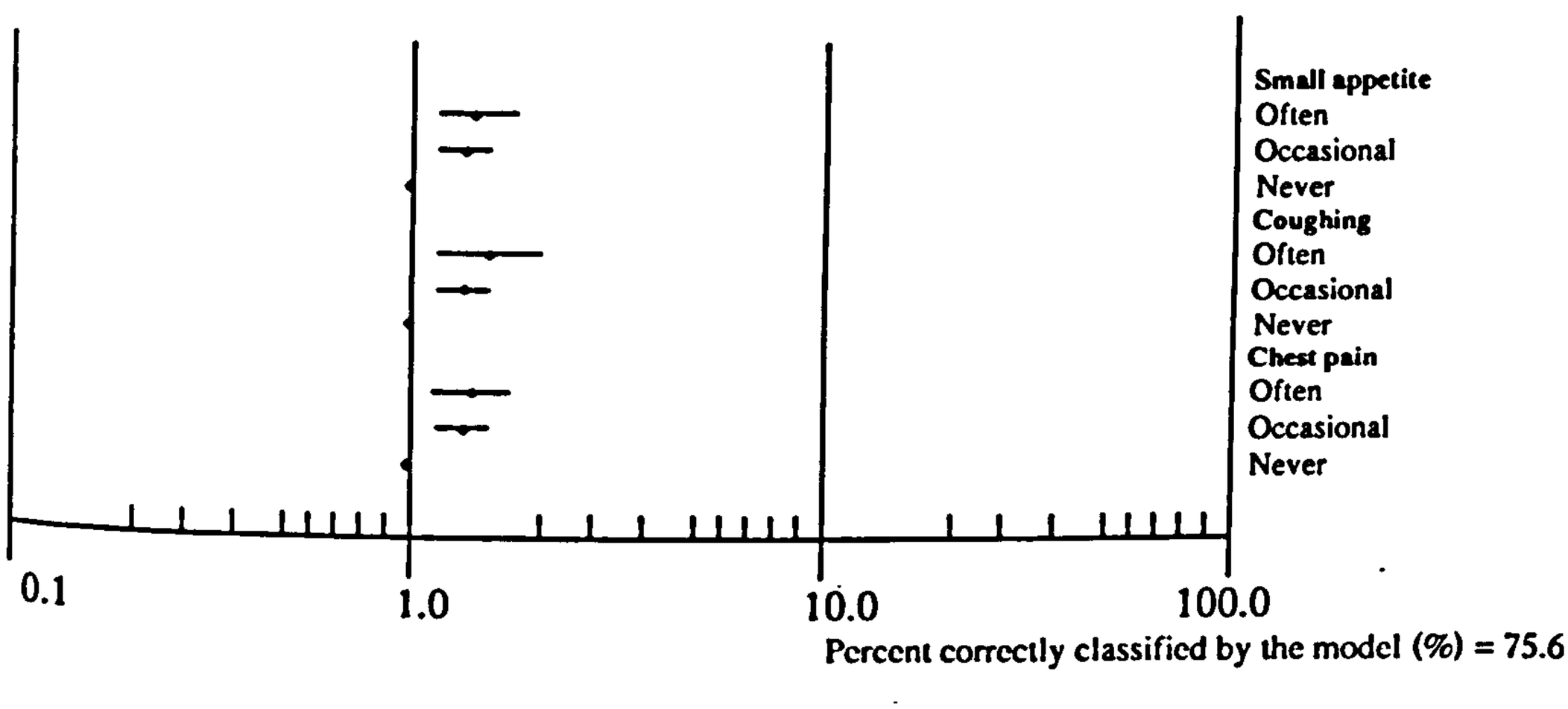
Figure 5.10: Adjusted odds ratios with 95% confidence intervals for peer factors associated with alcohol drinking (peer model).



5.4.5 Health model for predicting alcohol use

Three key predictors for alcohol use remained in the final logistic regression equation (see Figure 5.11). The statistical significance of all other variables disappeared in the model. These predictors are all independently associated with alcohol use in the health model. Based on adjusted odds ratios, all of these students who had small appetite, had a cough, or who had chest pains had high odds of using alcohol.

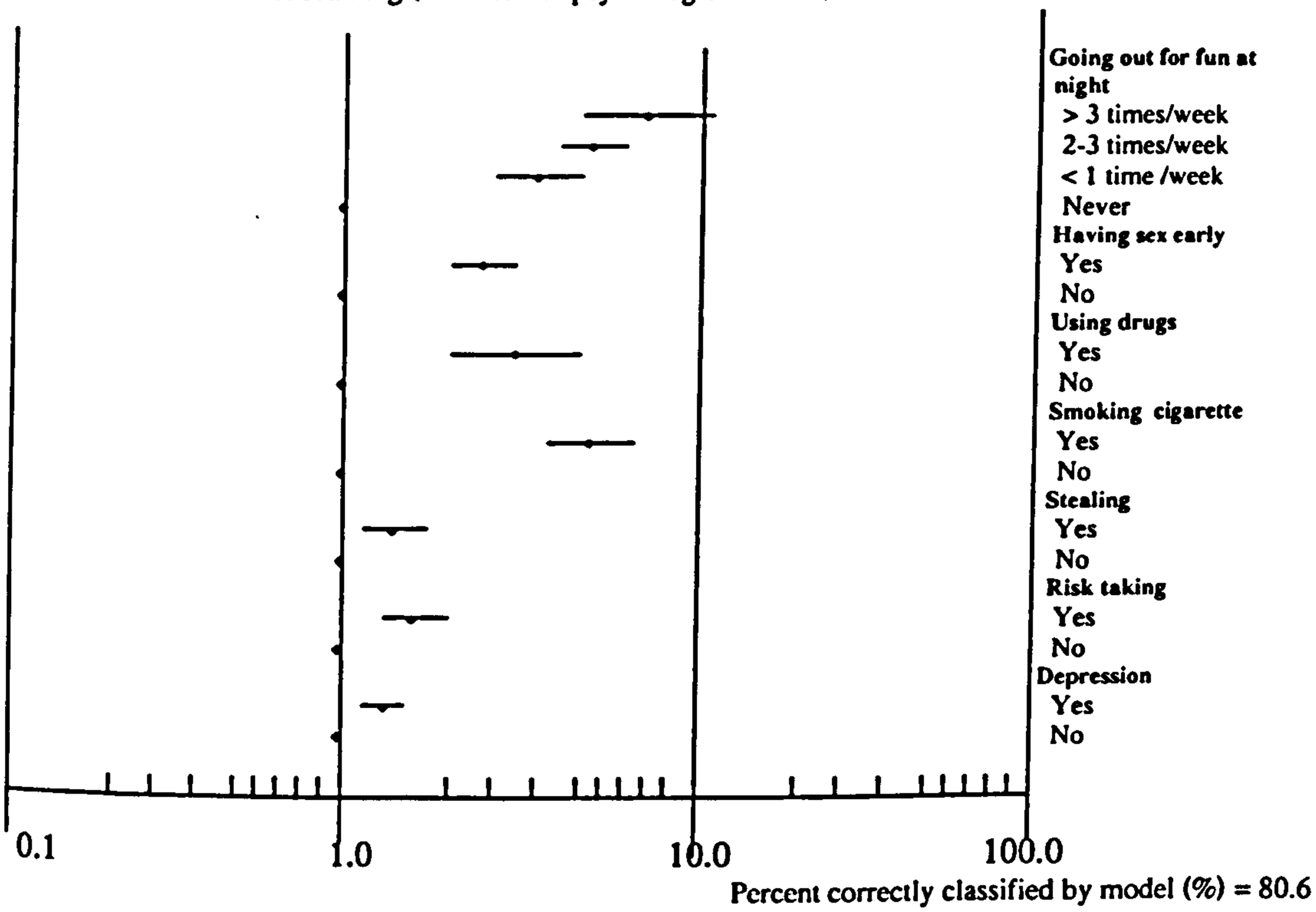
Figure 5.11: Adjusted odds ratios with 95% confidence interval for health factors associated with alcohol drinking (health model).



5.4.6 Behavioural/psychological model for predicting alcohol use

Multivariate logistic regression analysis of behavioural/psychological model revealed seven key predictors for alcohol use remaining in the final regression equation (see Figure 5.12). Compared between multivariate analysis and bivariate analysis, "being aggressive" and "hurting oneself" which were significantly associated with alcohol use in bivariate analysis (see Table 5.6 and 5.9) were not retained in the logistic regression.

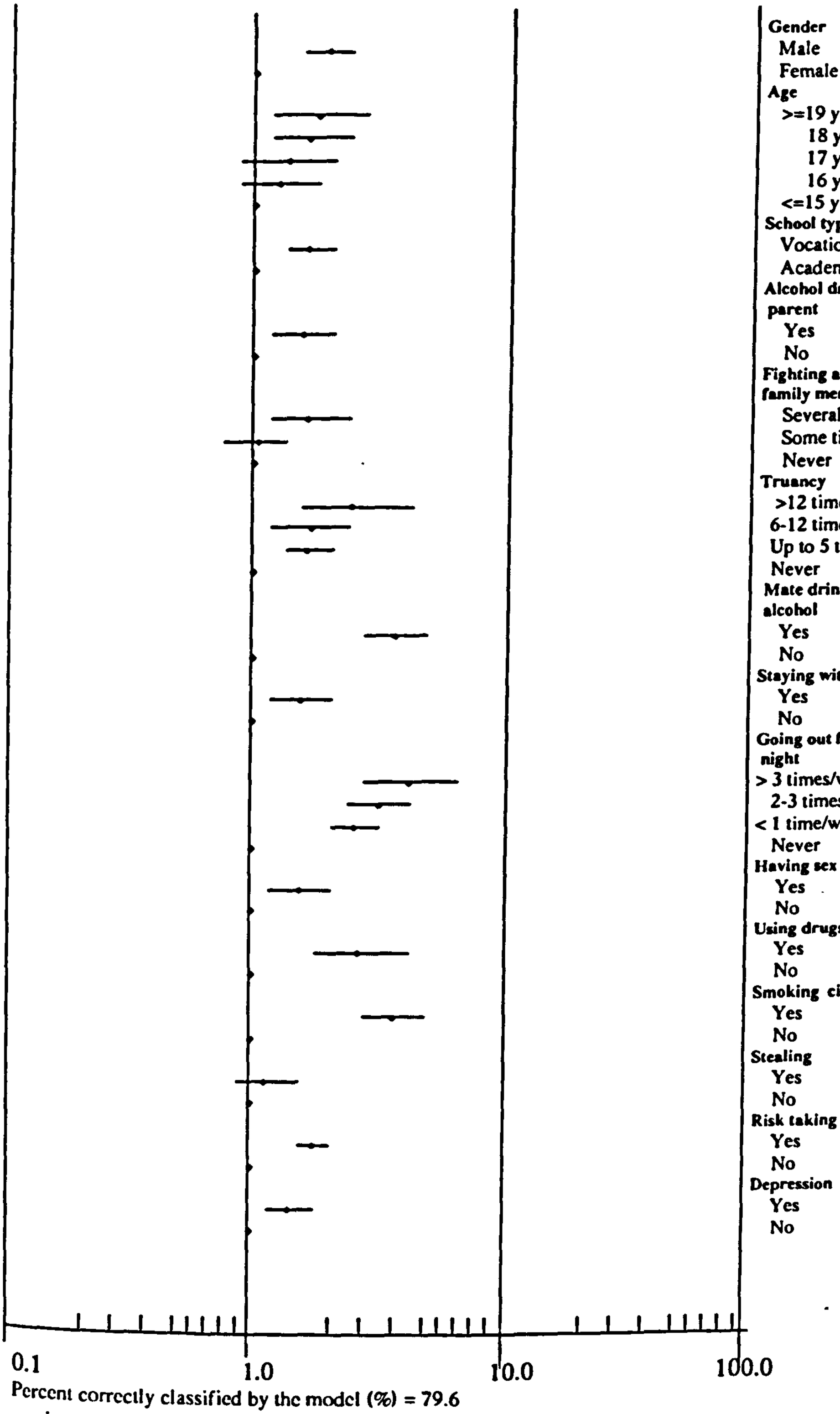
Figure 5.12: Adjusted odds ratios with 95% confidence interval for behavioural / psychological factors associated with alcohol drinking (behavioural/psychological model).



5.4.7 Overall model for predicting alcohol use

The effects of all risk variables (personal risk behaviours, psychological characteristics, family problems, and school activities) and socio-demographic variables were all included as independent variables for the likelihood of alcohol use using logistic regression analysis. Multivariate logistic regression analysis of overall model revealed fifteen key predictors for alcohol use remaining in the final regression equation (Figure 5.13). Comparing between the overall model and other separate models (e.g. Socio-demographic model, family model, school model, etc), some key predictors in separate models disappeared in overall model. Predictors in overall model have high validity in making predictions for alcohol use because they have less confounding effects associated with them. However, their usefulness depends on how much and the quality of the information that is available. The predictor variables that remain in the final logistic regression model could serve as an indicative source of information for identifying students at high-risk of alcohol use. Using these models intensive preventive and cessation programs can be developed and aimed at high-risk group among Khon Kaen secondary school students.

Figure 5.13: Adjusted odds ratios with 95% confidence interval for all factors associated with alcohol drinking (overall model)



Percent correctly classified by the model (%) = 79.6

5.5 Discussion of epidemiology, associations, and predictive model for alcohol use

5.5.1 Prevalence of alcohol use among Khon Kaen secondary school students

It was estimated that 53.9% of Khon Kaen secondary school students have experienced using alcohol and 25.5% of Khon Kaen secondary school students continued to use alcohol while 28.4% had given up use. In a province the size of Khon Kaen, with a population of secondary school of 63,407 15-19 year olds, about 16,169 Khon Kaen secondary school students would be current alcohol users according to the calculated prevalence. The progressive tendency toward alcohol use among Khon Kaen secondary school students was identified with a significant increase in the proportion of current alcohol users with year (20.2%, 24.3%, and 32.2% in 10th, 11th, and 12th school year, respectively) (see Figure 5.1). These results indicate that there were more new alcohol users than the number of users who gave up using alcohol in each school year. These findings suggest that any project concerning alcohol use among Khon Kaen secondary school students should consider both prevention of incoming alcohol users and persuading the current users to give up alcohol use.

When compared with other international studies of alcohol use among adolescent age between 15 to 20 during 1995 to 1998, the prevalence of alcohol use among Khon Kaen secondary school students was lower than Lugo (Spain), Munich (German), and Japan in 1996 (see Table 5.23). However, it was still higher than Newcastle Upon Tyne, UK and Kenya in 1995 and 1996, respectively. In addition, the level of current alcohol use among Khon Kaen secondary school students was much higher than cigarette and illegal drug use in the same population (see Result Sections 6.1 and 7.1).

5.5.2 Association between alcohol use and other factors

The associations between alcohol use and socio-demographic variables were useful for identifying students at risk of alcohol use (see Table 5.2 and Figure 5.2). For example, the prevalence of alcohol use was higher among male students, older students, vocational school students, and students whose fathers had higher income occupation (having own business) or had no job. Bivariate analysis revealed that fathers' occupation was significantly associated with alcohol use among Khon Kaen secondary school students (Table 5.2). In addition, the relationship between fathers' education and alcohol use approached significant ($p=0.057$). However, when logistic regression was used to control

for potential confounding factors, fathers' occupation was still significantly associated with alcohol use.

Table 5.23: Summary of epidemiological studies of alcohol use among adolescent age between 15 to 20 during 1995 to 1998.

Country	Year	Author	Level/Age	Sample	Percentage of students who ever used alcohol	Percentage of students who currently use alcohol
Newcastle Upon Tyne, UK	1995	Gilvarry, et al. (30)	secondary school	3,623	75 %	20 %
Kenya	1996	Kuria. (26)	secondary school students 12-19 years	952	---	15 % and 14 % in urban and rural schools used alcohol
Lugo, Spain	1996	Martinez et al. (81)	secondary school students, 15-18 years	805	---	34.6 %
Munich, German	1996	Sherer. et al. (93)	secondary school students, 11-17 years	423	---	35.7 %
Beijing, China	1996	Li et al (71)	secondary school, 6th, 8th, 10th grade (12-16 years)	1,040	70.0 %	---
Japan	1996	Matsushita et al (86)	high school, 15-18 year olds	14,438		50.0 %
Jamaica	1997	Soyibo and Lee (94)	high school, 16, 17 year olds	2,417	50.2 %	
Khon Kaen, Thailand	1998	Daosodsai	secondary school, 15-19 year olds	4,217	53.9 %	25.5 %

Fathers' income level (indicated by fathers' occupation) showed more strength as a predictor of alcohol use than fathers' qualification (indicated by fathers' education) (Figure 5.2).

Similarly, Kokkevi and Stefanis (1991) reported that alcohol use by Greek adolescent students 14-18 years was associated with gender (rate of frequent alcohol use was twice as high in males as in females, age (the older students were more likely to use alcohol than the younger), and type of school (higher rates of alcohol use were reported in technical-vocational school in comparison to public school), but not associated with educational

level of students' father (95). A large number of studies also found alcohol use to be associated with gender (31, 44, 63, 84, 96-103) and age (44, 63, 97, 98).

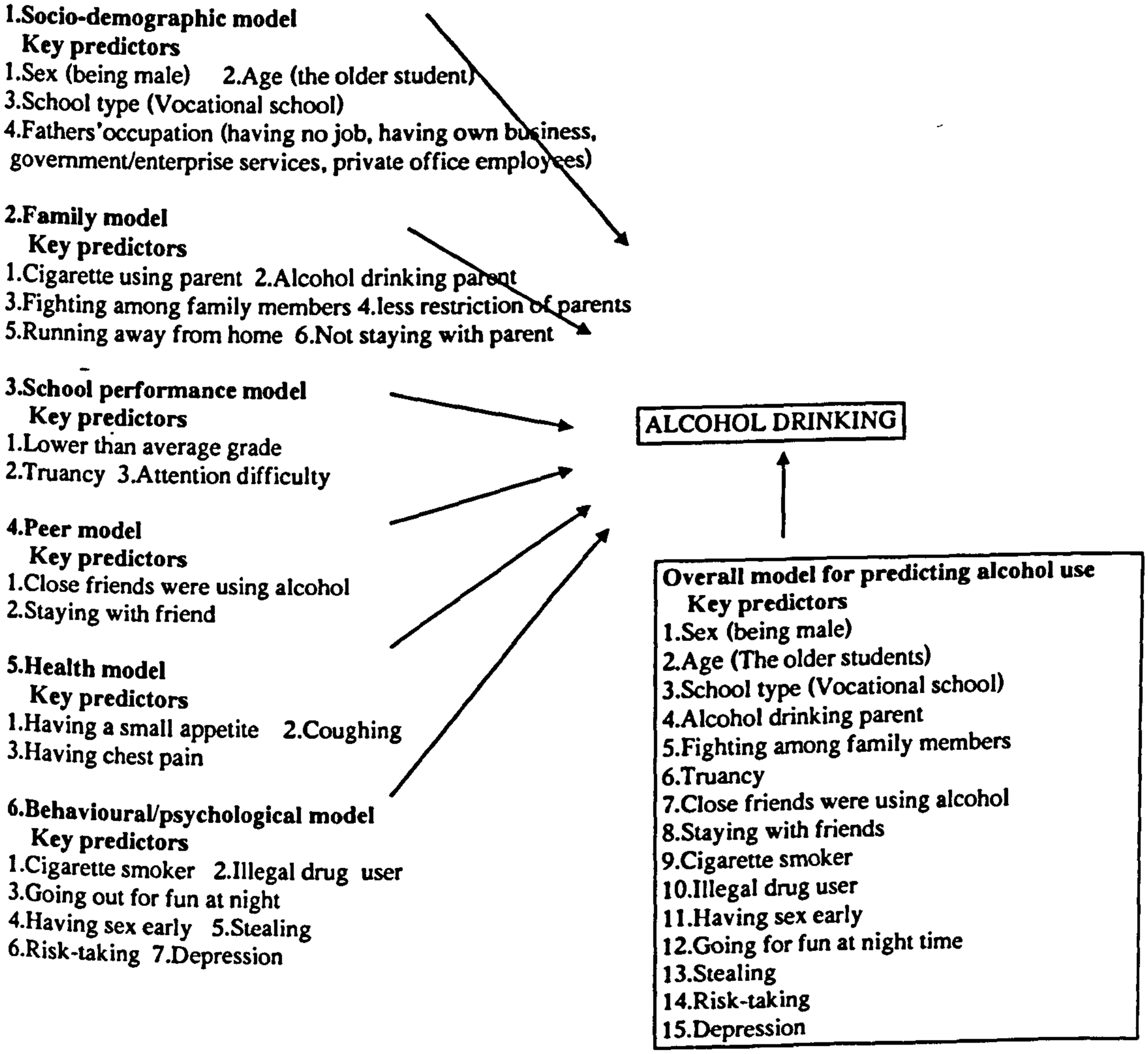
In this study, finding associations between alcohol use and other factors (such as family problems, peer environment, school problems, students' risk behaviours, and psychological condition of students) have several implications for the development of alcohol use prevention programs targeted at Khon Kaen secondary school students. Importantly, parental behaviour is one of the biggest single influence on the long-term behaviour of children (104), thus parents can help to prevent their children from using alcohol by providing a good role model at home and by not overtly using or encouraging use of substances such as alcohol. The results of this study supported that prevalence alcohol drinking was higher in students who had alcohol-drinking parents (Table 5.16). In addition, the results also showed that students who were not staying with their parents were more likely to use alcohol (Table 5.16). This suggests that parents should consider carefully time spent apart from their children in these age groups. Students who were frequently going out for fun at night were more likely to drink alcohol (Table 5.9). This result again suggests a parental role in particular in examining the habits of students who frequently go out. Furthermore, entertainment places in the night time such as discos, bars, pubs etc, should be more restrictive (with the police) in controlling age of entry and following the law (not allowing young people aged under 18 years). Teachers should provide counselling for students who are truant and help them to avoid alcohol use (Table 5.21).

5.5.3 Key predictors of alcohol use

One major aim of this study was to establish predictive models to aid in identifying high-risk groups of students who had a high probability of using alcohol (summarized in Figure 5.14). Factors potentially associated with alcohol use were tested by logistic regression analysis. In populations where alcohol drinking by secondary school students cannot be detected directly, these models are the first useful predictors for possible alcohol use in Khon Kaen students. Perhaps more importantly however targeted prevention work has been shown to be more effective than a general approach across the whole population. These models help identify students at risk of alcohol using at an early stage of using or before using alcohol and from there prevention programs can put in place for each high risk group. Such interventions may be through parents or through teachers who are in

important positions to address alcohol misuse among school students and as groups may find different groups of predictors more useful. In either case the models provide a more formalised index of suspicion. Finally, the range of factors relating to alcohol use mean that approaches to alcohol work must be widely based both across age groups and locations and should include community-based action with an orientation towards the students at risk, the families, the youths' peers, the schools and national health policies that control availability and accessibility to alcohol by students or young people. To inform such approaches information was also needed on the social aspects of alcohol use: the subject of the following sections.

Figure 5.14: Key predictors of alcohol use of Khon Kaen secondary school students



CHAPTER 5: ALCOHOL - PART 2
SOCIAL ASPECTS OF ALCOHOL USE

5.6 Age of first using alcohol

A retrospective survey was used to determine the age at which Khon Kaen secondary school students began alcohol use and to understand the reasons why they used alcohol. The questions were used as part of the ASTS questionnaire (see Appendix 1). The students were asked questions regarding the age at which they began drinking alcohol and their reasons for first and further drinking. The questions "How old were you when you first drank alcohol?", "What were your main reasons for drinking the first time?" and "What were your main reasons for drinking the further times?" were used to assess the age of first use of alcohol, the reasons for first time drinking, and the reasons for drinking the further times, respectively. T-test and Chi-square statistic were used to compare the age of initiation of alcohol use and reasons for first drinking in male and female students.

Table 5.24: Distribution of age of first use of alcohol by Khon Kaen secondary school students.

Age of first use alcohol	Frequency	Percent	Cumulative Percent
7 years	2	0.1	0.1
8 years	8	0.4	0.5
9 years	6	0.3	0.7
10 years	31	1.4	2.2
11 years	26	1.2	3.4
12 years	108	5.0	8.4
13 years	161	7.5	15.8
14 years	322	14.9	30.8
15 years	732	33.9	64.7
16 years	439	20.3	85.0
17 years	239	11.1	96.1
18 years	77	3.6	99.7
19 years	7	0.3	100.0
Total	2158	100.0	

* One hundred and sixteen individuals (2.8%) did not provide this information

Khon Kaen secondary school students (10th-12th school year) who have ever used alcohol started to use at ages from 7 to 19 years (see Table 5.24). The mean age of first use was 14.9 years (SD=1.68). Age of first use of alcohol for Khon Kaen secondary school students was divided into two age groups; before 15 years and 15-19 years. Most (69.2 %) students who have ever used alcohol started to use alcohol at

ages 15-19 years (Table 5.25). This indicates that alcohol use mostly started at secondary school (i.e. 10th-12th school year; see Table 5.25). Male students started using alcohol before age 15 years more frequently than female students (34.7 % of male students started to use alcohol before age 15 years, compared with 24.4 % of female students, $x^2 = 25.44$, $p<0.001$) (see Table 5.25). The mean age of first alcohol use of male students was significantly lower (14.8 years (SD=1.7) for male student, 15.2 years (SD=1.6) for females, $t=5.74$, $p<0.001$).

Table 5.25: Frequency and percentage of Khon Kaen secondary school students who started using alcohol before 15 years and between 15-19 years by gender.

Age of first use alcohol	**Frequency (%)**		
	Male	**Female**	**Overall**
Before 15 years (before 10th school year)	463 (34.7)	201 (24.4)	664 (30.8)
15-19 years (10th-12th school year)	871 (65.3)	623 (75.6)	1494 (69.2)
Total	1334 (100.0)	824 (100.0)	2,158 (100.0)

Among secondary school students who started using alcohol at 15-19 years, most of them started at age 15-16 years (Figure 5.15). This was true of both males and females.

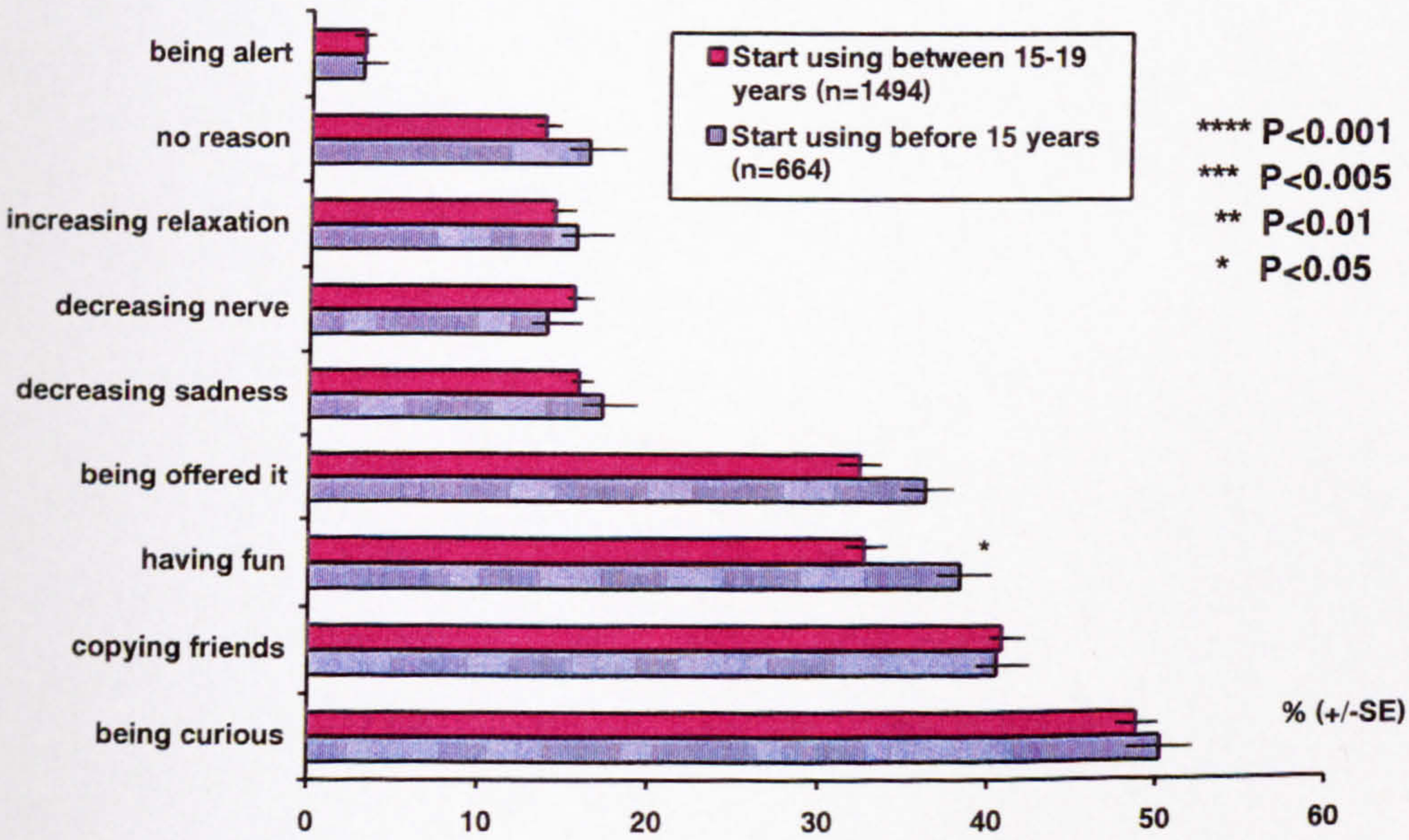
Figure 5.15: Proportion of secondary school students who started using alcohol between 15-19 years of age.

5.7 Reasons for first time drinking alcohol

Respondents were asked to identify any of several reasons that they considered to apply to themselves about reasons for first drinking alcohol. In this section, chi-square statistic are used to compare the proportion of students reporting their reasons for

using alcohol the first time between different genders and different ages of first use. The main reasons that contributed to the initiation of alcohol use were "being curious" (48.2%), "copying friends" (39.5%), "having fun" (33.3%), and "being offered alcohol" (32.4%). Almost 1 in 5 started drinking alcohol to "decrease sadness" (15.8%), "increase relaxation" (14.3%), and "decrease nerves" (14.7%). Some students (14.8%) indicated no reasons for the first time. Only 3.2 % reported "to be alert" as their reason. There were no significant differences in the reasons for first use of alcohol between the proportion of students who started to use alcohol before 15 year old and those who started between 15-19 year olds ($p > 0.05$), except for "having fun" which students who started to used alcohol before 15 year olds were more likely to report (Figure 5.16).

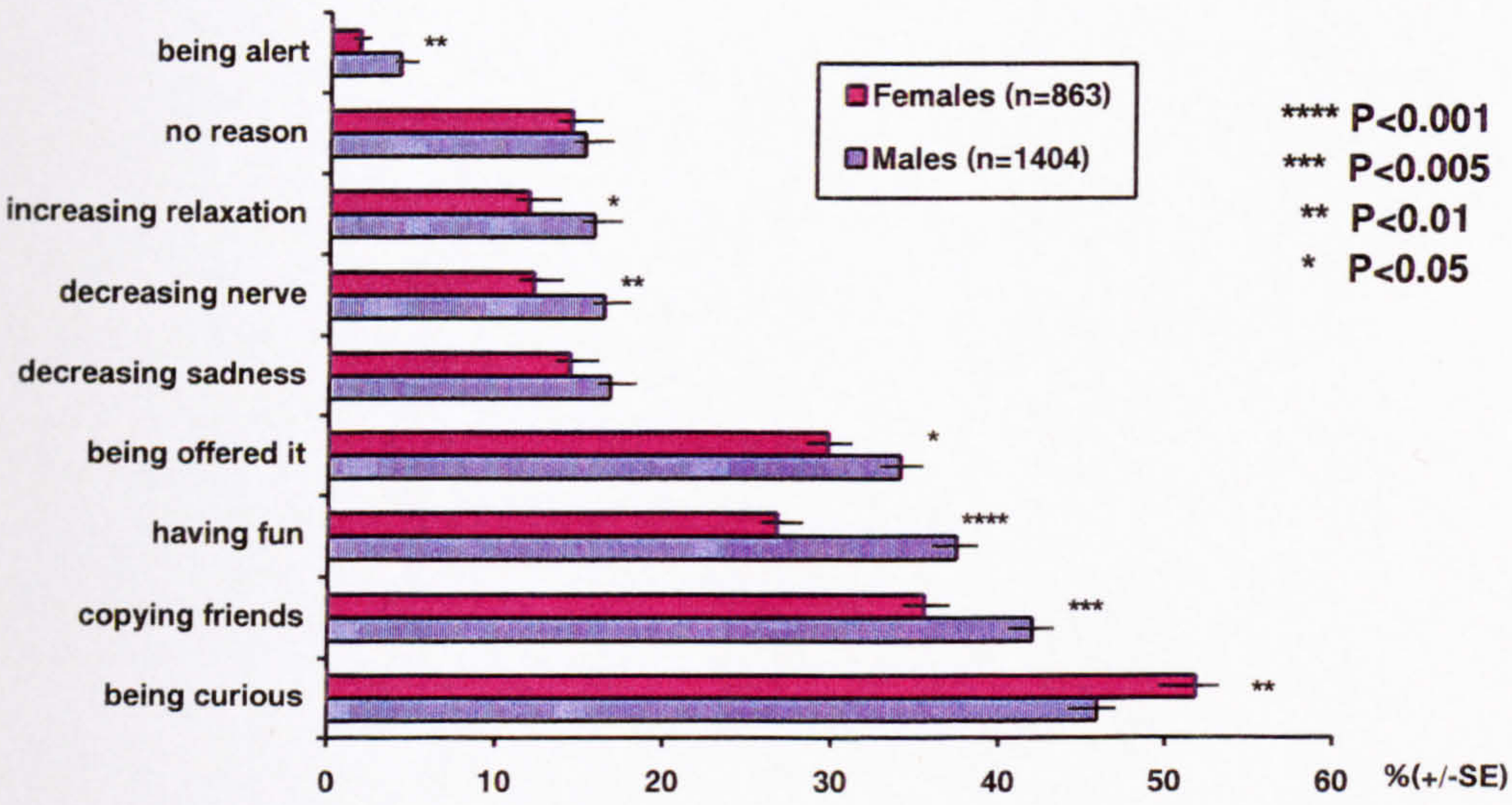
Figure 5.16: Percentage of students by the reasons for the first time drinking, compared between students who started to use alcohol before 15 year olds and between 15-19 year olds.



"Being curious to try alcohol" was the most common reason for both male and female students to first using alcohol (cited by 45.9% of male and 51.8% of females) (see Figure 5.17). Female students were more likely to use alcohol the first time for the reason of "being curious to try alcohol" than male students. However, male students seem more susceptible to peer group than female students: 42.0 % of male and 35.5 % of female mentioned "copying friends"; 34.0 % of male and 29.7 % of female mentioned "being offered alcohol". Moreover, the reasons "having fun", "decreasing

nerves", "increasing relaxation", and "being alert" for the first time alcohol use; were all more likely to be reported by males than females (see Figure 5.17). There were no significant differences in reports of "decreasing sadness" and "no reason" ($p > 0.05$).

Figure 5.17: Percentage of students by reasons for first drinking, compared between male and female students.



5.8 Reasons for drinking alcohol further times

The most common reason for drinking alcohol further times (continuing to drink) was "having fun"(50.3%) which differed from first drinking where "being curious to try alcohol"(48.2%) was most often selected. A comparison between reasons for drinking the first time and the further times using bivariate analysis (Chi-square test) showed significantly higher rates of students who reported the reasons of "being curious to try alcohol", "copying friends", and "being offered alcohol" in first time use (see Figure 5.18). Conversely, the rates of students drinking alcohol because of "having fun", "increasing relaxation", "decreasing sadness", "decreasing nerves", "being alert", and "no reason" were higher on later drinking occasions.

Using bivariate analysis to compare the reasons for using alcohol between current alcohol users who were occasional users and monthly users (infrequent users) and those who were weekly users to daily users (frequent users), significantly higher rate of users who reported the reason "having fun", "increasing relaxation", and

"decreasing sadness", and "decreasing nerves" were found among weekly to daily users (Figure 5.19).

Figure 5.18: Percentage of students by the reasons for drinking first time and further times.

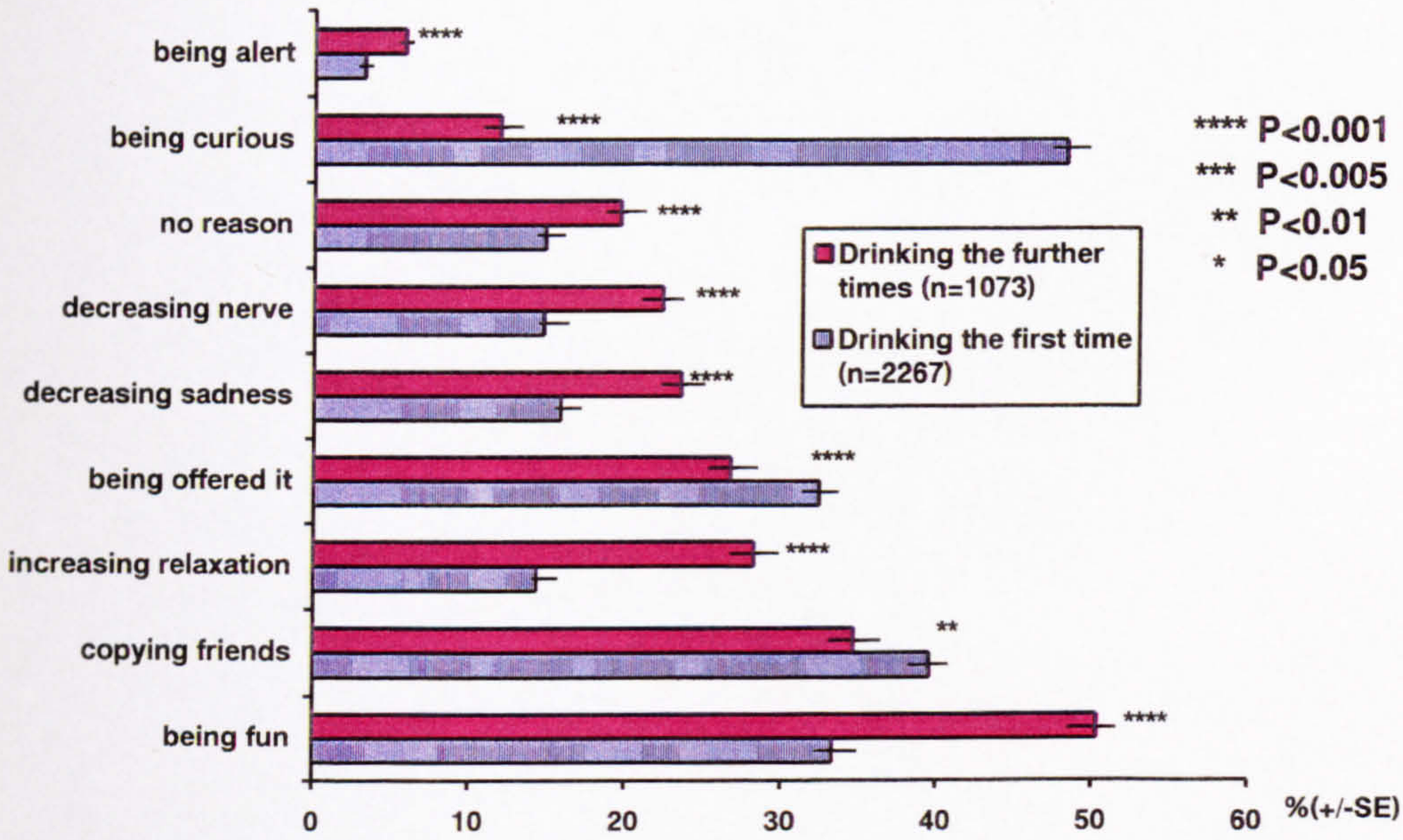
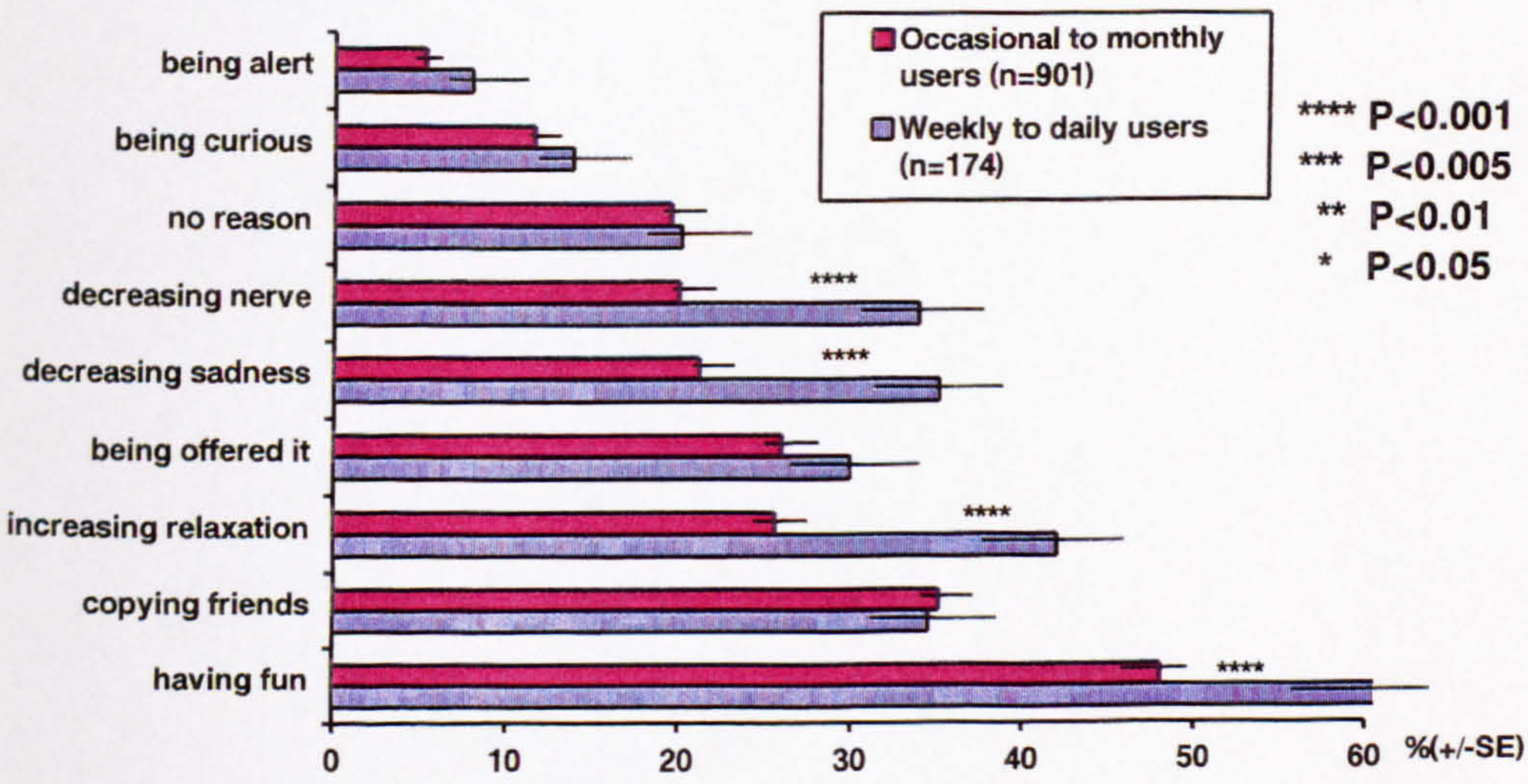
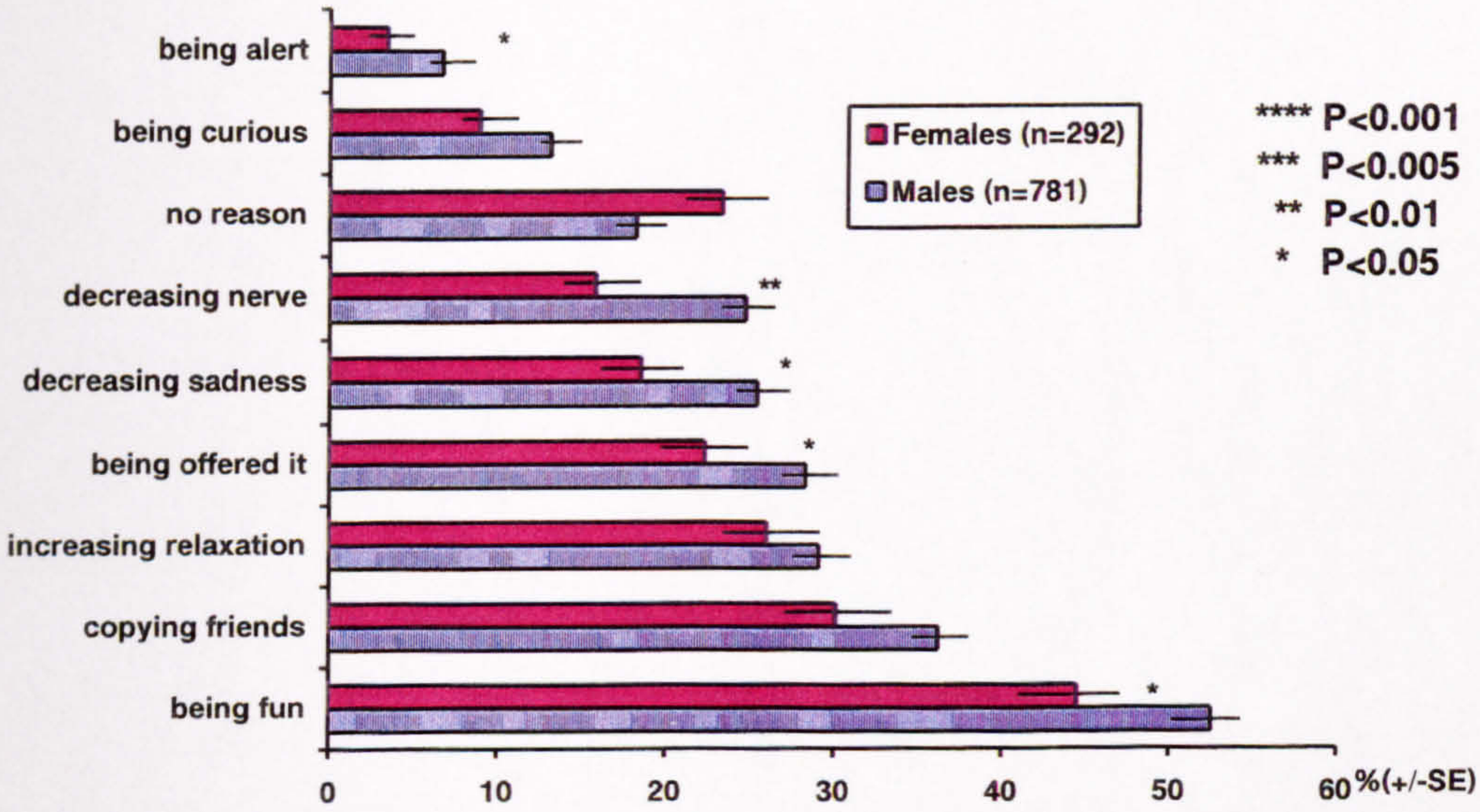


Figure 5.19: Percentage of students by reasons for drinking alcohol further times, compared between occasional to monthly users (infrequent users) and weekly to daily users (frequent users).



However, there were no significantly differences in the other reasons ($p > 0.05$). Bivariate analysis revealed that males were more likely than females to report "having fun", "being offered alcohol", "decreasing sadness", "decreasing nerves", and "being alert" for drinking the further times but there were no significant difference ($p > 0.05$) in "being curious", "copying friends" and "increasing relaxation" (Figure 5.20).

Figure 5.20: Percentage of students by reasons for drinking alcohol further times, compared between male and female students.



Curiosity and peer influences (copying friends and being offered it) were the main reasons for starting alcohol use (Figure 5.18) while, recreational purposes such as having fun, increasing relaxation, decreasing sadness, and decreasing nerves were the main reasons of alcohol users for continuing to use alcohol and changing from infrequent users to frequent users (Figure 5.18 and 5.19). The result showed that males were more likely to use alcohol for recreational purposes than females (Figure 5.20). This may be one of the reasons that the prevalence of alcohol among males was significantly higher than females (Table 5.2).

5.9 Effects of alcohol use

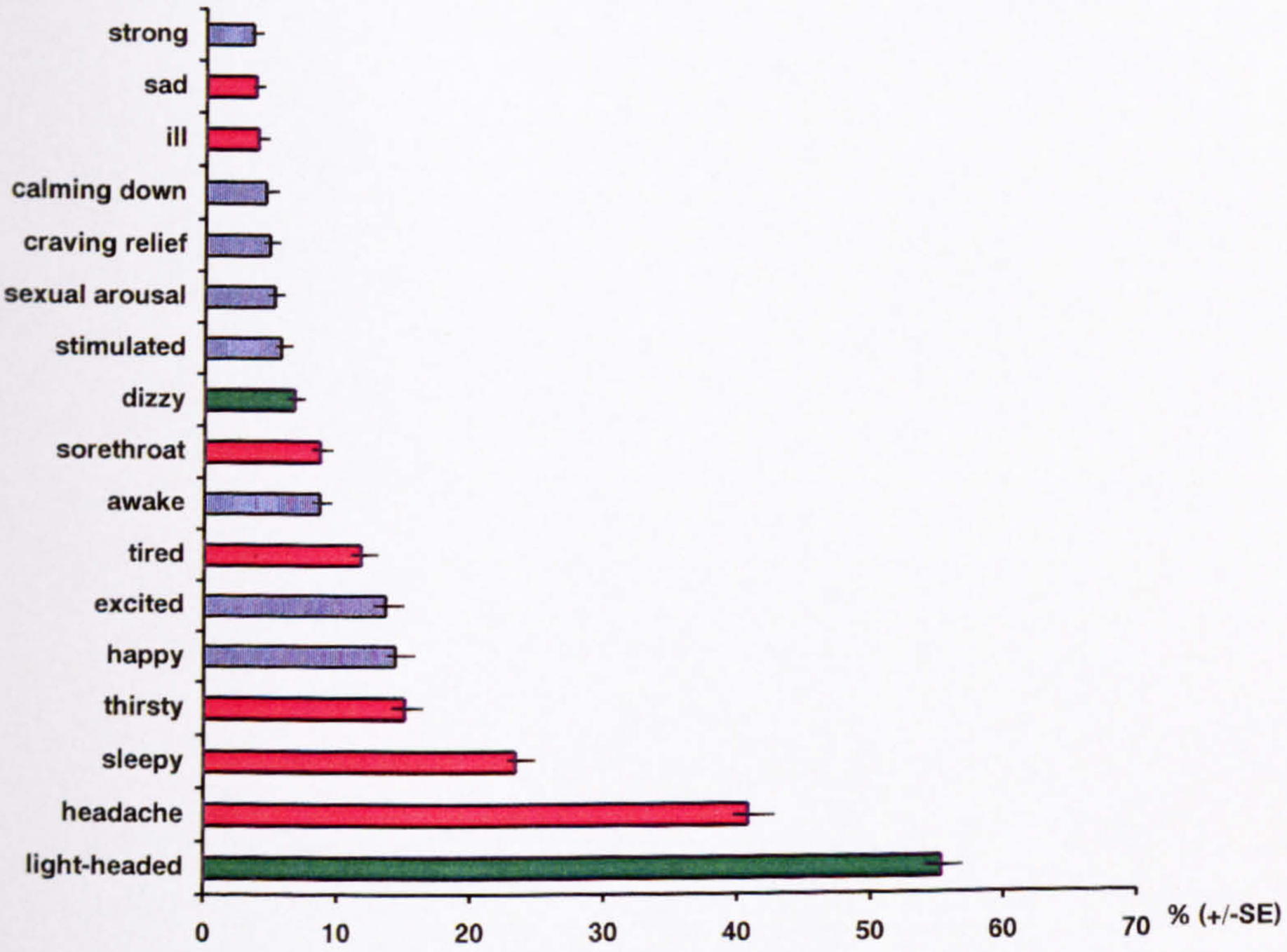
Alcohol is classified as a central nervous system depressant, with its apparently stimulatory early effects on speech and behaviour being attributed to an alcohol-induced depression or disruption of the mechanisms that normally regulate these activities. Low doses of alcohol may lead to stimulation of behaviour that is suppressed by anxiety or punishment (105). Effects of alcohol consumption that occur at different blood-alcohol levels are shown in Box 5.2 (106). In addition, blood alcohol levels vary according to sex, size and body build, previous exposure to alcohol, type of drink, whether it is taken with food, and whether drugs that affect gastric emptying are used (107). In order to know the effects of alcohol after drinking among Khon Kaen secondary school students, students were asked a question "How did alcohol make you feel after drinking?" (see Appendix 1). Students who have ever used alcohol reported both positive effects and negative effects after using alcohol (Figure 5.21). In this study, the effects that were reported more than 10% of individuals are considered predominant effects. These include light-headedness, headache, sleepiness, thirst, happiness, excitement and tiredness.

Box 5.2: Alcohol effects in the non-tolerant individual by different blood-alcohol level (106)

Blood-Alcohol level (g/100ml)	Effects
0.02	-Warmth and Relaxation
0.04	-Most people feel relaxed, talkative, and happy (skin may become flushed)
0.05	-First sizeable changes begin to occur; lightheartedness, giddiness, lowered inhibitions, and less control of thoughts may be experienced; both restraint and judgement are lowered; co-ordination may be slightly altered.
0.06	-Judgement is somewhat impaired; ability to make rational decisions about personal capabilities is affected
0.08	-Definite impairment of muscle co-ordination and slower reaction time occurs; driving ability becomes suspect; sensory feelings of numbness of the cheeks and lips occur; hands, arms, and legs may tingle and then feel numb.
0.10	-Clumsiness, speech may become fuzzy; clear deterioration of reaction time and muscle control
0.15	-Definite impairment of balance and movement
0.20	-Motor and emotional control centres are measurably affected; slurred speech, staggering, loss of balance, and double vision can all be present
0.30	-Lack of understanding of what is seen or heard occurs; individuals are confused or stuporous and may lose consciousness
0.40	-Usually unconscious; the skin becomes clammy
0.45	-Respiration slows and may stop altogether
0.50	-Death occurs

The effects of alcohol use on male and female students were compared using bivariate analysis. Among students who were current alcohol users, males were more likely to report effects of "being happy", "being sexually aroused", "being stimulated", "being strong", and "craving relief", whereas females were more likely to report effects of "having a headache", and "having a sore throat" (see Figure 5.22). There were no significant differences between males and females in other effects of alcohol use ($p>0.05$).

Figure 5.21: Percentages of students who have ever used alcohol reported effects of drinking alcohol (n=2268).

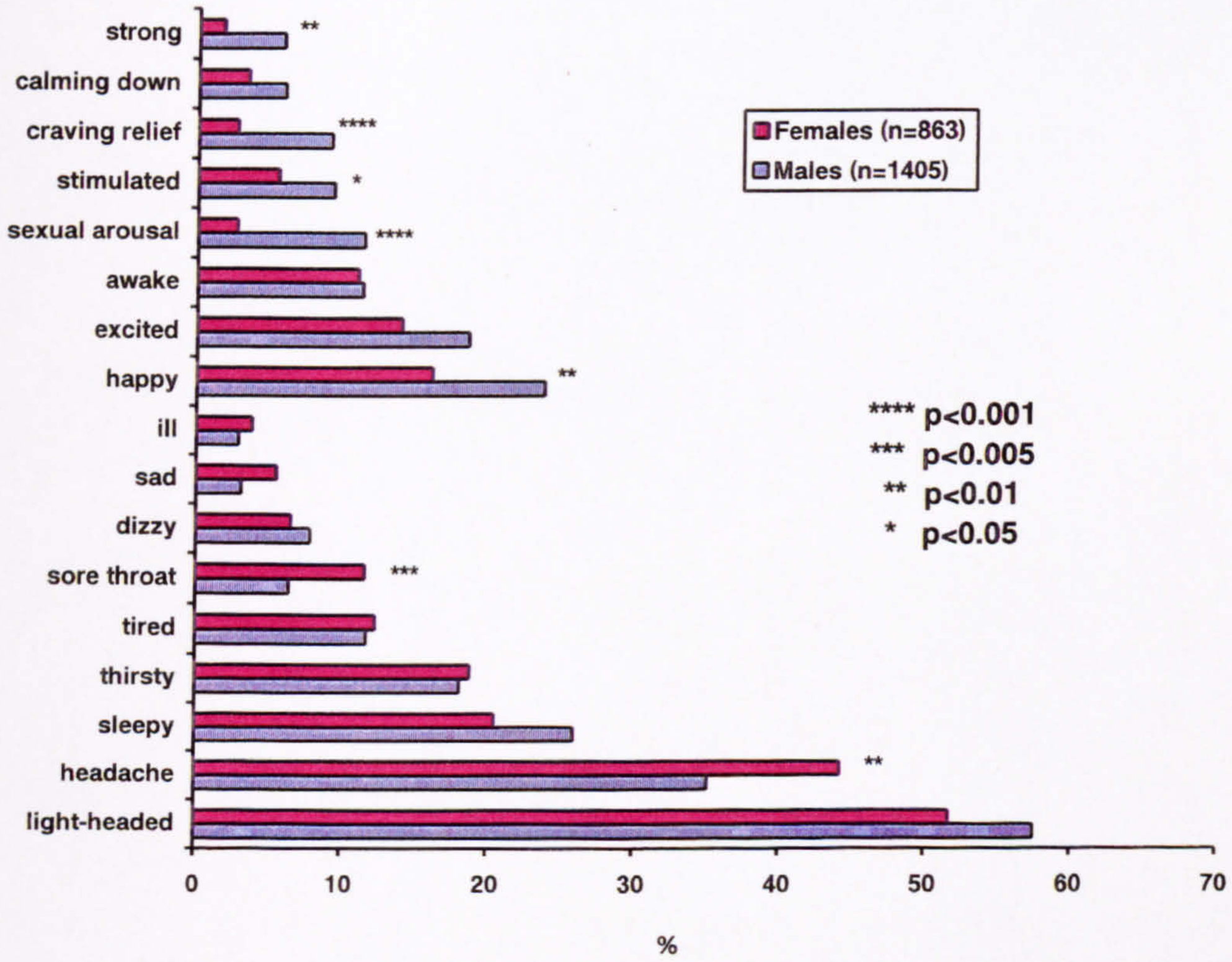


Note : Red bars indicate negative effects, blue bars indicate positive effects, and green bars indicate neutral effects which may be positive effects for some individuals and negative effects for other individuals.

These different effects of alcohol use between males and females may be the results of individual variability (107, 108). Females have a different body weight and body composition with females having a smaller body weight, a smaller proportion of water and a higher proportion of fat than males. This individual variability may effect the

processes such as where alcohol is deposited in the body, reaches its site of action and is eliminated. Consequently, some differences in effects of alcohol use between males and females may be explained by sex and individual variability.

Figure 5.22: Percentage of current male alcohol drinkers who reported effects of drinking alcohol compared with current female alcohol drinkers.

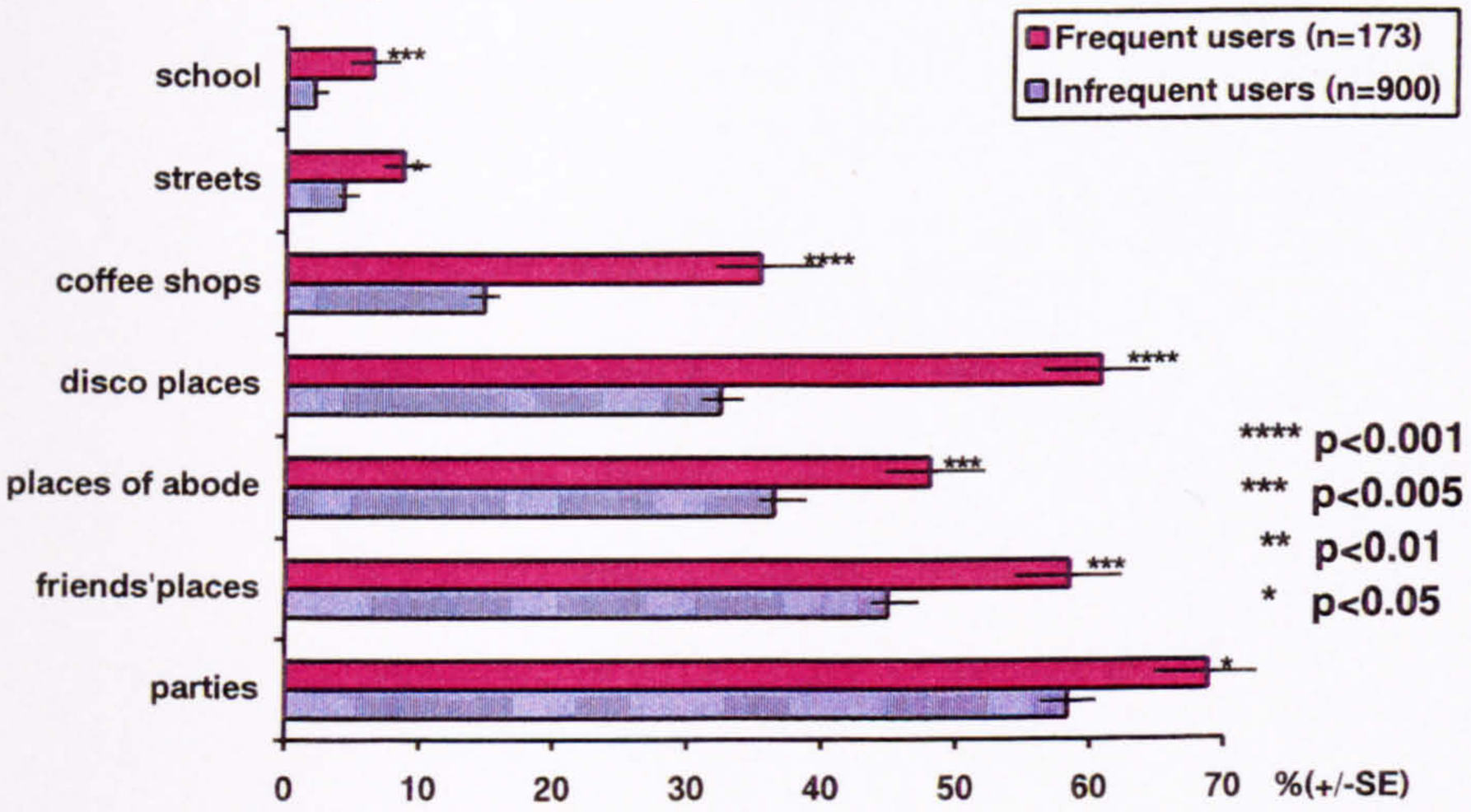


5.10 Places of using alcohol

To examine places of using alcohol by Khon Kaen secondary school students, students who had used alcohol were asked where they usually did so. Over half (51.6%) of them drank alcohol at parties, over one in three (38.0%) drank alcohol at friends' places, nearly one in three (32.4%) drank alcohol at their places of abode, over a quarter (26.6%) drank at disco places, and 11.9% drank at coffee shops. Only small number of them drank alcohol on the streets (3.3%) and at schools (2.7%) and the percentage of alcohol users drinking at parties was much greater than that at any other places. In this section, chi-square statistic was used to examine the proportion of students reporting places where they usually drank alcohol according to frequency of alcohol use, sex and academic and vocational schools.

There was a significantly higher proportion of drinking at parties, friends' places, students' accommodations, disco places, coffee shops, streets, and schools within frequent alcohol users (weekly to daily users) (Figure 5.23).

Figure 5.23: Percentages of current alcohol users by places where they usually drank alcohol, compared between infrequent users and frequent users.



For both male and female students, the most commonly reported places of using alcohol were at parties, friends' places, places of abode and disco places. However, males were also more likely to drink at friends' places, disco places, coffee shops, and on the streets (Figure 5.24). For both academic and vocational school students, the most commonly reported places of use were at parties, friends' places, places of abode, and disco places (Figure 5.25). However, vocational school students were more likely than academic school students to drink alcohol at friends' places, disco places, and coffee shops.

Figure 5.24: Percentages of current alcohol users by places where they usually drank alcohol, compared between males and females.

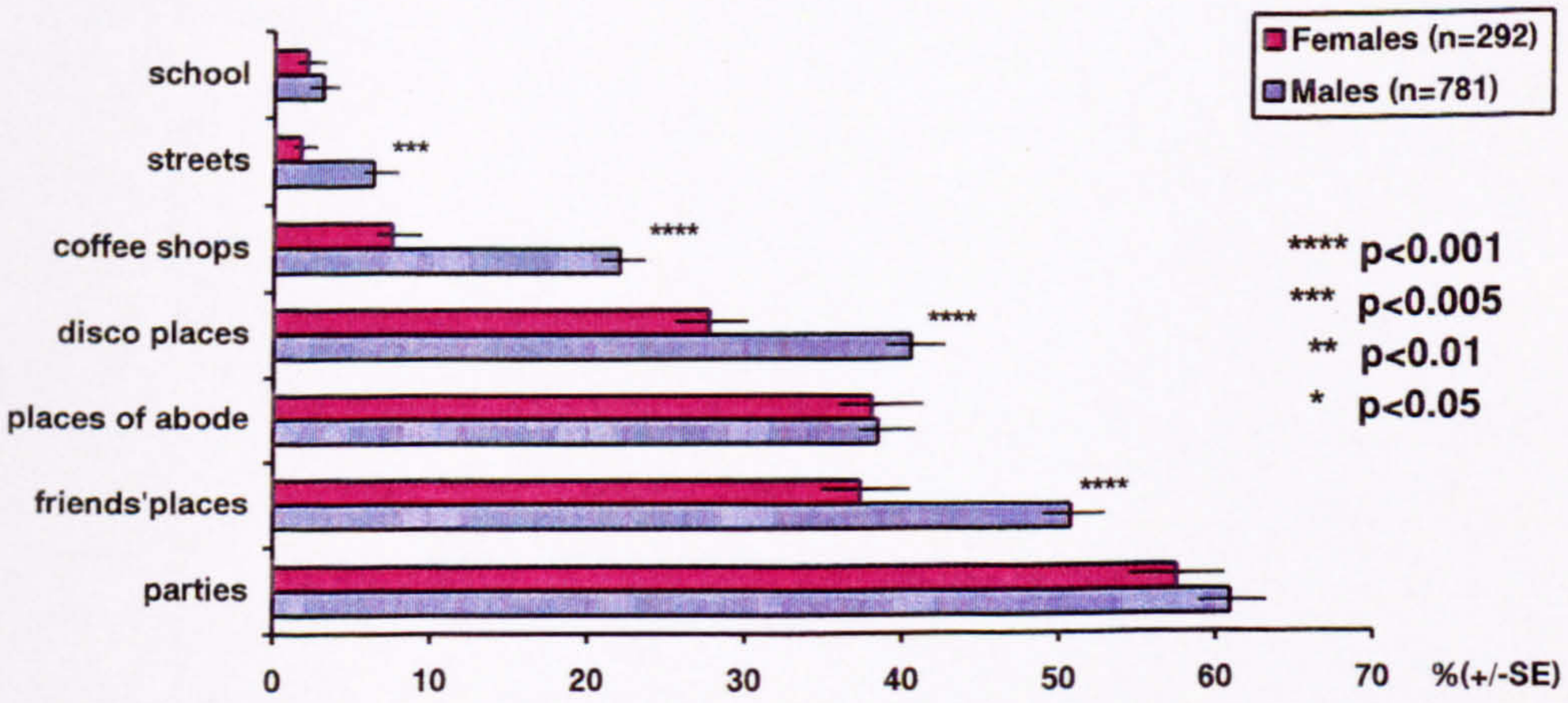
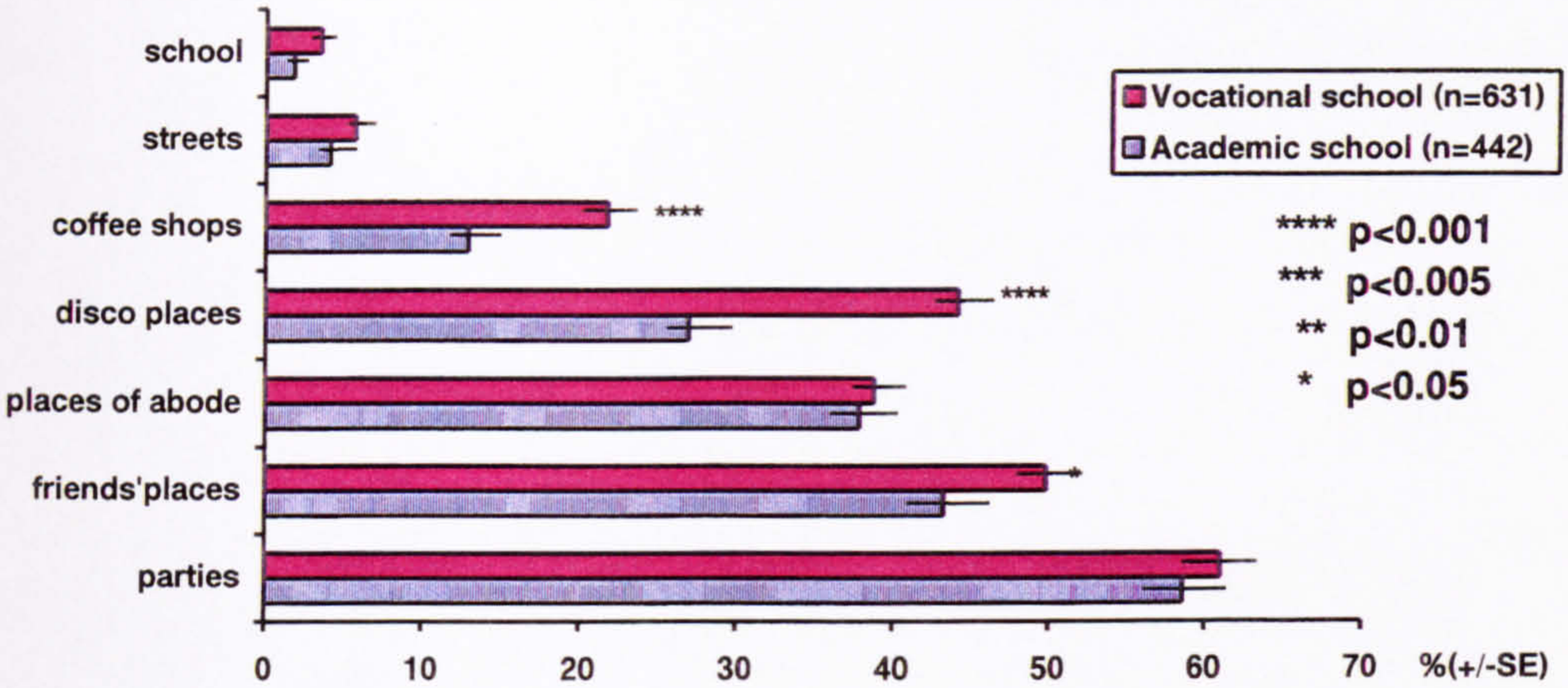


Figure 5.25: Percentages of current alcohol users by places where they usually drank alcohol, compared between academic and vocational school students.



5.11 Attitude towards alcohol use

The attitudes toward alcohol use of Khon Kaen secondary school students were explored by means of attitudinal questions probing general opinions rather than personal experiences.

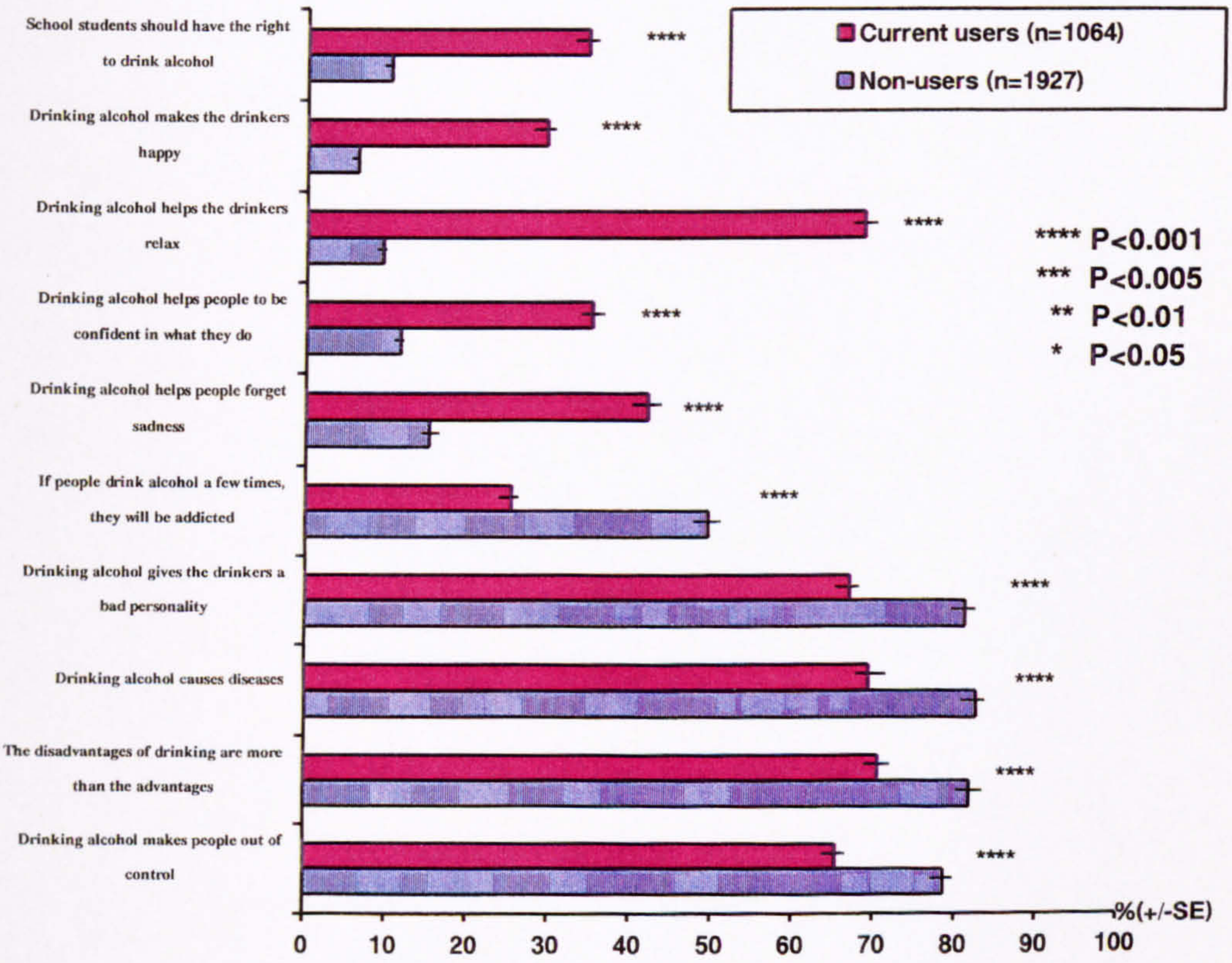
5.11.1 Opinion on alcohol use

Students were asked if they agreed or disagreed with a series of statements about attitudes towards alcohol use. Bivariate analysis was used to compare the proportions of students who agreed with statements about attitude towards alcohol use between current alcohol users and non-users, between male and female students, and between academic and vocational school students.

More than two third of current alcohol users agreed that using alcohol makes users relax (68.5% users, 9.4% non-users). Over four in five of non-alcohol users agreed that drinking alcohol causes diseases (69.3% users, 82.5% non-users), the disadvantages of alcohol use are more than the advantages (70.5% users, 81.8% non-users) and drinking alcohol give the drinker a bad personality (66.9% users, 81.1% non-users). Current alcohol users were more likely than non-users to agree with the views that "drinking alcohol will help the drinkers relax", "drinking alcohol helps people forget sadness", "drinking alcohol makes the drinkers happy", "drinking alcohol helps people to be confident in what they do", and "school students should

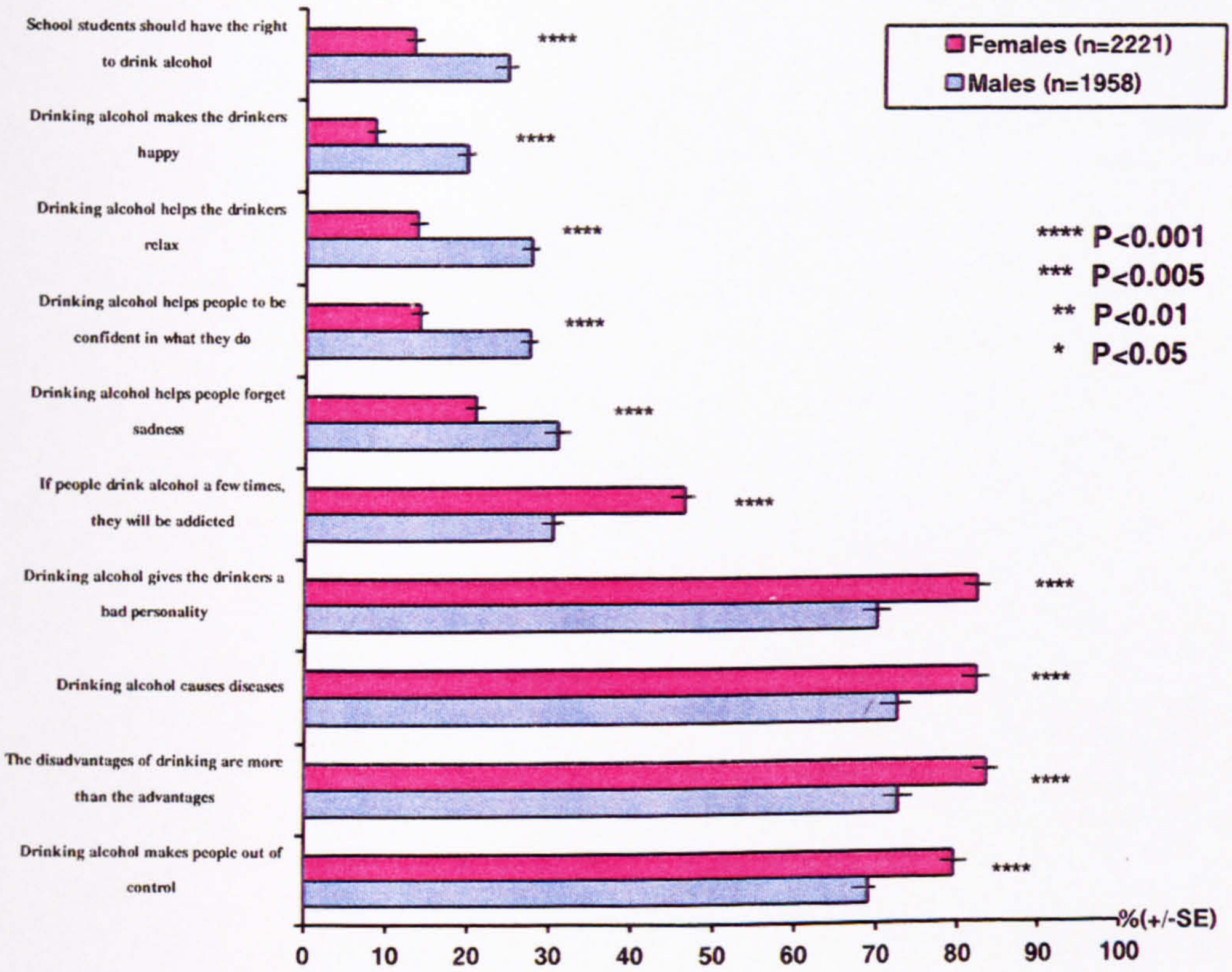
have the right to drink alcohol". Non-users were more likely than current alcohol users to agree with the views of "drinking alcohol causes diseases", "the disadvantages of drinking alcohol are more than the advantages", "drinking alcohol makes people out of control", "drinking alcohol gives the drinkers a bad personality", and "if people drink alcohol a few times, they will be addicted" (Figure 5.26).

Figure 5.26: Proportion of students who agreed with statements about alcohol use, comparing between current alcohol users and non-users.



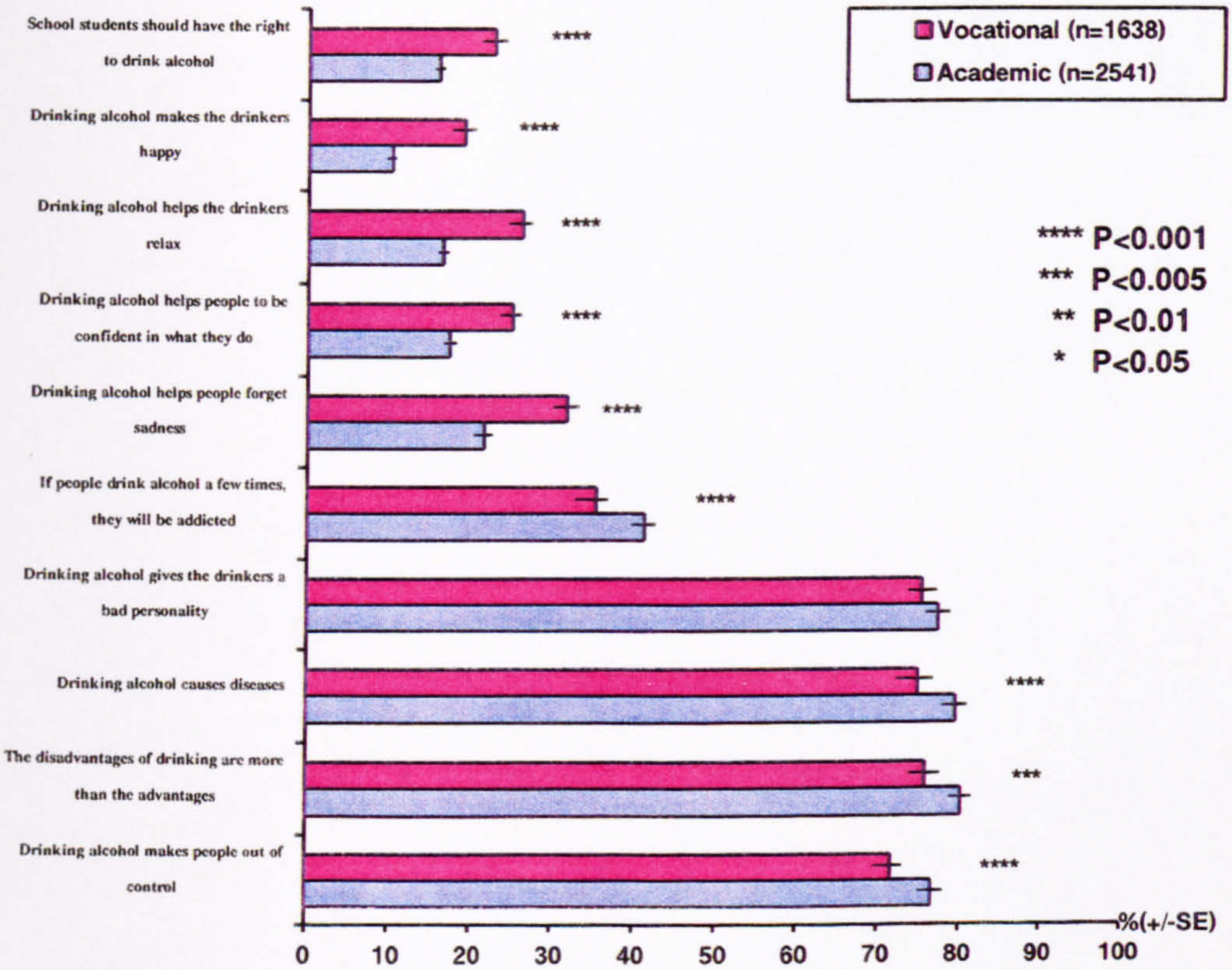
By comparison, male students were more likely than female students to agree with the views that "drinking alcohol will help the drinkers relax", "drinking alcohol helps people forget sadness", "drinking alcohol makes the drinkers happy", "drinking alcohol helps people to be confident in what they do", and "school students should have the right to drink alcohol". Female students were more likely than male students to agree with the views of "drinking alcohol causes diseases", "the disadvantages of drinking alcohol are more than the advantages", "drinking alcohol makes people out of control", "drinking alcohol gives the drinkers a bad personality", and "if people drink alcohol a few times, they will be addicted" (Figure 5.27).

Figure 5.27: Proportion of students who agreed with statements about alcohol use, comparing between male and female students.



There were also differences between the views of vocational school students and those at academic schools. Vocational students were more likely to agree with positive views of alcohol use such as "drinking alcohol will help the drinkers relax" while academic school students were more likely to agree with the views like "drinking alcohol causes diseases" (Figure 5.28). This contrasts in opinion on alcohol use between academic and vocational school students suggested that alcohol use has become more normalised among vocational school students than academic school students and is supported by earlier findings.

Figure 5.28: Proportion of students who agreed with statements about alcohol use, comparing between academic and vocational school students.

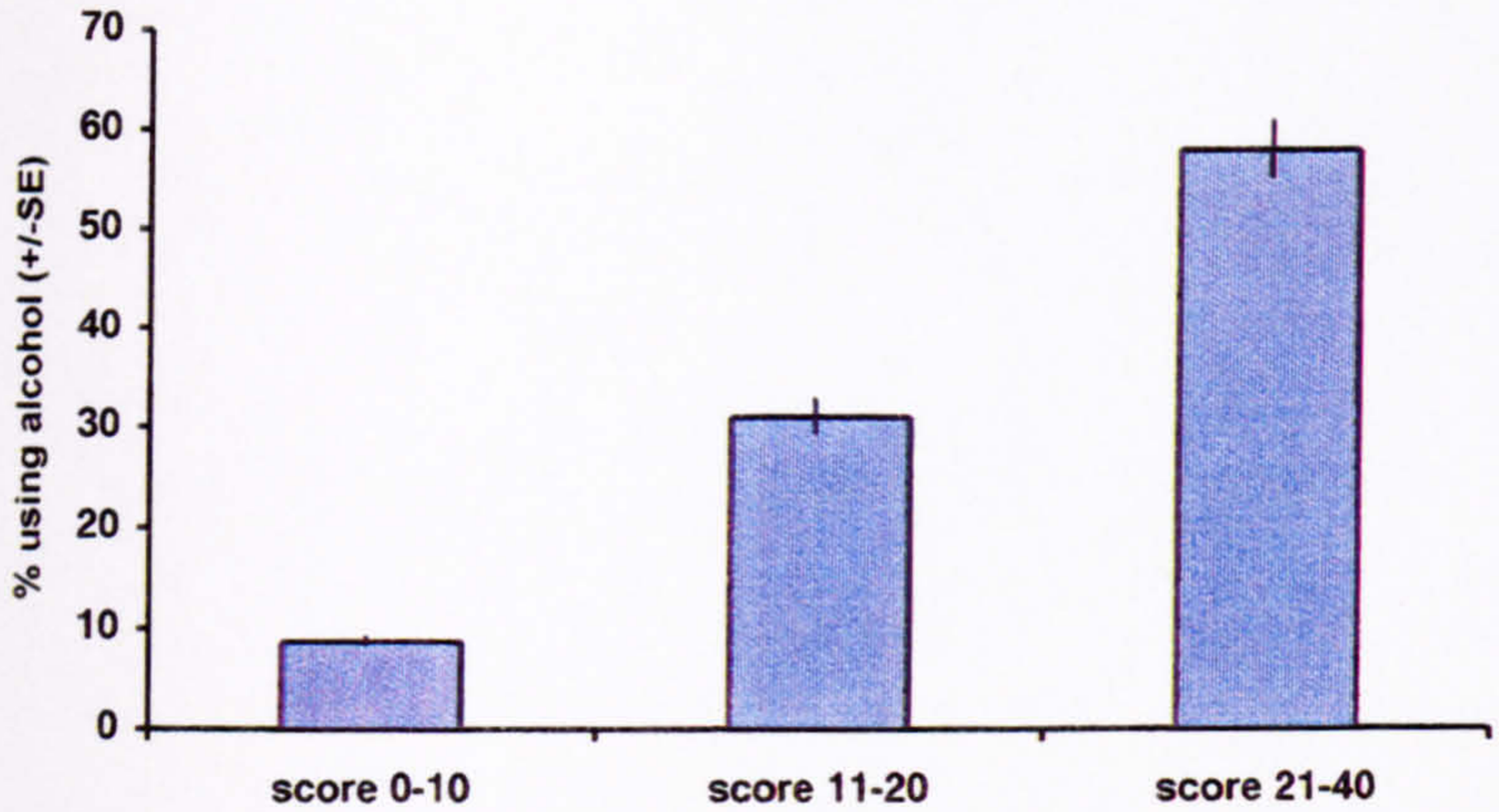


5.11.2 Association between attitude towards alcohol and alcohol use

The scale of attitude towards alcohol was created to measure student's overall opinion of alcohol use. The attitude scale was a 10-item scale; each item has a range of 0 through 4 (see Method of measurement sections in Chapter 2), with higher scores indicating more positive attitude towards alcohol. The chi-square statistic was used to explore the relationship between alcohol use and attitude towards alcohol use. T-Test statistics were used to compare mean score of attitude towards alcohol use between current alcohol users and non-users, between male and female students, and between academic and vocational school students.

A linear association was found between the prevalence of alcohol use and attitude towards alcohol ($x^2_{\text{(for a trend)}} = 297.69$, $p<0.001$) (Figure 5.29), students who had higher score of attitude towards alcohol were more likely to use alcohol.

Figure 5.29: Prevalence of alcohol use of students who had different levels of attitude towards alcohol.



The mean score of attitude towards alcohol use of current alcohol users was significantly higher than non-users [score 17.0 (SD=5.8) for current users, score 10.2 (SD=6.0) for non-users, t= -30.25 , p<0.001]. Similarly, the mean score of attitude towards alcohol use of male students was significantly higher than female students [score 14.9 (SD=6.2) for males, score 10.8 (SD=6.0) for females, t= 21.95 , p<0.001] and the mean score of attitude towards alcohol use of vocational school students was significantly higher than academic school students [score 14.2 (SD=6.2) for vocational school students, score 11.8 (SD=6.4) for academic school students, t= -11.80 , p<0.001].

5.12 Discussion for social aspects of alcohol use

5.12.1 Age of first use and reasons of use

Khon Kaen secondary school students (10th-12th school year) age 15-19 years who have ever used alcohol started to use alcohol at age from 7 to 19 years (Table 5.25). Initiating alcohol use at an early age can cause serious physical and psycho-social problems in the future (62). Thus, prevention efforts or early protection against alcohol use should begin early and continue. Among secondary school students who started using alcohol at secondary school age, most of them started to use alcohol at age 15-16 years (Figure 5.15). These results indicate that secondary school students age 15-16 years (as 10th school year) were at highest risk of starting alcohol use and intensive prevention programs should be prepared for students at least as young as aged 15-16 years and ideally younger than secondary school students.

"Being curious to try alcohol", "copying friends", and "being offered alcohol" were the main reasons for first time use of alcohol while the main reasons that contributed to the continuing use of alcohol were: "having fun", "increasing relaxation", "decreasing sadness", "decreasing nerves", and "being alert" (see Figure 5.18). In addition, the reasons that were indicated to play a major role in progression from infrequent alcohol users to frequent alcohol users were: "having fun", "increasing relaxation", "decreasing sadness", and "decreasing nerves" (see Figure 5.19). "Copying friend" was one of the most common reasons for drinking the first time for secondary school students. Similarly, Hawkins et al reported that a younger age of alcohol initiation was associated with peer alcohol initiation (109). Urberg, et al. examined the influence of adolescent's closest friends on initiation of alcohol use (78) and the peer effects identified in that research would support these findings for Khon Kaen students.

The results show that male students started using alcohol before age 15 years (as before 10th-12th school years) more frequently than females (34.7 % of male students compared with 24.4 % of female students, $x^2 = 25.44$, $p<0.001$; Figure 5.15). Similarly, Warren et al (1997) studied age of initiating selected health-risk behaviours among high school students in the United States and reported that male students initiated alcohol use earlier (110). Alexander (1991) reported that the mean age of first alcohol use for American male adolescents (aged 14-17) was 11.9 years and for female adolescents 12.7 years (29) which were both lower than the mean age of first alcohol use of Khon Kaen secondary school students (for males 14.8 years, for females 15.2 years). Moreover, there seems to be more motivation for males to start and continue using alcohol than females. For example, male students were more likely to use alcohol the first time for reasons of "copying friends", "having fun", "being offered alcohol", "decreasing nerves", "increasing relaxation", and "being alert" (see Figure 5.17). Again, peer pressure seems to have a large part to play.

Because first experiences with alcohol use of Khon Kaen secondary school students, 15-19 year olds, occurred from such an early age (7 years to 19 years), preventive

strategies are important to delay the age of initiation of alcohol use. Using the results from this study, prevention efforts or early protection of alcohol use should begin even in primary school and continue through out secondary education. Among 10th to 12th school year, intensive preventive programs should be prepared for students age 15-16 years (as 10th school year) which account for 78.3% of secondary school students who started using alcohol at age 15-19 years. In particular efforts should be directed towards male students. Understanding the reasons for students' first drinking alcohol and their reasons for continuing should help inform education and prevention campaigns at different school levels.

5.12.2 Effects of alcohol drinking

Females were more likely to report negative effects of "having a headache", and "having a sore throat" than males, whereas males were more likely to report positive effects of "being happy", "being sexual aroused", "being stimulated", "being strong", and "craving relief" after drinking alcohol than females (Figure 5.22). On possible explanation of lower use by females could also be a lower level of negative experiences in males. However, although "having a headache" was the most reported negative effects by alcohol users (Figure 5.21), many students still continued to use. This implies that being happy, being awake, etc may psychologically outweigh the negative effects. In order to reduce the number of current alcohol users, some education programs that show in particular the long term harms of alcohol use should be developed together with enforcing programs, including forbidding alcohol use at school age.

5.12.3 Places of drinking alcohol

Drinking alcohol by Khon Kaen secondary school students occurred most frequently on a ceremonial occasion (e.g. at parties). Similarly, Wada et al (1998) surveyed alcohol consumption among Japanese high school students in Chiba by self-administered questionnaire and reported that alcohol drinking occurred most frequently on such ceremonial occasions (111). Friends' places were the second most common places where students drank alcohol. The results support that peers are still highly involved with alcohol use. Over a quarter of alcohol users drank alcohol at

disco places and coffee shops, In particular male students and vocational school students reported higher use of alcohol at disco places and coffee shops (see Figure 5.24 and 5.25). In order to reduce alcohol use among young people, entertainment places in the night time such as discos, bars, etc., should be more restricted by police through controlling age of entry. Although, the small number of alcohol users drank alcohol at schools (2.7%), more effective prohibition of alcohol use at school should be developed to stop use at school which could influence other students through peer pressure.

Knowing the place of abode is where students often used alcohol (32.4% of alcohol users drank alcohol at their place of abode) also suggests that parents are important in preventing their children from using alcohol by monitoring their children at home and not allowing the use of alcohol. Overall, these results support that interventions targeting this age group should be wide based including not only schools but also again the community (family, the students' peers, school, etc) and in this case alcohol suppliers. Such activities are essential if at least some individuals are to be prevented from moving onto other drugs (112)

5.12.4 Attitude towards alcohol drinking

In the short term one way of measuring the success or otherwise of any intervention may be to examine the attitudes of students towards alcohol use. Attitude is a favourable or unfavourable evaluative reaction toward something or someone, exhibited in one's beliefs, feeling, or intended behaviour. Attitude can lead to particular forms of behaviour but expressed attitudes only imperfectly predict behaviour because of the influences of other factors such as social influences (culture, religion, law and regulation, etc.) (113). The results in this study support that there was an association between alcohol use and attitude towards alcohol use; the higher score of the attitude towards alcohol use, the more the chance of using alcohol (see Figure 5.29). Similarly, current alcohol users had significantly higher score of attitude toward alcohol use than non-users. Male and vocational school students had significantly higher score of attitude towards alcohol use (Figure 5.27 and 5.28). Most alcohol non-users generally disagreed with alcohol use. However, there were a

minority of non-users who also agreed with "drinking alcohol helps people forget sadness" (15.2%), "drinking alcohol helps people to be confident in what they do" (11.6%), "school students should have the right to drink alcohol" (10.3%), "drinking alcohol will help the drinkers relax" (9.4%), and "drinking alcohol makes the drinkers happy" (6.3%) (see Figure 5.26). These imply that some non-users who agreed with the benefits of alcohol use were in high-risk group and may be tempted to become alcohol users in the future.

More than two third of alcohol users agreed that using alcohol will make users relax (68.5%). However, most users recognised the disadvantages of drinking alcohol are more than the advantages (70.5%) and that drinking alcohol causes diseases (69.3%) (Figure 5.26). Although this implies that the benefits of relaxation may outweigh the other damages of alcohol use in users views, it also identifies that messages about the negative effects of alcohol alone may not be enough to stop people using as many users already recognise these effects. Other supplemental interventions should be used, such as insistence on school regulation about substance use, screening for substances, monitoring substance use by parents and teachers, counselling, and harm reduction strategies.

CHAPTER 6: CIGARETTE USE - PART 1
EPIDEMIOLOGY, ASSOCIATIONS, AND PREDICTIVE MODELS

6.1 Epidemiology of cigarette use among Khon Kaen secondary school students

There are long-term effects of cigarette use throughout adolescence including the risk of respiratory disease and cancers, bronchitis, heart disease, ulcers and circulatory problems (105, 114, 115). Many studies have shown that cigarette use is associated with alcohol and illegal drug use (34, 65, 116, 117). Furthermore, cigarettes are considered by some to be a gateway to illegal substance use (118). For all these reasons, epidemiological study of cigarette use among Khon Kaen secondary school students were regarded as important and therefore included in the questionnaire.

6.1.1 Prevalence of cigarette use among Khon Kaen secondary school students

The respondents (n = 4,217) were asked confidentially about their use and extent of use of cigarettes. The questions: "have you ever smoked cigarettes?" was used to assess if students had never, ever or currently smoked cigarettes; and "How often do you smoke cigarettes?" was used to assess frequency of cigarette use among Khon Kaen secondary school students (see Appendix 1 for full questionnaires). The prevalence of current cigarette smoking among Khon Kaen secondary school students was 10.3 percent (+/- 1.1, 95% CI). Over one in five (21.8 %, (+/- 1.3, 95% CI)) were former smokers (i.e. had ever smoked) although most (67.9 %, (+/- 1.4, 95% CI)) had never smoked cigarettes. Current cigarette users ranged from occasional smokers to daily smokers (see Table 6.1). Most (62.2%) current cigarette users were daily smokers. Former cigarette users were categorised as students who either tried smoking cigarette once or twice, smoked a few times or smoked several times in their past.

6.1.2. Tendency towards cigarette use through 10th-12th school year

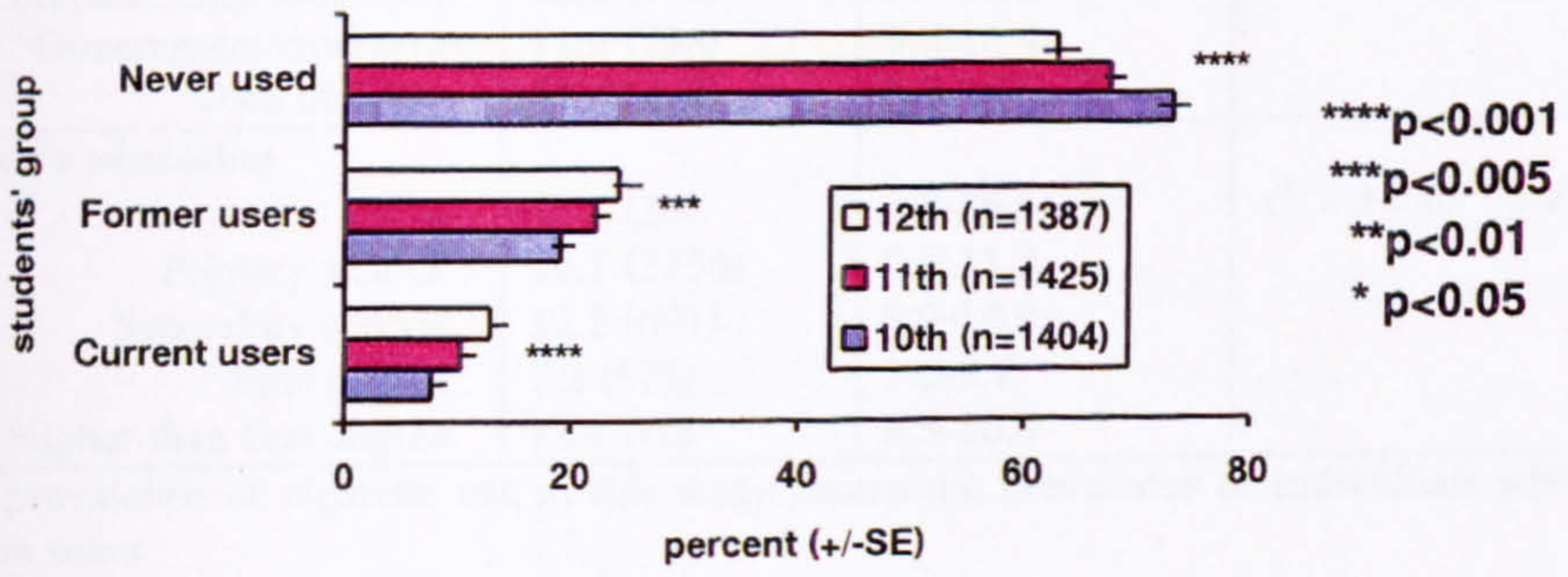
The percentage of current cigarette users was used to determine the size of the cigarettes use problems among Khon Kaen secondary school students. Using the chi-square test, there was a significant increase in the proportion of current cigarette users as students progressed through 10th, 11th, and 12th school years with 7.7%, 10.3%, and 12.9% respectively currently using cigarettes in each school year (Figure 6.1).

Table 6.1: Proportion of current and former cigarette users and students who have never used cigarettes

Students	Frequency	Percent
Current cigarette users		
Occasional users	69	15.9
Monthly users	32	7.4
Weekly users	63	14.5
Daily users	270	62.2
Total current cigarette users	434	100.0
Former cigarette users		
Tried once or twice	551	60.0
Smoked a few times	246	26.7
Smoked several times	122	13.3
Total former cigarette users	919	100.0
Students who have never used cigarettes		
Never used cigarettes	2863	100.0

In addition, the proportion of former users and students who never used cigarettes was also used to compare tendencies towards cigarette use through 10th, 11th, and 12th school year students. There was a significant increase in the proportion of the former users who gave up using cigarettes in the 10th, 11th, and 12th school years (19.1%, 22.2%, and 24.2% respectively) but the rate at which students gave up cigarettes (through 10th, 11th, and 12th school year) was less than the rate at which new smokers began.

Figure 6.1: Percentage of students who were current cigarette users, former cigarette users, and who never used cigarettes by each school year



6.2 Association between Socio-demographic variables and Cigarette use

In this section, the relationships between cigarette use among Khon Kaen secondary school students and measured socio-demographic variables were examined using bivariate analyses. Initial results are shown in Table 6.2. Later, multivariate logistic regression analysis is used to control for potential confounding factors and to explore

the independent relationships between cigarette use and a variety of socio-demographic variables.

Table 6.2: Prevalence and 95 % confidence intervals for cigarette use according to socio-demographic variables

Socio-demographic variables	Prevalence* % (sample size)	95% confidence interval	Statistical difference within demographic variable
Gender			
Male	20.5 (1987)	18.7-22.3	x^2 =422.52 p<0.001
Female	1.2 (2229)	0.8-1.8	
Age			
<=15 years	2.3 (516)	1.3-4.3	x^2 = 236.31 p<0.001
16 years	6.5 (1262)	5.2-8.0	
17 years	10.1 (1297)	8.5-11.9	
18 years	14.1 (924)	11.9-16.5	
>=19 years	36.9 (203)	30.3-44.0	
Type of school			x^2 = 170.02 p<0.001
Academic	5.4 (2561)	4.6-6.3	
Vocational	17.9 (1655)	16.1-19.8	
School zone			x^2 = 28.91
District area	7.8 (2089)	6.7-9.0	p<0.001
Inner city	12.8 (2127)	11.4-14.3	
School grade			x^2 = 22.07 p<0.001
Tenth	7.8 (1404)	7.6-10.7	
Eleventh	9.9 (1425)	7.5-10.6	
Twelfth	13.2 (1387)	11.2-14.8	
Father's occupation			
No job	15.7 (51)	7.5-29.1	x^2 = 9.33 p=0.156
Increasing Labour	8.1 (509)	5.9-10.8	
Income Farmer	9.6 (1983)	8.3-11.0	
Private office employee	12.3 (146)	7.7-18.8	
Government/enterprise	11.9 (798)	9.8-14.4	
Own business	11.4 (492)	8.8-14.6	
Father's education			
No	19.4 (36)	8.8-36.5	x^2 = 14.40 p<0.01
Primary school	10.1 (2756)	9.0-11.3	
Secondary school	12.2 (691)	9.9-14.9	
First degree	7.2 (573)	5.2-9.7	
Higher than first degree	15.7 (70)	8.5-26.8	

* The prevalence of cigarette use in this study means the prevalence of individuals who are current cigarette users.

Cigarette use among secondary school students in Khon Kaen was significantly associated with socio-demographic characteristics of gender, age, school year level, type of school, school zone, and fathers' education but not associated with fathers' occupation. Male students were more likely to use cigarettes than female students. Rate of frequent cigarette use was 17 times as high in males as in females (Table 6.2). Vocational school students reported a higher prevalence of cigarette use than

academic school students. Students in inner cities were more likely to use cigarettes than students in district area. There was also a linear trend in the prevalence of cigarette use with age (x^2 (for a trend) = 170.84, $p < 0.001$) with older students being more likely to use cigarettes. Similarly, there was a linear trend in the prevalence of cigarette use with school year variable (x^2 (for a trend) = 20.69, $p < 0.001$); the prevalence of cigarette smoking in higher school year was higher than in lower school year. There was a significant association between cigarette use and father's education. The highest prevalence of cigarette use was 19.4 % in students whose fathers had no education degree. Similarly, a high prevalence of cigarette use was also found in students whose fathers had no job, although this factor was not significantly associated with cigarette use among secondary school students.

6.2.1 Multivariate logistic regression analysis for cigarette use and socio-demographic factors

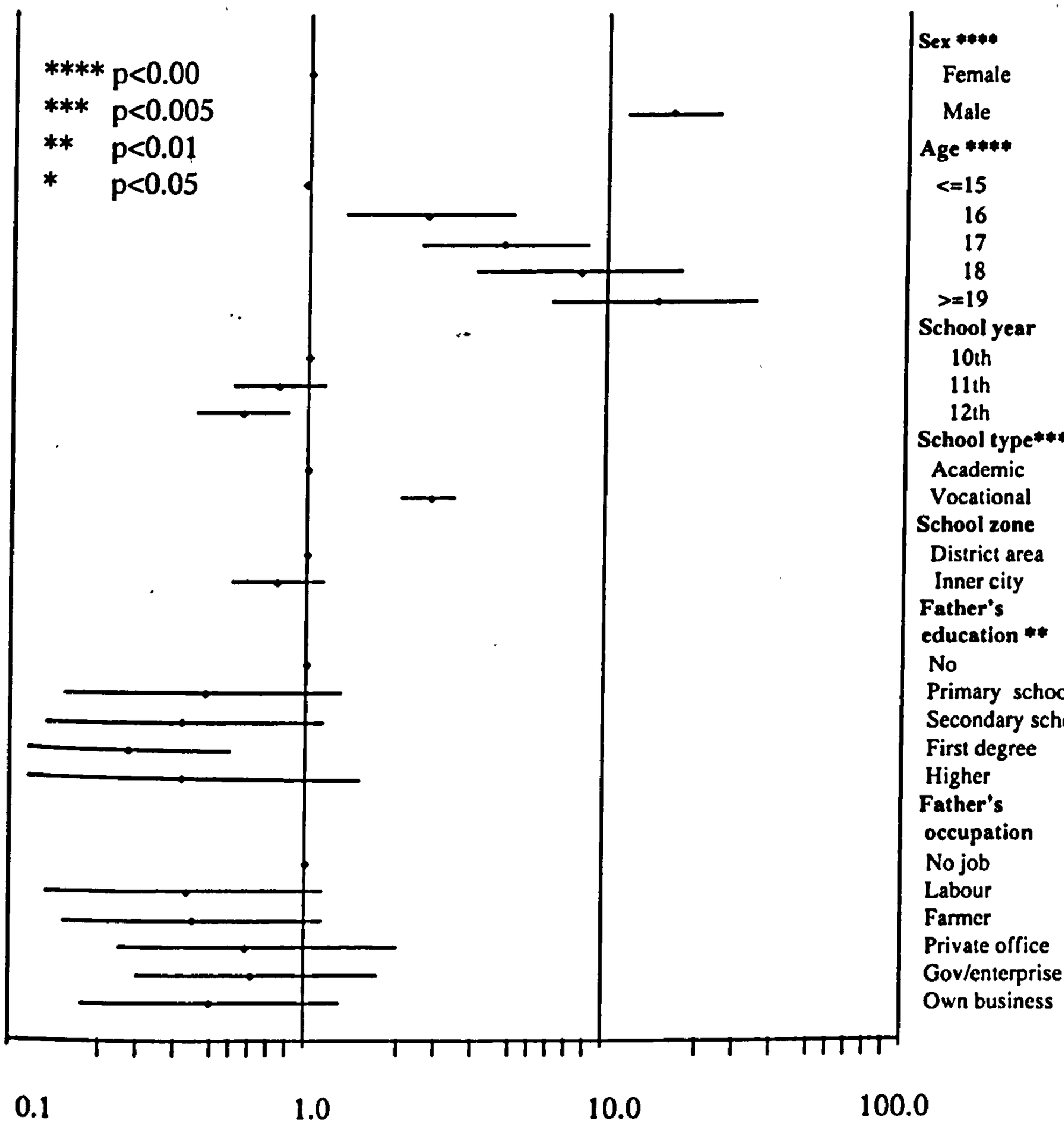
The effects of socio-demographic factors on the likelihood of cigarette use were explored by using logistic regression analysis. The results of the logistic regression are shown as adjusted odds ratios and their 95% confidence interval after adjustment for all other factors in the model (Figure 6.2). Using the 0.05 level, four of the coefficients were significant, gender, age, type of school, and father's education. The association between higher fathers' education and lower cigarette use was also apparent in the logistic regression analysis except for students whose fathers had higher than a first degree where there was an increase in cigarette use. Cigarette use was not associated with school zone. Similarly, cigarette use was not significantly associated with school year level in the logistic regression model; although the relationship approached significance (p=0.057). Thus, the likelihood of cigarette use of students in lower school year trended to be higher than students in higher school year (see discussion Section 6.3.7) once corrected for age.

6.2.2 Associations between cigarette use, school year and zone by Socio-demographic sub groups

Bivariate analysis revealed a significant relationship between cigarette use and school year (Table 6.2). Similarly, there was an association between cigarette use and school

zone (Table 6.2). However, multivariate logistic regression analysis revealed that school year and school zone were not significantly associated with cigarette use (Figure 6.2) suggesting these variables may be associated with smoking through confounding effects. Therefore, this following section additionally explores whether there are different relationships between school year and cigarette use and between school zone and cigarette use in different sub-groups of other socio-demographic variables.

Figure 6.2: Adjusted odds ratios with 95 % confidence intervals for cigarette use among Khon Kaen secondary school students.



The higher school year students were more likely to use cigarettes than the lower school year students in both genders, both types of school, both school zone, and students whose fathers had primary school degree (Table 6.3). Conversely, the higher school year students were less likely to use cigarette than the lower school year in each age group, except for age 15 and 16 years which had no students in 12th school year (see also discussion Section 6.3.7). There were no associations between cigarette use and school year in students whose fathers had no educational degree, secondary school degree, first degree, and higher than first degree.

Table 6.3: Prevalence and odds ratios of cigarette use according to socio-demographic variables that were significantly associated with cigarette use categorised by 10th, 11th, and 12th school year

Demographic variables	Prevalence % (sample)			Statistical difference within Socio-demographic variables
	10th	11th	12th	
Sex				
Male	16.5 (641)	19.4 (681)	25.4 (665)	$x^2 = 16.56$ $p < 0.001$ $x^2_{\text{for a trend}} = 15.86$ $p < 0.001$
Female	0.5 (763)	1.2 (744)	1.9 (722)	$x^2 = 6.20$ $p < 0.05$ $x^2_{\text{for a trend}} = 6.20$ $p < 0.05$
Age				
<= 15 years	2.2 (501)	6.7 (15)	---	Fisher's exact test $p = 0.301$
16 years	6.1 (781)	7.1 (481)	---	$x^2 = 0.42$ $p = 0.518$ $x^2_{\text{for a trend}} = 0.42$ $p = 0.557$
17 years	29.0 (69)	9.5 (824)	8.2 (404)	$x^2 = 29.13$ $p < 0.001$ $x^2_{\text{for a trend}} = 12.36$ $p < 0.001$
18 years	52.6 (19)	23.8 (80)	12.2 (825)	$x^2 = 31.85$ $p < 0.001$ $x^2_{\text{for a trend}} = 29.41$ $p < 0.001$
>= 19 years	66.7 (30)	36.4 (22)	31.1 (151)	$x^2 = 13.57$ $p < 0.005$ $x^2_{\text{for a trend}} = 12.33$ $p < 0.001$
Type of school				
Academic	3.6 (862)	5.0 (854)	7.6 (845)	$x^2 = 13.56$ $p < 0.005$ $x^2_{\text{for a trend}} = 13.21$ $p < 0.001$
Vocational	14.6 (542)	17.2 (571)	22.0 (542)	$x^2 = 10.36$ $p < 0.01$ $x^2_{\text{for a trend}} = 10.04$ $p < 0.005$
School zone				
District area	5.0 (625)	7.5 (707)	10.3 (757)	$x^2 = 13.77$ $p < 0.005$ $x^2_{\text{for a trend}} = 13.75$ $p < 0.001$
Inner city	10.1 (779)	12.3 (718)	16.7 (630)	$x^2 = 3.57$ $p < 0.005$ $x^2_{\text{for a trend}} = 13.01$ $p < 0.001$
Fathers' education				
No degree	20.0 (5)	27.8 (18)	7.7 (13	$x^2 = 1.95$ $p = 0.378$ $x^2_{\text{for a trend}} = 0.93$ $p = 0.336$
Primary school	7.1 (821)	9.6 (937)	13.0 (998)	$x^2 = 18.01$ $p < 0.001$ $x^2_{\text{for a trend}} = 17.87$ $p < 0.001$
Secondary school	10.8 (259)	10.1 (218)	15.9 (214)	$x^2 = 4.10$ $p = 0.129$ $x^2_{\text{for a trend}} = 2.62$ $p = 0.106$
First degree	6.1 (247)	6.4 (204)	10.7 (122)	$x^2 = 2.87$ $p = 0.238$ $x^2_{\text{for a trend}} = 2.12$ $p = 0.145$
Higher	11.8 (34)	28.6 (21)	6.7 (15)	$x^2 = 3.95$ $p = 0.139$ $x^2_{\text{for a trend}} = 0.00$ $p = 0.995$

Inner city students were more likely to use cigarettes in every school year, amongst male students, vocational school students, and students whose fathers had primary school degree, secondary school degree, and first degree (Table 6.4). Conversely, the prevalence of cigarette use among academic school students in district area was significantly higher than academic students in inner city (see also discussion Section 6.3.7). However, the significant associations between cigarette use and school zone

were not found in female students and students whose fathers had no educational degree or had higher than a first degree.

Table 6.4: Prevalence and odds ratio of cigarette use according to socio-demographic variables significantly associated with cigarette use categorised by district and inner-city school.

Demographic variables		Prevalence % (sample)		Statistical difference within
		District area	Inner-city	Socio-demographic variables
Sex	Male	16.9 (885)	23.3 (1102)	$x^2 = 12.24$ $p < 0.001$
	Female	1.0 (1024)	1.5 (1025)	$x^2 = 1.01$ $p = 0.315$
Age	<= 15 years	2.7 (187)	2.1 (329)	Fisher's exact test $p = 0.764$
	16 years	5.3 (638)	7.7 (624)	$x^2 = 2.90$ $p = 0.089$
	17 years	7.7 (659)	12.5 (638)	$x^2 = 8.23$ $p < 0.005$
	18 years	11.0 (544)	18.4 (380)	$x^2 = 10.11$ $p < 0.005$
	>= 19 years	20.0 (55)	43.2 (148)	$x^2 = 9.26$ $p < 0.005$
Type of school	Academic	6.8 (1761)	2.3 (800)	$x^2 = 22.48$ $p < 0.001$
	Vocational	12.8 (328)	19.1 (1327)	$x^2 = 7.19$ $p < 0.01$
School year	10^{th}	5.0 (625)	10.1 (779)	$x^2 = 12.89$ $p < 0.001$
	11^{th}	7.5 (707)	12.3 (718)	$x^2 = 9.05$ $p < 0.005$
	12^{th}	10.3 (757)	16.7 (630)	$x^2 = 12.15$ $p < 0.001$
Fathers education	No degree	5.8 (18)	33.3 (18)	Fisher's exact test $p = 0.088$
	Primary school	8.0 (1662)	13.3 (1094)	$x^2 = 20.06$ $p < 0.001$
	Secondary school	8.9 (271)	14.3 (420)	$x^2 = 4.55$ $p < 0.05$
	First degree	1.0 (98)	8.4 (475)	$x^2 = 6.70$ $p < 0.05$
	Higher	0.0 (9)	18.0 (61)	Fisher's exact test $p = 0.336$

6.3 Established association between risk variables and cigarette use

In order to find other possible indicative variables for cigarette use among Khon Kaen secondary school students, a wide range of risk variables which were selected from the research literatures (Table 6.5) including psychological characteristics, personal risk behaviours, health problems, peer contexts, family problems and school activities. These were tested by bivariate analysis to investigate which were associated with cigarette use of Khon Kaen secondary school students. These following section deal with these bivariate analyses.

In addition to Table 6.5, Fuller and Cavanaugh (1995) (15) stated that adolescents with physical signs or symptoms such as cough, chest pain, nasal irritation, cold or allergies and wheezing may be attributable to the effects of cigarette, alcohol, or substance use.

Table 6.5: Summary of studies that identify risk variables associated with cigarette use among adolescents

Risk variables associated with cigarette use	Country's study (sample size)	Authors	Year
Friends were cigarette smokers	-Ecuador (2625 school students age 9-15 years)	-Padgett et al (119)	1998
	-Australia, (3019 secondary school students)	-Hawthrone (66)	1997
	-Israel, Jerusalem. (847 high school students)	-Meijer et al (120)	1996
	-Australia, Victoria. (2032 secondary school students)	-Patton et al (121)	1995
	-Bangladesh, Dhaka. (667 male teenager age 12-20 years)	-Ahsan et al (122)	1991
	-Korea (9886 8th and 11th graders)	-Juan et al (23)	1989
Students were not staying with parents	- UK (7722 secondary school students)	-Miller (80)	1997
Cigarette smoking parent	-Ecuador (2625 school students age 9-15 years)	-Padgett et al (119)	1998
	-Hong Kong. (6304 school students)	-Lam et al (123)	1998
	-Bangladesh, Dhaka. (667 male teenager age 12-20 years)	-Ahsan (122)	1991
Poor school performance (average grade)	- UK, (7722 secondary school students)	-Miller and Plant (82)	1995
	-Korea (9886 8th and 11th graders)	-Juan et al (23)	1989
Truancy	- Switzerland, (3420 secondary school students)	-Michaud et al (83)	1998
	-Japan, Oklahoma. (high school students)	-Hann et al (124)	1995
Using illegal Drugs	-USA, California (1936 High school students)	-Sussman et al (84)	1997
	-Japan, Tokyo. (4171 high school students)	-Oh et al (125)	1996
	-Switzerland, (9273 school students and apprenticeship program)	-Konings et al (34)	1993
Using alcohol	-Australia (3019 school students)	-Hawthrone (66)	1997
	-USA, California (1936 High school students)	-Sussman et al (84)	1997
	-Japan (14438 high school students)	-Matsushita et all (86)	1996
	- Spain, Barcelona and Lleida (1816 secondary students)	-Ariza and Nebot (85)	1995
Premature sexual Activity	-South Africa, Cape Peninsula. (7340 high school students)	-Flisher et al (126)	1996
Depression	-Connecticut, (4884 school student)	-Coogan et al (127)	1996
	-Australia, Victoria. (2032 secondary school students)	-Patton (121)	1995
Suicide	-USA (3,054 9th-12th graders, average age 16 +/- 1.2 years)	-Woods et al (128)	1993
Cough, Wheezing, Nose and Throat problems	-Hong Kong, (6304 secondary school students)	-Lam et al (129)	1998

6.3.1 Association between cigarette use and psychological characteristics

Students were asked to self-evaluate whether they were aggressive, depressive, or risk taking people (see questions in Appendix 1). The results showed that students who reported being any of these were more likely to use cigarettes than those who did not (Table 6.6). The significant association between cigarette use and psychological variables were possibly confounded by sex and age group. Therefore, these significant associations were examined across sex and age groups. Both male and female students who reported being aggressive and risk taking persons were also more likely to use cigarettes (Table 6.7). However, only male students who reported being depressive people were more likely to use cigarettes than those who did not. Students aged 17-19 years who had aggressive characteristics were more likely to use cigarettes (Table 6.8). This significant relationship was not found in age group 15 and 16 years. Students age 17 and 18 years who had depressive characteristic were also more likely to use cigarettes. This significant relationship was also not found in other age groups.

Table 6.6: Prevalence of cigarette use according to psychological characteristics

Variables	Prevalence % (sample size)	Statistical difference within variable
Aggressive		
No	9.0 (3115)	$x^2 = 30.75$
Yes	15.2 (995)	$p<0.001$
Depressive		
No	9.2 (2672)	$x^2 = 11.87$
Yes	12.6 (1465)	$p<0.005$
Risk taking		
No	8.3 (2902)	$x^2 = 56.07$
Yes	16.4 (1162)	$p<0.001$

Table 6.7: Prevalence of cigarette use according to psychological characteristics categorised by male and female students

Variables	Male		Female	
	Prevalence % (sample)	Statistical difference within variable	Prevalence % (sample)	Statistical difference within variable
Aggressive				
No	18.1 (1489)	$x^2 = 31.30$	0.7 (1625)	$x^2 = 16.70$
Yes	30.3 (445)	$p < 0.001$	2.9 (550)	$p < 0.001$
Depressive				
No	17.8 (1311)	$x^2 = 20.80$	1.0 (1361)	$x^2 = 2.33$
Yes	26.7 (641)	$p < 0.001$	1.7 (824)	$p = 0.127$
Risk taking				
No	17.7 (1320)	$x^2 = 26.33$	0.5 (1582)	$x^2 = 28.38$
Yes	27.9 (612)	$p < 0.001$	3.5 (550)	$p < 0.001$

Furthermore, only in students aged 16-18 years was there a significant relationship between risk taking characteristic and use of cigarettes.

Table 6.8: Prevalence of cigarette use according to psychological characteristics categorised by current age groups.

	<=15 years		16 years		17 years		18 years		>=19 years	
Variables	Prevalence % (sample)	Statistical difference within variable	Prevalence % (sample)	Statistical difference within variable	Prevalence % (sample)	Statistical difference within variable	Prevalence % (sample)	Statistical difference within variable	Prevalence % (sample)	Statistical difference within variable
Aggressive										
No	1.7 (361)	x^2= 2.83	5.8 (924)	x^2= 3.75	8.5 (966)	x^2= 14.80	12.3 (706)	x^2= 12.15	33.1 (148)	x^2= 3.56
Yes	4.2 (143)	p = 0.093	9.0 (311)	p = 0.053	16.3 (295)	p < 0.001	22.3 (193)	p < 0.001	49.0 (50)	p < 0.05
Depressive										
No	1.6 (321)	x^2= 2.51	5.8 (815)	x^2= 2.61	8.4 (822)	x^2= 8.34	12.5 (575)	x^2= 4.12	38.8 (129)	x^2= 0.48
Yes	3.8 (185)	p = 0.113	8.2 (429)	p = 0.106	13.5 (443)	p < 0.005	17.4 (333)	p < 0.05	33.8 (71)	p = 0.487
Risk taking										
No	1.7 (345)	x^2= 2.54	5.5 (898)	x^2= 8.77	8.2 (890)	x^2= 16.94	10.9 (631)	x^2= 21.73	33.6 (128)	x^2= 1.77
Yes	4.2 (143)	p = 0.111	10.3 (321)	p < 0.005	16.0 (356)	p < 0.001	22.9 (266)	p < 0.001	43.1 (72)	p = 0.183

6.3.2 Association between cigarette use and personal risk behaviours

Students were questioned about their experiences of personal risk behaviours including; alcohol use, illegal drugs use, having sex early, hurting oneself, going out for fun at night time, and stealing (Appendix 1). Students who were current alcohol users or illegal drugs users had significantly higher percentages of cigarette use (Table 6.9). Similarly, students who reported having had early sexual intercourse, hurting themselves and having stolen were more likely to use cigarettes. Students who reported a higher frequency of going out for fun at night were also more likely to use cigarettes. Overall therefore, there were strong associations between cigarette use and these behaviours. Significant associations were also tested for different genders. The significant relationships held independently for both sexes (Table 6.10). Age however, could easily confound the significant associations between cigarette use and alcohol use, illegal drug use, and going out for fun at nighttime. Therefore, the analyses were repeated for each age group independently. Students in all age groups who reported higher frequencies of going out for fun at night-time were more likely to use cigarettes than those who reported lower frequencies (Table 6.11). Similarly, in all age groups, students who were alcohol users and illegal drug users were more likely to use cigarettes.

Table 6.9: Prevalence of cigarette use according to personal risk behaviours

Variables		Prevalence % (sample size)	Statistical difference within variable
Alcohol use	No	2.8 (3138)	$x^2 = 748.07$
	Yes	32.2 (1075)	$p<0.001$
Illegal drug us	No	6.8 (3994)	$x^2 = 1011.34$
	Yes	73.4 (222)	$p<0.001$
Having sex early	No	6.4 (3744)	$x^2 = 570.28$
	Yes	42.8 (444)	$p<0.001$
Hurting oneself	No	9.5 (3670)	$x^2 = 38.68$
	Yes	16.3 (529)	$p<0.001$
Going out for fun at night	No	1.3 (1333)	$x^2 = 466.26$
	< 1 time/week	8.1 (1776)	$p<0.001$
	1-2 time/week	20.8 (809)	$x^2_{\text{(for a trend)}} =$
	> 2 time/week	40.5 (247)	433.49
			$p<0.001$
Stealing	No	8.7 (3303)	$x^2 = 43.52$
	Yes	16.2 (900)	$p<0.001$

6.3.3 Association between cigarette use and health problems

Students were questioned about their health problems in the last three months including: having a small appetite, coughing, having chest pains, having a cold, having a sore throat, having a sore nose, and being wheezy (see Appendix 1). There was a linear association between prevalence of cigarette use and a small appetite: the

greater the problems of having small appetite, the higher the chance of smoking cigarettes (Table 6.12). Similarly, there were linear associations between prevalence of cigarette use and having chest pains and coughing in the last 3 months. However, there were no significant differences in prevalence of cigarette use between students reporting having a cold, a sore throat, a sore nose and wheezy problems and those reporting no problem.

Table 6.10: Prevalence of cigarette use according to risk behaviours categorised by male and female students

Variables	Male		Female	
	Prevalence % (sample)	Statistical difference within variable	Prevalence % (sample)	Statistical difference within variable
Alcohol use				Fisher's exact test
No	6.5 (1204)	$x^2 = 367.92$	0.5 (1934)	$p < 0.001$
Yes	42.0 (783)	$p < 0.001$	5.8 (292)	
Illegal drug use				Fisher's exact test
No	14.1 (1789)	$x^2 = 443.23$	0.8 (2205)	$p < 0.001$
Yes	77.8 (198)	$p < 0.001$	37.5 (24)	
Going out for fun at night				
No	4.5 (376)	$x^2 = 211.45$	0.0 (957)	$x^2 = 51.91$
1 time/week	15.3 (870)	$p < 0.001$	1.2 (906)	$p < 0.001$
1-2times/week	29.3 (535)	$x^2_{\text{(for a trend)}} = 203.33$	4.0 (274)	$x^2_{\text{(for a trend)}} = 47.11$
>2times/week	52.2 (182)	$p<0.001$	7.7 (65)	$p<0.001$
Having sex early				
No	13.8 (1603)	$x^2 = 236.44$	0.9 (2141)	$x^2 = 54.96$
Yes	49.7 (366)	$p < 0.001$	10.3 (78)	$p < 0.001$
Hurting oneself				
No	18.6 (1778)	$x^2 = 37.57$	0.8 (1892)	$x^2 = 14.79$
Yes	36.9 (203)	$p < 0.001$	3.4 (326)	$p < 0.001$
Stealing				
No	17.7 (1523)	$x^2 = 32.15$	1.0 (1782)	$x^2 = 6.05$
Yes	29.8 (459)	$p < 0.001$	2.5 (441)	$p < 0.05$

Table 6.11: Prevalence of cigarette use according to alcohol use, cigarette use, and frequencies of going out for fun at night categorised by current age groups

	<=15 years		16 years		17 years		18 years		>=19 years	
Variables	Prevalence % (sample)	Statistical difference within variable	Prevalence % (sample)	Statistical difference within variable	Prevalence % (sample)	Statistical difference within variable	Prevalence % (sample)	Statistical difference within variable	Prevalence % (sample)	Statistical difference within variable
Alcohol use		Fisher's								
No	0.9 (448)	exact test	2.0 (1021)	x^2= 182.18	3.4 (961)	x^2= 182.96	2.9 (616)	x^2= 189.94	15.1 (86)	x^2= 30.52
Yes	11.8 (68)	p < 0.001	25.8 (240)	p < 0.001	29.3(334)	p < 0.001	36.4 (308)	p < 0.001	53.0 (117)	p < 0.001
Illegal drug use		Fisher's		Fisher's						
No	1.4 (506)	exact test	3.5 (1213)	exact test	6.8(1231)	x^2= 286.01	10.2 (863)	x^2= 162.13	27.8 (169)	x^2= 36.14
Yes	50.0 (10)	p < 0.001	79.6 (49)	p < 0.001	71.2 (66)	p < 0.001	68.9 (61)	p < 0.001	82.4 (34)	p < 0.001
Going out for fun at night		Fisher's		x^2= 75.84		x^2= 123.13		x^2= 128.14		x^2= 23.18
No	*	exact test	0.6 (472)	p < 0.001	1.3 (381)	p < 0.001	1.8 (218)	p < 0.001	16.7 (24)	p < 0.001
<1time/week	1.2 (412)	p < 0.005	6.6 (516)	x^2 (for a trend) =	8.5 (585)	x^2 (for a trend) =	8.4 (406)	x^2 (for a trend) =	25.3 (87)	x^2 (for a trend) =
1-2times/week			15.9 (208)	74.52	18.6(247)	113.07	26.2 (221)	117.67	48.1 (52)	22.26
>2times/week	7.3 (96)		21.6 (51)	p< 0.001	40.0 (70)	p< 0.001	47.8 (67)	p< 0.001	63.2 (38)	p< 0.001

Note: * Because the Chi-square distribution which provided the expected values were not large enough (less than 80% of expected frequencies exceed 5), the frequencies of going out for fun at night were then grouped into two categories to give bigger expected values

Table 6.12: Prevalence of cigarette use according to health problem variables.

Variables		Prevalence % (sample size)	Statistical difference within variable
Small appetite	Never	9.0 (2431)	$x^2 = 10.83$, $p<0.005$
	Occasional	11.0 (1429)	$x^2_{\text{(for a trend)}} = 10.39$, $p<0.005$
	Often	14.5 (310)	
Cough	Never	6.9 (1371)	$x^2 = 25.09$, $p<0.001$
	Occasional	11.6 (2494)	$x^2_{\text{(for a trend)}} = 24.01$, $p<0.001$
	Often	13.8 (268)	
Chest pains	Never	8.9 (2260)	$x^2 = 8.36$, $p<0.05$
	Occasional	11.7 (1526)	$x^2_{\text{(for a trend)}} = 6.64$, $p<0.05$
	Often	11.4 (351)	
Cold	Never	9.7 (951)	$x^2 = 0.55$, $p=0.718$
	Occasional	10.3 (2713)	$x^2_{\text{(for a trend)}} = 0.55$, $p=0.457$.
	Often	10.9 (487)	
Wheezy	Never	9.7 (3305)	$x^2 = 3.23$, $p = 0.199$
	Occasional	11.9 (649)	$x^2_{\text{(for a trend)}} = 2.64$, $p=0.104$
	Often	11.5 (174)	
Sore throat	Never	10.1 (1312)	$x^2 = 0.195$, $p=0.907$
	Occasional	9.8 (2490)	$x^2_{\text{(for a trend)}} = 0.00$, $p=0.985$
	Often	10.5 (333)	
Sore nose	Never	9.6 (2799)	$x^2 = 1.74$, $p=0.419$
	Occasional	10.8 (1200)	$x^2_{\text{(for a trend)}} = 1.70$, $p=0.193$
	Often	11.8 (114)	

Again since these relationships may have been confounded by different genders, alcohol use status (being alcohol users or non-users), and illegal drug use status (being illegal drug users or non-users) independent analyses were undertaken for each sub group. Among male students, the association between cigarette use and appetite problem, coughing, and chest pains remained. These effects were not significant in female students (Table 6.13).

In alcohol users there were significant associations between cigarette use and having a small appetite and between cigarette use and having a cough (Table 6.14). However, these significant associations were not found in alcohol non-users. In illegal drug users there were also significant associations between cigarette use and appetite problems, having a cough, and having chest pains but not in those not using illegal drugs (Table 6.15).

Table 6.13: Prevalence of cigarette use according to frequencies of small appetite, cough, and chest pain problem categorised by sex

Variables	Male		Female	
	Prevalence % (sample)	Statistical difference within variable	Prevalence % (sample)	Statistical difference within variable
Small appetite		x^2= 23.43		x^2= 2.09
Never	17.4 (1191)	p < 0.001	1.0 (1240)	p =0.351
Occasional	22.7 (633)	x^2 (for a trend) = 22.05	1.6 (796)	x^2 (for a trend) = 0.08
Often	33.8 (130)	p<0.001	0.6 (180)	p=0.783
Cough		x^2= 22.50		x^2= 0.08
Never	14.2 (599)	p < 0.001	1.3 (772)	p = 0.959
Occasional	22.5 (1218)	x^2 (for a trend) = 22.33	1.2 (1276)	x^2 (for a trend) = 0.01
Often	28.5 (123)	p<0.001	1.4 (145)	p= 0.925
Chest pains		x^2= 19.56		x^2= 3.04
Never	17.0 (1128)	p < 0.001	0.8 (1132)	p = 0.218
Occasional	24.2 (681)	x^2 (for a trend) = 19.26	1.5 (845)	x^2 (for a trend) = 2.82
Often	28.8 (125)	p<0.001	1.8 (226)	p = 0.093

Table 6.14: Prevalence of cigarette use according to frequencies of small appetite, cough, and chest pain problem categorised by alcohol use

Variables	Alcohol drinkers		Non-drinkers	
	Prevalence % (sample)	Statistical difference within variable	Prevalence % (sample)	Statistical difference within variable
Small appetite		x^2= 6.55		x^2= 3.37
Never	25.0 (543)	p < 0.05	4.4 (1888)	p = 0.185
Occasional	31.7 (394)	x^2 (for a trend) = 5.34	3.1 (1033)	x^2 (for a trend) = 0.71
Often	33.7 (104)	p< 0.05	4.9 (205)	p=0.392
Cough		x^2= 9.64		x^2= 1.53
Never	25.0 (276)	p < 0.01	2.4 (1095)	p = 0.465
Occasional	35.2 (673)	x^2 (for a trend) = 7.44	2.9 (1818)	x^2 (for a trend) = 1.47
Often	35.3 (85)	p<0.01	3.8 (183)	p= 0.225
Chest pains		x^2= 0.70		x^2= 0.25
Never	31.8 (491)	p = 0.703	2.5 (1766)	p = 0.882
Occasional	34.0 (432)	x^2 (for a trend) = 0.05	2.8 (1094)	x^2 (for a trend) = 0.22
Often	30.8 (107)	p= 0.821	2.9 (244)	p= 0.638

Table 6.15: Prevalence of cigarette use according to frequencies of small appetite cough, chest pain problem categorised by illegal drug use

Variables	Illegal drug users		Non-users	
	Prevalence % (sample)	Statistical difference within variable	Prevalence % (sample)	Statistical difference within variable
Small appetite		x^2= 6.31		x^2= 0.18
Never	67.4 (95)	p < 0.05	6.7 (2336)	p = 0.912
Occasional	73.7 (95)	x^2 (for a trend) = 5.64	6.5 (1334)	x^2 (for a trend) = 0.17
Often	90.3 (31)	p < 0.05	6.1 (279)	p= 0.678
Cough		x^2= 20.17		x^2= 4.23
Never	46.3 (41)	p < 0.001	5.8 (1330)	p= 0.120
Occasional	77.5 (151)	x^2 (for a trend) = 17.89	7.3 (2343)	x^2 (for a trend) = 0.70
Often	89.3 (28)	p < 0.001	5.0 (240)	p= 0.402
Chest pains		x^2= 6.29		x^2= 2.65
Never	68.2 (85)	p < 0.05	6.6 (2175)	p = 0.266
Occasional	72.2 (108)	x^2 (for a trend) = 4.68	7.1 (1418)	x^2 (for a trend) = 0.37
Often	92.6 (27)	p < 0.05	4.6 (324)	p = 0.541

6.3.4 Association between cigarette use and family problems

Respondents were asked whether their parents were cigarette users and were also asked whether their parents were alcohol users (Appendix 1). The proportion of current cigarette users in students whose parents were cigarette users was significantly higher. In contrast, there was no significant difference in proportion of cigarette users between students whose fathers were current alcohol users and students whose fathers were not (Table 6.16). Respondents were also asked whether their parents were staying together and whether they were staying with their parents. Students who were not staying with their parents were more likely to use cigarettes, while there was no significant difference according to whether parents were staying together (Table 6.16). There was no association between prevalence of cigarette use and fighting among family members (Table 6.16). In contrast, there was an association between prevalence of cigarette use and restriction placed on students by their parents; the more the restriction parents placed on them, the less the students used cigarette. Students who reported having ever run away from home were more likely to use cigarettes (Table 6.16) but financial family financial problems had no significant association with current smoking.

Table 6.16: Prevalence of cigarette use according to family problem variables

Variables	Prevalence % (sample size)	Statistical difference within variable
Cigarette smoking parent		
No	8.9 (1906)	$x^2 = 7.55$
Yes	11.5 (2278)	$p<0.01$
Alcohol drinking parent		
No	9.1 (1374)	$x^2 = 3.07$
Yes	10.8 (2802)	$p=0.080$
Financial problem in family		$x^2 = 3.13$
No problem	12.4 (469)	$p=0.209$
Some problems	9.7 (2838)	x^2 (for a trend) $= 0.72$
Many problems	10.4 (723)	$p=0.397$
Fighting among family members		$x^2 = 1.37$
Never	10.8 (712)	$p=0.505$
Sometimes	10.0 (3093)	x^2 (for a trend) $= 0.04$
Several	11.8 (391)	$p=0.832$
Restrictions of parents		
Not at all	18.9 (217)	$x^2 = 20.41$
A little	10.1 (2995)	$p<0.001$
A lot	9.9 (594)	x^2 (for a trend) $= 8.85$
All the time	7.7 (389)	$p<0.005$
Run away from home		
No	8.1 (3612)	$x^2 = 128.09$
Yes	23.5 (574)	$p<0.001$
Parents stay together		
No	12.0 (739)	$x^2 = 3.33$
Yes	9.8 (3467)	$p=0.068$
Students stay with parent		
No	13.5 (1079)	$x^2 = 16.99$
Yes	9.1 (3126)	$p<0.001$

Each variable was examined within gender and age groups sub categories. Students, at age 17 years or over, whose fathers or mothers were cigarette users were more likely to use cigarettes (Table 6.17). This significant association was not found in students aged 16 years or under. In all age group, students who were not staying with their parents were more likely to use cigarettes than those who were staying with their parents. Restrictions placed on students by their parents were significantly related to prevalence of cigarette use in students age of 16 years or under. However, this sinificant relationship was not found in students aged 17 years or over.

Table 6.17: Prevalence of cigarette use according to family variables which associated with cigarette use categorised by current age groups

	<=16 years		17 years		>=18 years	
Variables	Prevalence %(sample)	Statistical difference within variable	Prevalence %(sample)	Statistical difference within variable	Prevalence %(sample)	Statistical difference within variable
Cigarette smoking parent						
No	5.7 (845)	x^2= 0.40	8.2 (586)	x^2= 4.15	15.4(474)	x^2= 4.15
Yes	5.0 (919)	p = 0.528	11.6(706)	p < 0.05	20.2(640)	p < 0.05
Students stay with parent						
No	7.1 (422)	x^2= 3.87	13.3(354)	x^2= 5.60	22.7(295)	x^2= 5.65
Yes	4.7(1351)	p < 0.05	8.8 (939)	p < 0.05	16.5(830)	p < 0.05
Restriction of parents						
Not at all	13.9 (79)	x^2= 14.14	16.2 (74)	x^2= 3.41	24.1 (58)	x^2= 2.08
A little	5.2(1240)	p < 0.005	9.7 (930)	p = 0.332	18.1(819)	p = 0.555
A lot	4.8 (271)	x^2 (for a trend)	10.2(176)	x^2 (for a trend)	19.2(146)	x^2 (for a trend)
All the times	2.8 (177)	= 6.31	8.9(112)	= 0.83	15.2(99)	= 0.86
		p< 0.05		p= 0.362		p= 0.352

While male students whose fathers or mothers were cigarette users were more likely to use cigarettes (see Table 6.18); this significant associations was not found in female students. Conversely, restrictions placed on students by their parents were significantly related to prevalence of cigarette use in female students but not in males. Both males and females students who were not staying with their parents were more likely to use cigarettes and for both sexes those who had ever run away from home were more likely to use cigarettes.

6.3.5 Association between cigarette use and peer variables

Cigarette use among Khon Kaen secondary school students was strongly associated with peer influences. Students whose close friends were cigarette users had a

significantly higher prevalence of cigarette use (Table 6.19). Students were also asked whether they were currently staying with their friends. Significantly higher rates of frequent cigarette use were found in students who were staying with their friends.

Table 6.18: Prevalence of cigarette use according to family problem variables categorised by male and female students

Variables	Male		Female	
	Prevalence % (sample size)	Statistical difference within variable	Prevalence % (sample size)	Statistical difference within variable
Cigarette smoking parent				
No	16.9 (942)	$x^2 = 14.20$	1.0 (964)	$x^2 = 0.47$
Yes	23.7 (1028)	p<0.001	1.4 (1250)	p=0.493
Restrictions of parents				
Not at all	28.1 (128)	$x^2 = 6.35$	5.6 (89)	$x^2 = 15.07$
A little	20.0 (1423)	p=0.096	1.1 (1572)	p<0.001
A lot	21.7 (263)	x^2 (for a trend) = 2.31	0.9 (559) *	x^2 (for a trend) = 4.96
All the time	16.8 (161)	p=0.128		p<0.05
Run away from home				Fisher' exact test
No	17.2 (1616)	$x^2 = 53.74$	0.8 (1996)	p<0.001
Yes	34.5 (357)	p<0.001	5.5 (217)	
Students stay with parent				
No	24.2 (559)	$x^2 = 6.72$	2.1 (520)	$x^2 = 5.23$
Yes	18.9 (1426)	p<0.01	0.9 (1700)	p<0.05

Note: * Because the Chi-square distribution which provided the expected values were not large enough (less than 80% of expected frequencies exceed 5), the frequencies of restriction of parents were then grouped into three categories.

When analysed by different genders, male and female students whose close friends were cigarette users were more likely to use cigarettes (Table 6.20). Similarly, both male and female students who were staying with their friends were more likely to use cigarette.

Table 6.19: Prevalence of cigarette use according to peer variables

Variables		Prevalence % (sample size)	Statistical difference within variable
Close friends smoking cigarette	No	2.7 (2364)	$x^2 = 352.26$
	Yes	20.7 (1751)	p<0.001
Students stay with friends	No	9.3 (3833)	$x^2 = 43.58$
	Yes	20.2 (372)	p<0.001

6.3.6 Association between cigarette use and school activity variables

Students were questioned about their average grade in school class (see question in Appendix 1). There was a linear association between average grade and cigarette use; students who had higher than average grades were less likely to use cigarettes (Table 6.21). Students were also asked whether they had attention difficulty in their classes. There were no associations between cigarette use and attention difficulty in class.

Table 6.20: Prevalence of cigarette use according to peer variables categorised by sex

Variables		Male		Female	
		Prevalence % (sample size)	Statistical difference within variable	Prevalence % (sample size)	Statistical difference within variable
Close friends were smoking cigarette	No	2.7 (2364)	$x^2 = 352.26$	2.7 (2364)	$x^2 = 352.26$
	Yes	20.7 (1751)	p<0.001	20.7 (1751)	p<0.001
Students stay with friends	No	9.3 (3833)	$x^2 = 43.58$	9.3 (3833)	$x^2 = 43.58$
	Yes	20.2 (372)	p<0.001	20.2 (372)	p<0.001

In addition, students were asked how often they played truant. In this case, there was a linear association between prevalence of cigarette use and students' truancy; the higher the number of truancy episodes, the higher the prevalence of cigarette use.

Table 6.21: Prevalence of cigarette use according to school activity variables

Variables	Prevalence % (sample size)	Statistical difference within variable
Average grade		$x^2 = 76.51$
D, F	15.7 (1293)	p<0.001
C	9.2 (2304)	$x^2_{\text{(for a trend)}} = 76.41$
A, B	3.2 (596)	p<0.001
Attention difficulty		
No	10.7 (2307)	$x^2 = 1.06$
Yes	9.8 (1892)	p=0.303
Truancy		
Never	4.6 (2702)	$x^2 = 367.41$
1-5 times	16.7 (1189)	p<0.001
6-12 times	31.4 (175)	$x^2_{\text{(for a trend)}} = 366.35$
> 12 times	40.9 (132)	p<0.001

The significant association between cigarette use and school variables (average grade and truancy) may be confounded by sex, age, and school type, and therefore analyses were undertaken within these sub groups. There were associations between cigarette use and average grade in both male and female students (Table 6.22). Similarly, both males and females, students who were playing truant were more likely to use cigarettes.

Table 6.22: Prevalence of cigarette use according to school activity variables categorised sex

Variables		Male		Female	
		Prevalence % (sample size)	Statistical difference within variable	Prevalence % (sample size)	Statistical difference within variable
Average grade	D, F	27.9 (673)	$x^2 = 53.01$	2.4 (620)	$x^2 = 10.44$
	C	19.1 (1052)	p<0.001	0.8 (1252)	p < 0.01
	A, B	6.8 (251)	$x^2_{\text{(for a trend)}} = 52.17$, p<0.001	0.6 (345)	$x^2_{\text{(for a trend)}} = 7.67$, p< 0.01
Truancy	Never	10.7 (1064)	$x^2 = 193.02$	0.6 (1638)	$x^2 = 23.86$
	1-5 times	26.6 (702)	p<0.001	2.5 (487)	p< 0.001
	6-12 times	43.5 (115)	$x^2_{\text{(for a trend)}} = 192.73$,	5.2 (97) *	$x^2_{\text{(for a trend)}} = 23.54$, p<0.001
	> 12 times	56.8 (95)	p<0.001		

Note: * Because the Chi-square distribution which provided the expected values were not large enough (less than 80% of expected frequencies exceed 5), the frequencies of truancy were then grouped into three categories.

The associations between cigarette use and average grade were found in all age groups, except for students age 18 years. (Figure 6.3) and as shown in Figure 6.4, in all age groups there were linear associations between prevalence of cigarette use and students' truancy.

Figure 6.3: Prevalence of cigarette use according to different school performance categorised by current age groups.

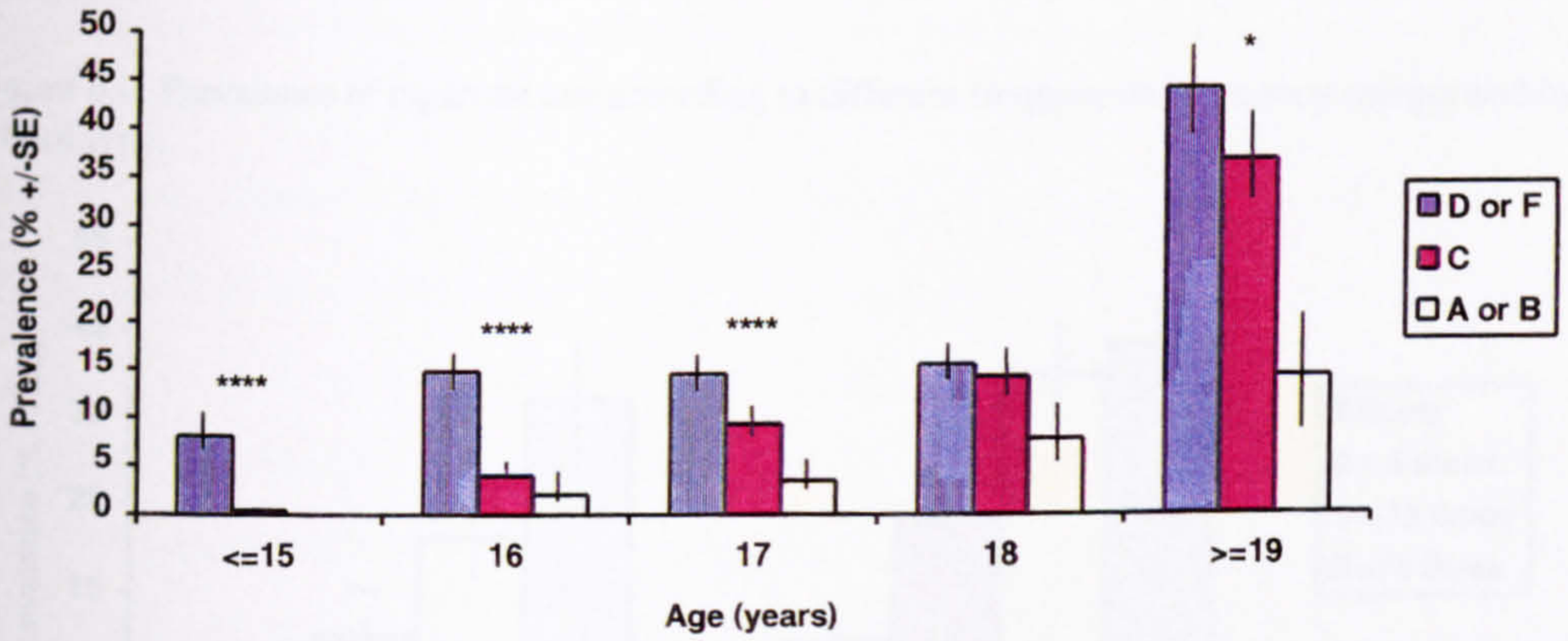
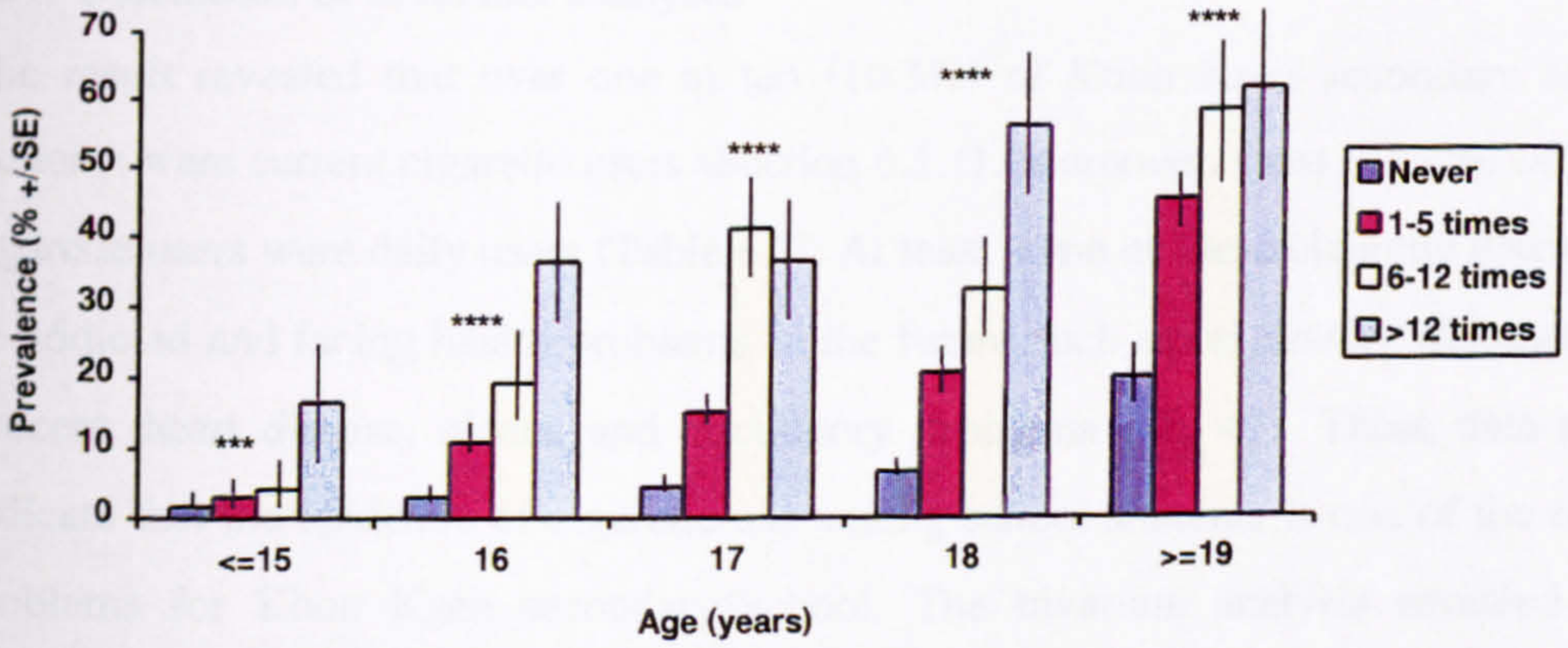


Figure 6.4: Prevalence of cigarette use according to different frequencies of truancy categorised by current age groups



There was an association between cigarette use and average grade in both academic and vocational school students (Figure 6.5). Similarly, there was an association between cigarette use and truancy in both academic and vocational school students (Figure 6.6).

Figure 6.5: Prevalence of cigarette use according to school performances categorised by school type.

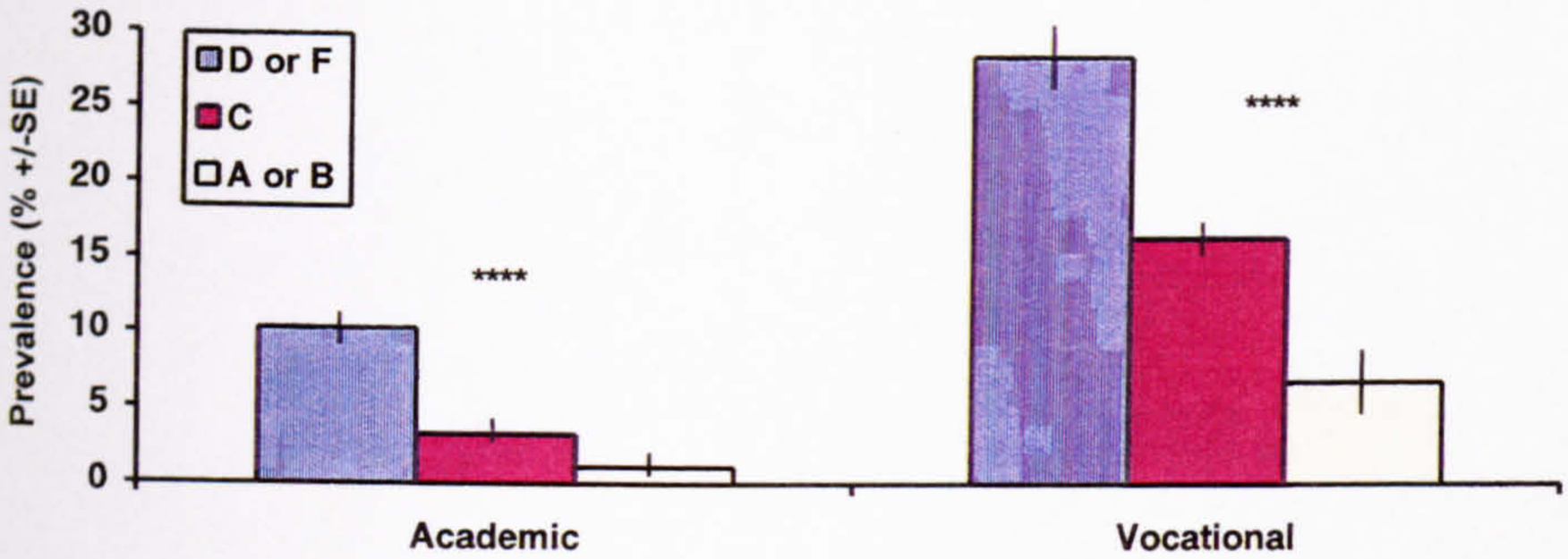
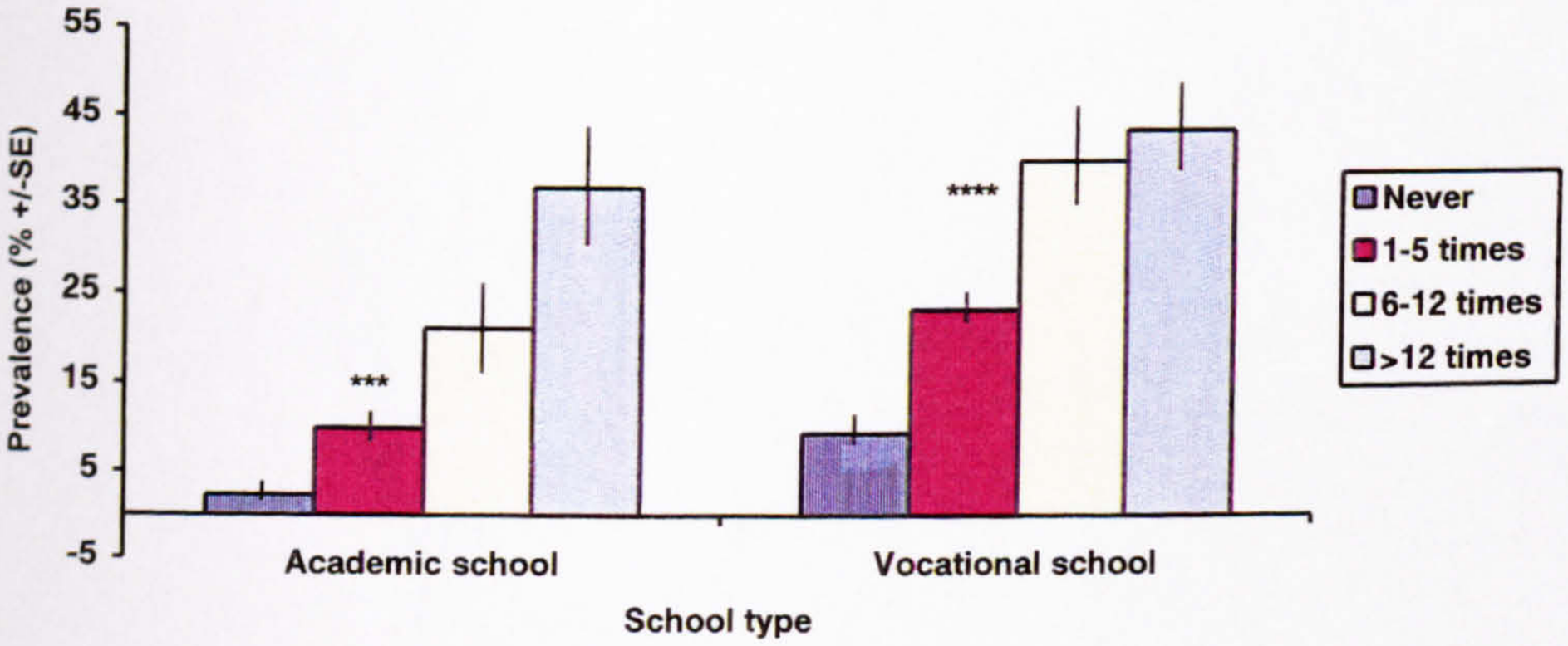


Figure 6.6: Prevalence of cigarette use according to different frequencies of truancy categorised by school type.



6.3.7 Discussion of bivariate analyses

The result revealed that over one in ten (10.3%) of Khon Kaen secondary school students were current cigarette users (Section 6.1.1). Moreover, most (62.2%) of these cigarette users were daily users (Table 6.1). At least some of these cigarette users may be addicted and facing health problems in the future such as respiratory diseases and cancers, heart disease, ulcers, and circulatory problems (45, 49). These data alone indicate that the epidemic of cigarette use among school students is one of the major problems for Khon Kaen secondary school. The bivariate analysis revealed that cigarette use was associated with sex, age, school type, school zone, fathers' education, and school year (Table 6.2). However, there were no significant associations with cigarette use and fathers' occupation. Multivariate logistic regression analysis supported that sex, age, school type, and fathers' education were independently associated with cigarette use (Figure 6.2). School year and school zone were significantly associated cigarette use in bivariate analysis but they were not

independently associated with cigarette use in multivariate logistic regression analysis. This was because the association between school year and cigarette use was confounded by age and fathers' education (Table 6.3) and the association between school zone and cigarette use was confounded by age, sex, and fathers' education (Table 6.4). After examining the association between cigarette use and school year in different sub-groups of socio-demographic variables, the result revealed an negative association between school year and cigarette use in each age group; higher school year students were less likely to use cigarette than lower school year students (Table 6.3) . This can be explained by effect of "age for school year (older students in school year)". For example, students aged 19 years in 10th and 11th school year were more likely to use cigarettes than students aged 19 years in 12th school year (Table 6.3). This effect of older students in younger age groups was consistent across age groups.

The inner-city environment is notorious for the use of substances and entertainment places including discos, coffee shops and gambling venues are associated with a variety of social problems (6, 130). School students in the inner city area rather than in district areas seem to be more exposed to substances. However, examining the association between cigarette use and school zone in different school types (Table 6.4), the result revealed that the prevalence of cigarette use among academic school students in district area was significantly higher than academic school students in inner cities. This was possibly for the same reason as alcohol use (see also alcohol use section); i.e. that most academic school in inner-cities have more teachers, budget, and prevention programs to deal with substance use such as alcohol, cigarette, and illegal drug use.

Only male students who reported being depressive were more likely to use cigarette (Table 6.7). It is possible that Thai female students had more tolerance to cigarette use than males even when they felt depressed. This may also be influenced by the culture where females are more likely to be closely monitored by family and society than males and female who "misbehave" (e.g. use illegal drugs) are more likely to be blamed by family and society (131). The variables in personal risk behaviours such as behaviours of alcohol use, illegal drug use, and going out for fun at night were

strongly associated with cigarette use (Table 6.9) and were consequently consistent across different sex and age groups (Tables 6.10 and 6.11). Because cigarette use among Khon Kaen school students was strongly associated with illegal drug use, it was possible that cigarette use among school students leads into other hard substance use such as illegal drug use. However, this does not necessarily indicate cause and effect but may instead relate to certain types of individuals being drawn into different risky behaviours at different times in life.

The results revealed that there were associations between cigarette use and appetite problems, coughing and chest pains (Table 6.12). These associations were confounded by alcohol use and illegal drug use. Among illegal drug users, there were significant associations between cigarette use and appetite, coughing and chest pain problems but these associations were not found in illegal drug non-users. Among alcohol users, there were significant associations between cigarette use and appetite problem and between cigarette use and coughing (Table 6.14) but these associations were not found in alcohol non-users. It was possible that such health problems may be caused by using illegal drugs, alcohol drinking and cigarette smoking, or all of them and that some effects may be synergistic. The result also revealed the significant associations between cigarette use and appetite, cough, and chest pain problems were only in male students (Table 6.13). This may be the effects of different levels of alcohol and illegal drug use between males and females (Table 5.2 in part of alcohol and Table 7.3 in part of illegal drug) which could have confounded the association between cigarette use and health problems.

When analysed by age group there were significant associations between restrictions by parents and prevalence of cigarette use in those aged 16 years or under (Table 6.17). However, this significant relationship was not found in age group 17 years or over. One interpretation is that restrictions placed by parents on students are effective at stopping students using cigarettes only at younger ages (<=16 years). Parents using only restrictions on children age over 16 years may not be stopping them using cigarettes and alternative strategies as for alcohol should be considered. Among students in all age groups, those not staying with their parents were more likely to use

cigarettes (Table 6.17). This result suggests parents staying with their children at age 15-19 years may help to reduce cigarette use although again these analyses are not able to establish causative relationships. Male students whose fathers or mothers were cigarette users were more likely to use cigarettes (Table 6.18). Interestingly, this significant association was not found in female students. Male students may more easily follow the behaviours of their parents. Alternatively female students may be more controlled by their parents. However, only students aged 17 years or over whose fathers or mothers were cigarette users were more likely to use cigarettes than those whose parents were not (Table 6.17). Students age 17 years or over are likely to have more independence and more opportunity (such as more money and social affairs) to use cigarettes than students at younger ages (16 years or under) when parental influence (such as mimicking adults) may be strongest. Cigarette use was also strongly associated with use by close friends (Table 6.19). Therefore, both male and female students whose close friends were cigarette users were more likely to use cigarettes (Table 6.20).

Playing truant was strongly associated with cigarette use (Table 6.21) and this association was consistent in all age and sex group (Figure 6.4 and Table 6.22). There was a linear association between average grade and cigarette use; students who had higher than average grade were less likely to use cigarettes (Table 6.21). Cigarettes may be effecting performance or students who have lower average grades may feel more inclined towards use. Either way, educational counselling programs or educational advising programs should be established for students who have lower average grade. These programs can help low school performers generally but should also be aware of the links and need to address cigarette use. Finally, although the results showed that there were associations between cigarette use and psychological characteristics, having risk behaviours, having health problems, having family problems, having school problems, and peer influences, the results also showed that there were interrelations with these associations. For example, bivariate analysis revealed that higher school year students were more likely to use cigarette than lower school year students. However, this association was confounded by the age (Table

6.3). In order to identify key variables that were independently associated with cigarette use, multivariate analyses were used instead in section 6.4.

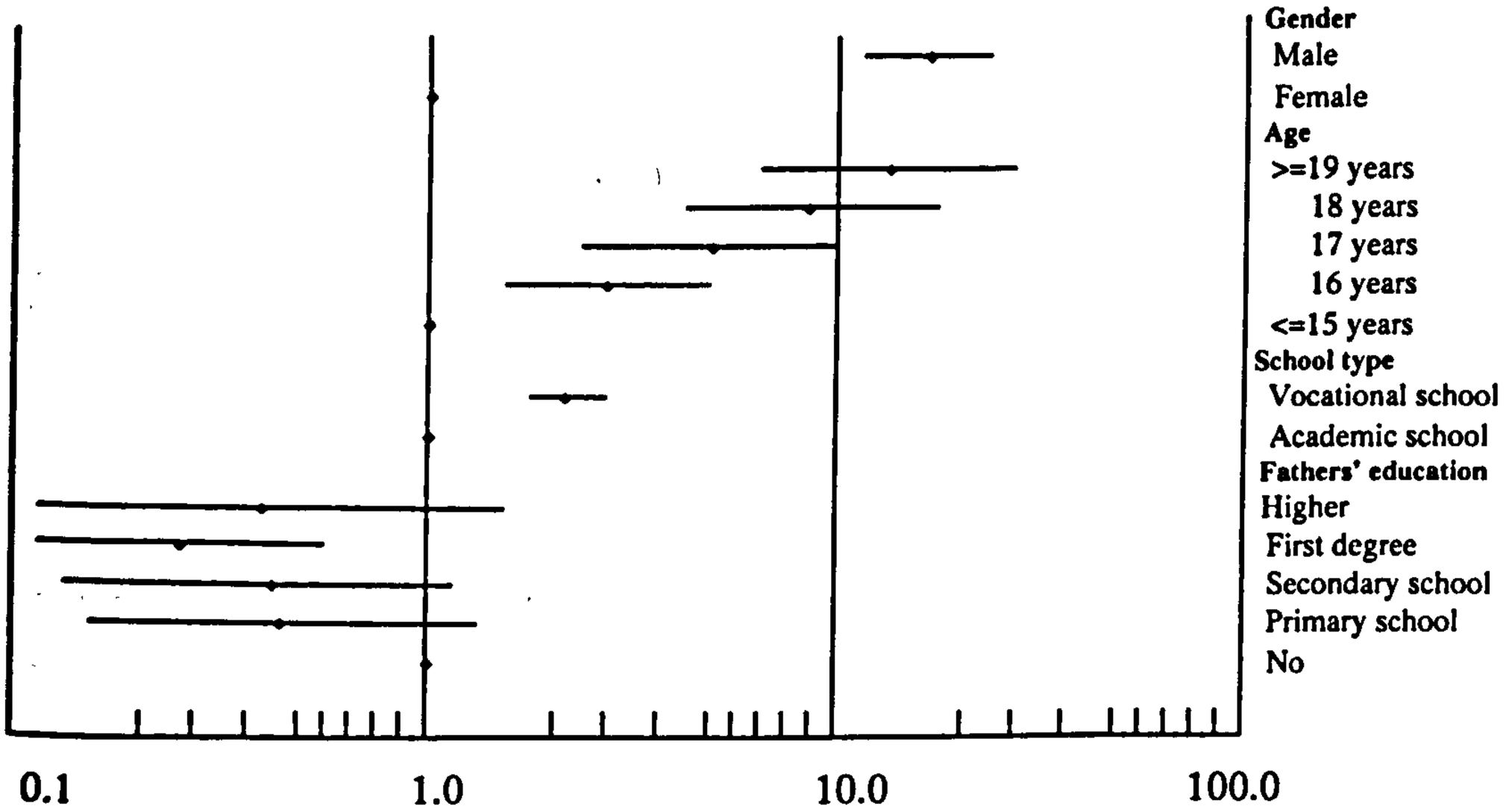
6.4 The indicative factors of cigarette smoking among school students

In order to identify significant predictors of cigarette smoking among Khon Kaen secondary school students, a series of logistic regression analyses were performed to examine which risk variables remained potentially associated with cigarette smoking by Khon Kaen secondary school students. Seven logistic regression models including; socio-demographic model, family model, school performance model, peer model, health model, and behavioural/psychological model were developed. Backward stepwise elimination was used to determine those variables that were independently associated with cigarette smoking and to remove non-significant confounding factors (92). These independent models can be used as predictors of cigarette use among Khon Kaen secondary school students. In addition, these seven models are useful for predicting cigarette use from different data sets.

6.4.1 Socio-demographic model for predicting cigarette smoking

The effects of socio-demographic factors on the likelihood of cigarette smoking were explored by using logistic regression analysis

Figure 6.7: Adjusted odds ratios with 95% confidence interval for socio-demographic variables associated with cigarette smoking (socio-demographic model)



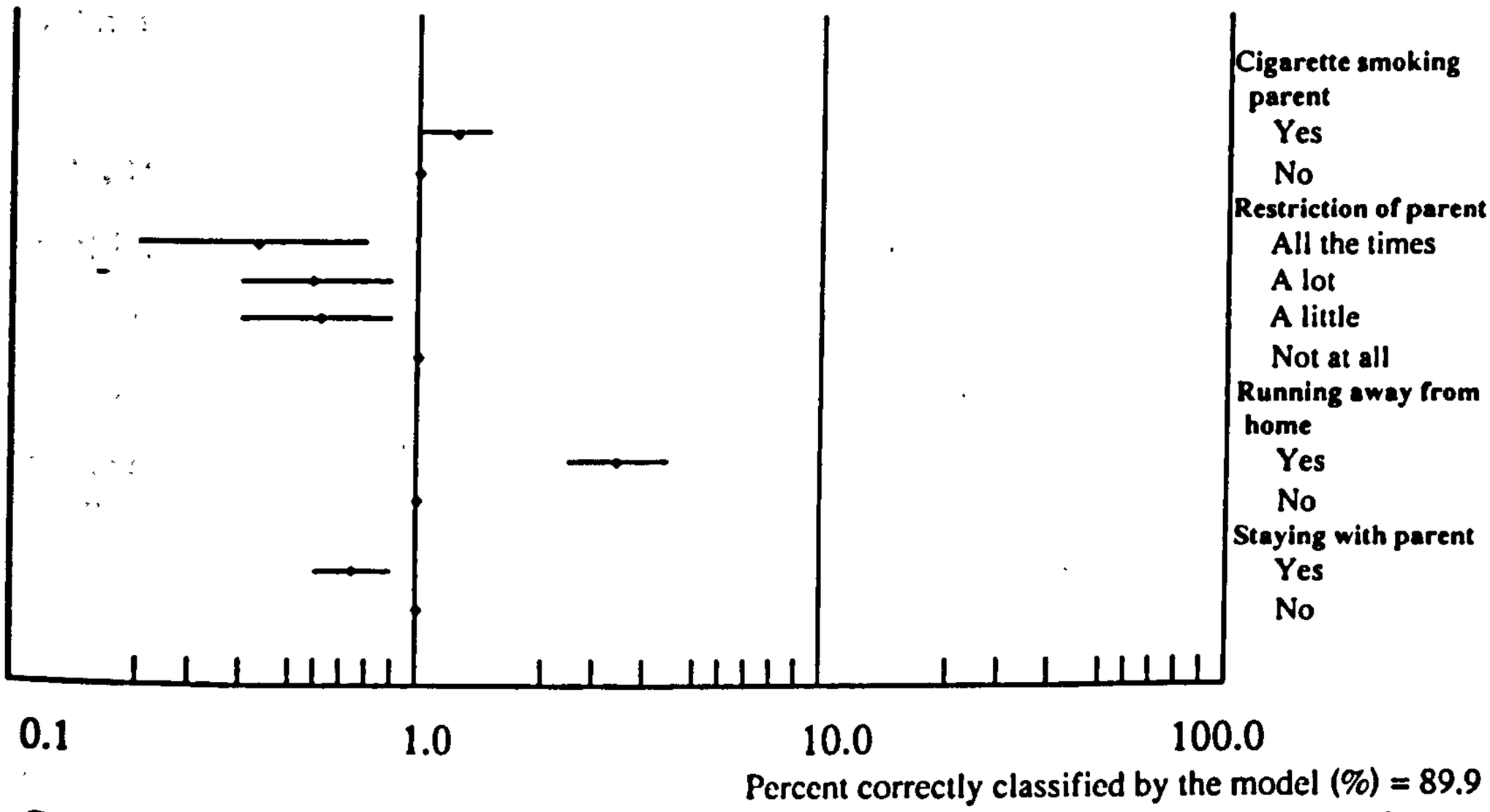
Percent correctly classified by the model (%) = 90.2

The results of the logistic regression were shown as adjusted odds ratios and their 95% confidence interval after adjustment for all other socio-demographic factors in the models. Multivariate logistic regression analysis revealed four key predictors for cigarette smoking in this model (Figure 6.7). Comparing between multivariate analysis and bivariate analysis, school year and school zone, which were significantly associated with cigarette use in bivariate analysis (Table 6.2), were not apparent in logistic regression analysis.

6.4.2 Family model for predicting cigarette smoking

Using multivariate logistic regression analysis, there were four key predictors for cigarette smoking remaining in the final regression equation of family model (Figure 6.8). The statistical significance of all other variables disappeared in the model.

Figure 6.8: Adjusted odds ratios with 95% confidence interval for family variables associated with cigarette smoking (family model)

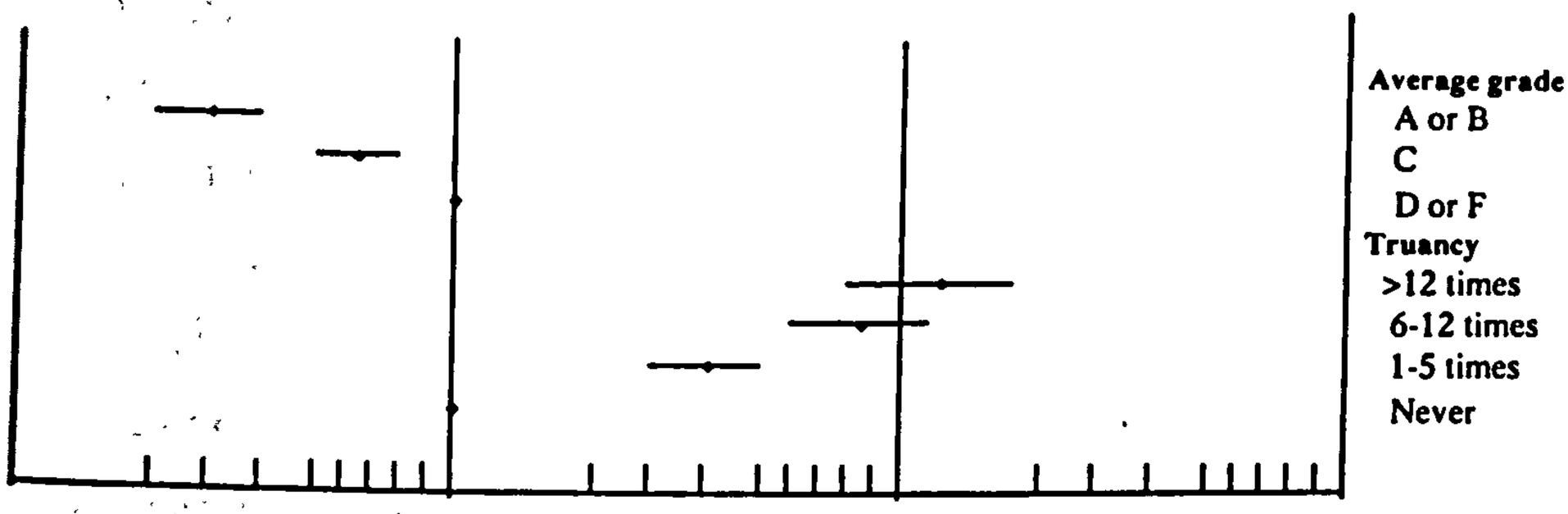


Comparing between multivariate analysis and bivariate analysis, these four variables which were all significantly associated with cigarette use in bivariate analysis (Table 6.16) all appeared in multivariate logistic regression analysis.

6.4.3 School performance model for predicting cigarette smoking

Multivariate logistic regression analysis of school performance model revealed two key predictors for cigarette smoking (Figure 6.9). The statistical significance of all other variables disappeared in the model.

Figure 6.9: Adjusted odds ratios with 95% confidence interval for school variables associated with cigarette smoking (school performance model)

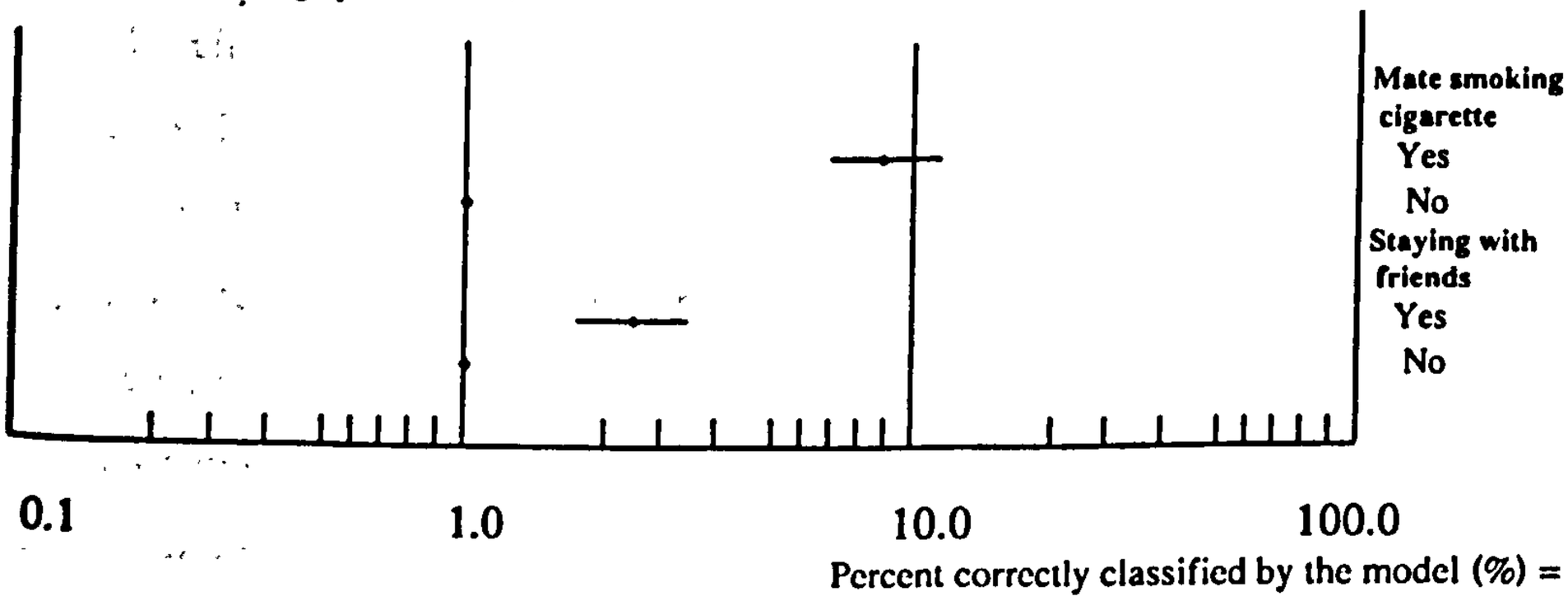


Comparing between multivariate analysis and bivariate analysis, attention difficulty which was significantly associated with cigarette use in bivariate analysis (Table 6.21) did not appear in the logistic analysis.

6.4.4 Peer model for predicting cigarette smoking

Multivariate logistic regression analysis of peer model revealed two key predictors for cigarette smoking remaining in the final regression equation (Figure 6.10). The statistical significance of all other variables disappeared in the model.

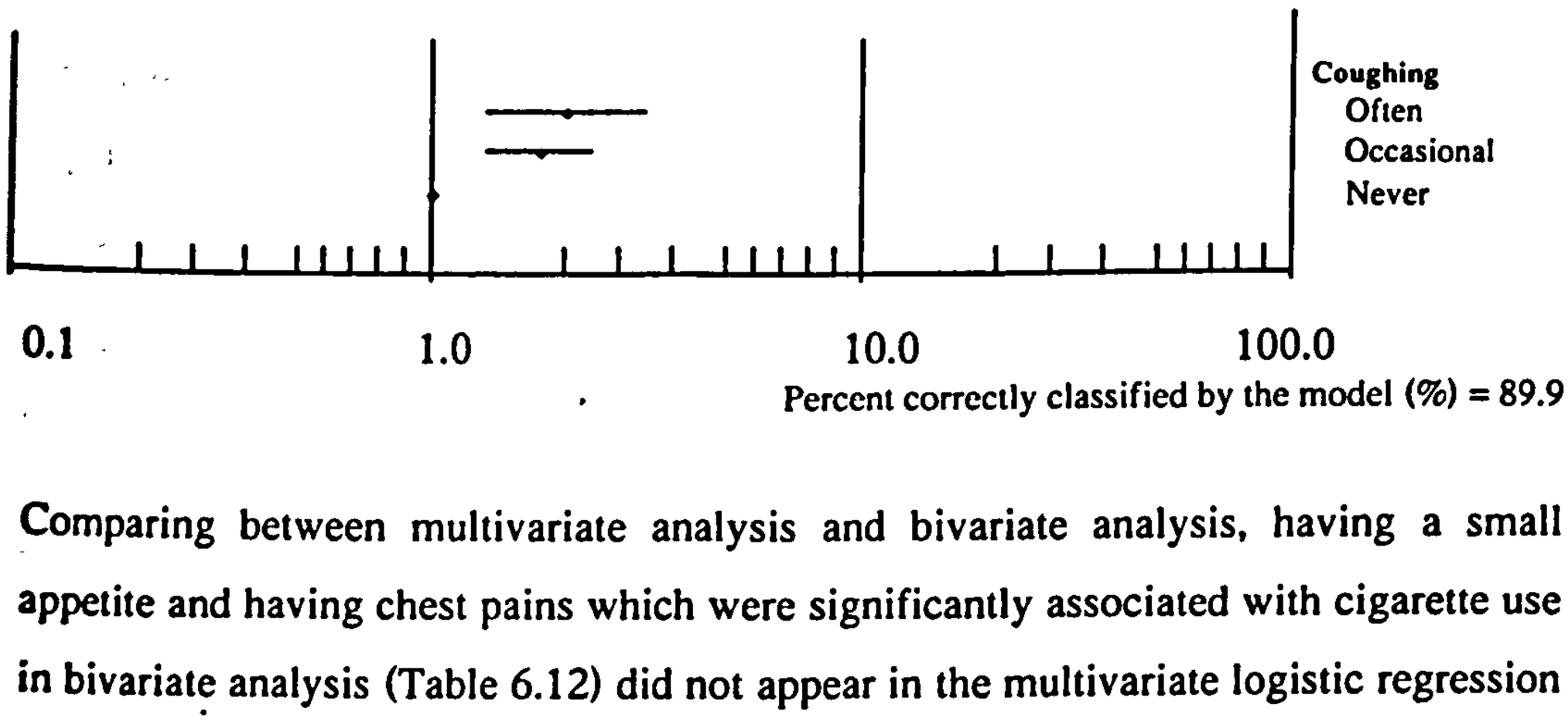
Figure 6.10: Adjusted odds ratios with 95% confidence interval for peer variables associated with cigarette smoking (peer model)



6.4.5 Health model for predicting cigarette smoking

Only one key predictor for cigarette smoking remained in the final logistic regression equation, coughing (Figure 6.11). The statistical significance of all other variables disappeared in the model.

Figure 6.11: Adjusted odds ratios with 95% confidence interval for health variables associated with cigarette smoking (health model)

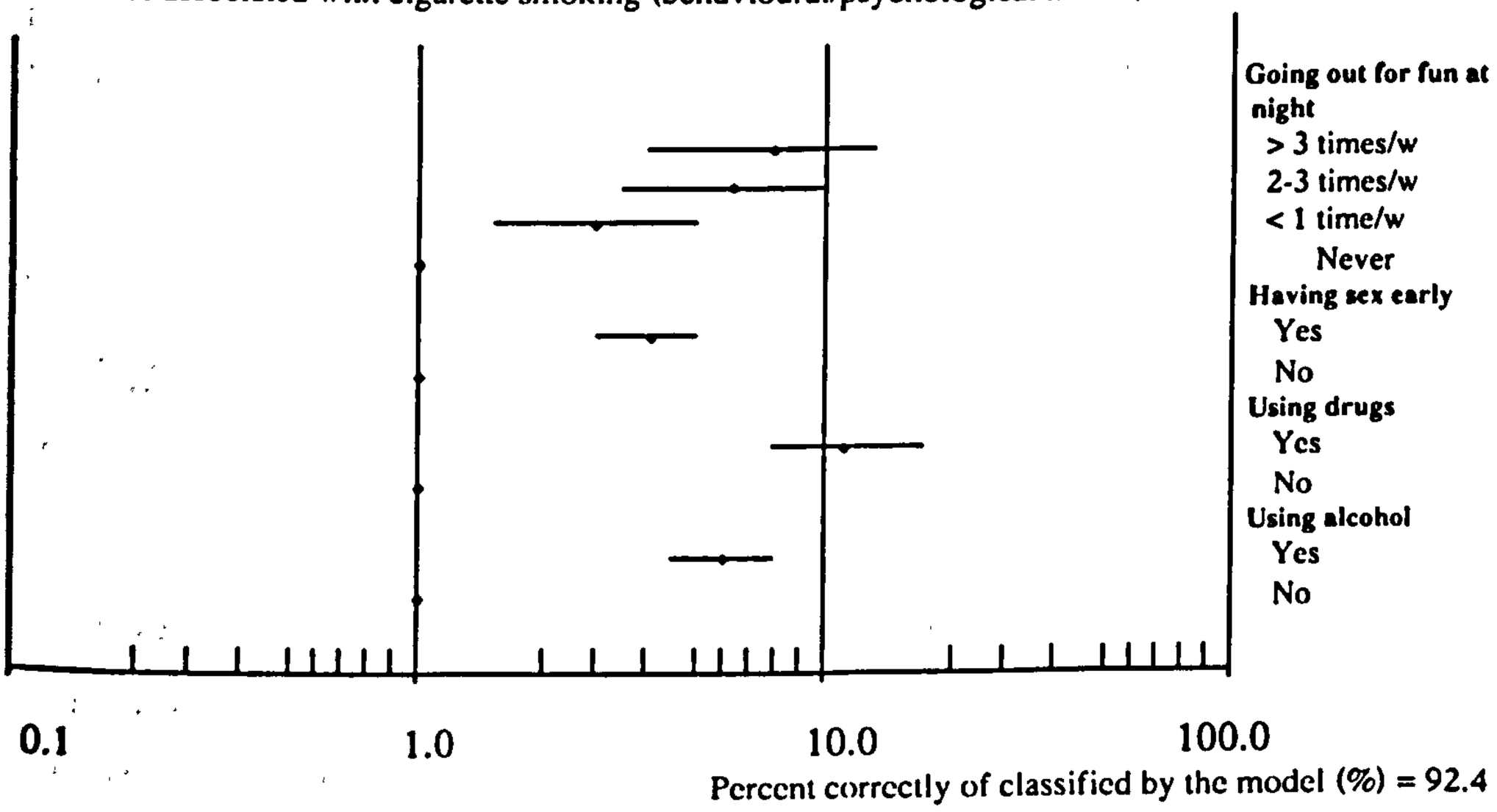


Comparing between multivariate analysis and bivariate analysis, having a small appetite and having chest pains which were significantly associated with cigarette use in bivariate analysis (Table 6.12) did not appear in the multivariate logistic regression model.

6.4.6 Behavioural/psychological model for predicting cigarette smoking

Multivariate logistic regression analysis for the behavioural/psychological model revealed four key predictors for cigarette smoking remaining in the final regression equation (Figure 6.12).

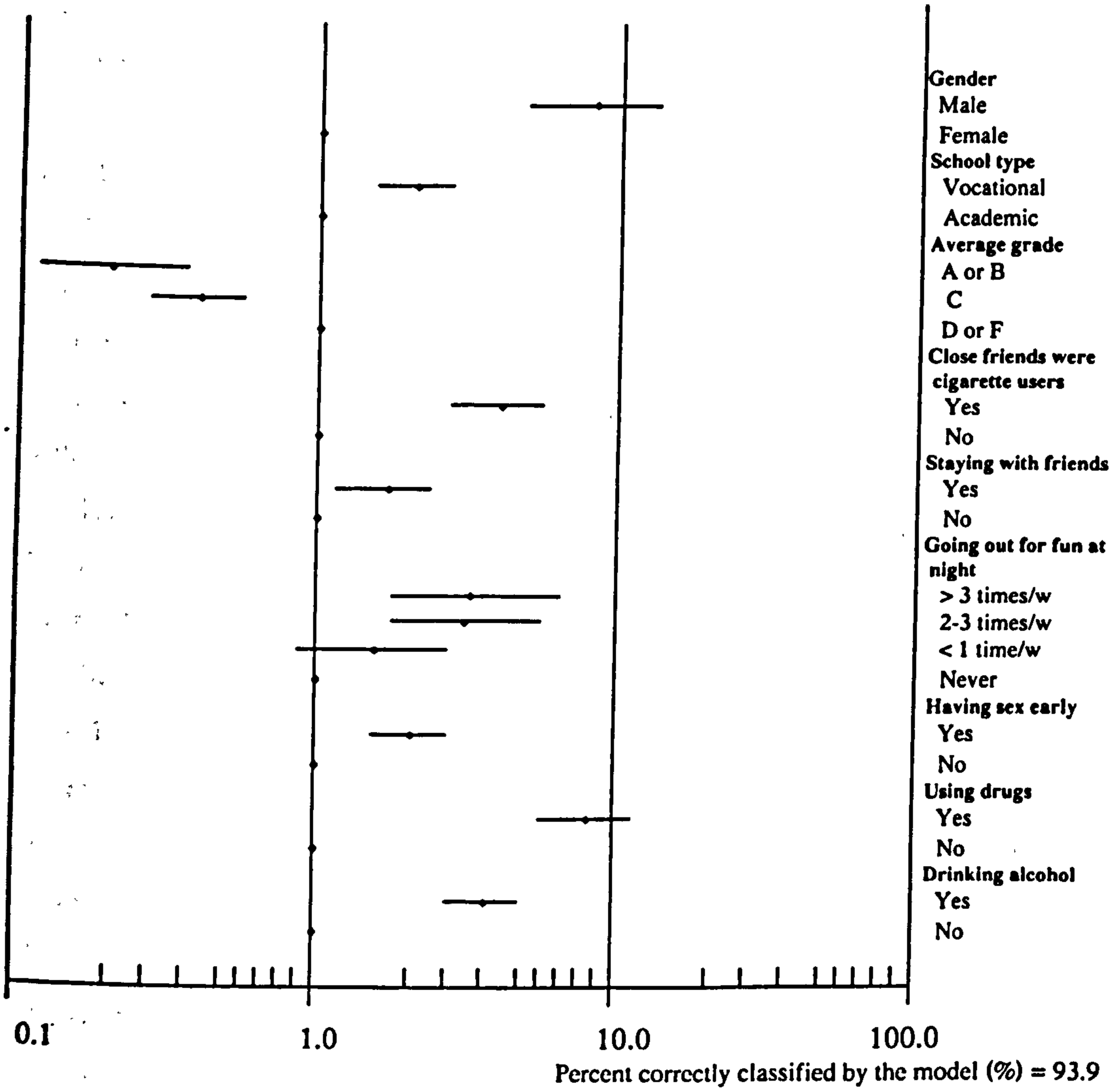
Figure 6.12: Adjusted odds ratios with 95% confidence interval for behavioural / psychological variables associated with cigarette smoking (behavioural/psychological model)



6.4.7 Overall model for predicting cigarette smoking

The effects of risk variables (personal risk behaviours, psychological characteristics, family problems, school activities) and socio-demographic variables, served as inclusive independent variables on the likelihood of cigarette smoking were explored by using logistic regression analysis in order to identify significant predictors of cigarette smoking among Khon Kaen secondary school students.

Figure 6.13: Adjusted odds ratios with 95% confidence interval for all variables associated with cigarette smoking (overall model)



Percent correctly classified by the model (%) = 93.9

Multivariate logistic regression analysis of overall model revealed nine key predictors for cigarette smoking remaining in the final regression equation (Figure 6.13). The statistical significance of all other variables disappeared in the model. Predictors in overall model have high validity in making predictions for cigarette use because they have the least confounding effects from all variables in each separate models.

However, the separated models may be useful when all data are not available or specific types of relationships need to be explored.

6.5 Epidemiology, associations and predictive models of cigarette use - Discussion

6.5.1 Prevalence of cigarette smoking

It was estimated that 32.1% of Khon Kaen secondary school students have experienced using cigarettes with one in ten (10.3 %) continuing to use cigarettes and 21.8 % giving use up. Most current cigarette users were daily users (62.2%) (see Table 6.1). In a province the size of Khon Kaen, with a population of secondary school 63,407 15-19 year olds, about 6,531 Khon Kaen secondary school students would be current cigarette users according to this calculated prevalence, in particular 4,063 current cigarette users would be daily smokers. The vast number of secondary school students in Khon Kaen who are current cigarette users is sufficiently high to warrant special attention to this subject. The progressive tendency of the cigarette use problem among Khon Kaen secondary school students (Figure 6.1) was identified with a significant increase in the proportion of current cigarette users (7.7%, 10.3%, and 12.9% in 10th, 11th, and 12th school year, respectively) through school years. These results indicate that there were more new cigarette users than the number of users who gave up using cigarettes in each school year although there was a significant increase in the proportion of students who gave up using cigarettes through 10th, 11th, and 12th school year. These findings suggest that any project concerning cigarette use among Khon Kaen secondary school students should consider prevention of incoming cigarette user, abstinence for those already using and relapse prevention for those who have stopped.

The level of current cigarette use among Khon Kaen secondary school students was generally lower when compared with other international studies of cigarette use amongst adolescents aged between 15 to 20 between 1995 and 1998 (Table 6.23). However, the data showed that most (62.2%) current cigarette users were daily users (Table 6.1) which may imply an additional severity to the problem from cigarette use in Thailand.

6.5.2 Associations between cigarette smoking and other factors

Among Khon Kaen secondary school students, the associations between cigarette use and socio-demographic variables (see Table 6.2 and Figure 6.2) were useful for identifying students at risk of cigarette use. For example, male students were more likely to use cigarettes than female students, the older students were more likely to use cigarette than the younger students, vocational school students rather than academic school students were more likely to use cigarettes. Students whose fathers had no education degree were more likely to use cigarettes. Moreover, students aged 19 years were more likely to use cigarettes in 10th and 11th school year than in 12th school year (Table 6.3).

Table 6.23: Summary of epidemiological studies of cigarette use among adolescent age between 15 to 20 during 1995 to 1998.

Country	Year	Author	Level/Age	Sample	% students ever used cigarette	% students currently use cigarette
Taiwan, Kaohsiung city	1998	Yang et al (79)	Secondary school students 16-18 years	1,358	---	56%
Germany	1998	Setter et al (132)	School and vocational students	20,527	---	51.2% of men and 49.4% of women
Brazil, Ribeirao Preto	1997	Muza et al (133)	Students grade 8-11 (age15-18)	1,025	37.7%	
Jamaica	1997	Soyibo and Lee (94)	high school, 16, 17 year olds	2,417	---	16.6 %
Australia, Queensland	1996	Stanton et al (134)	School students grade 10 14-16 years	2877	---	31%
UK,	1996	Miller and Plant (82)	Secondary school students age 15-16	7722	---	36.0%
Connecticut	1996	Coogan et al (127)	Students grade 4-12 (age 10-19)	4884	---	15%
Lugo, Spain	1996	Martinez et al. (81)	secondary school students, 15-18 years	805	---	25.7%
Japan	1996	Matsushita et al (86)	high school, 15-18 year olds	14,438	---	14.0 %
Newcastle Upon Tyne, UK	1995	Gilvarry, et al. (30)	secondary school	3,623	---	21 %
Spain, Barcelona.	1992	Ariza and Nebot (135)	Student age 13-18 years	1,816	---	28.6%
Greece	1991	Kokkevi and Stefanis (95)	School students age 14-18 years	11,058	---	22.3%
Khon Kaen, Thailand	1998	Daosodsai	secondary school, 15-19 year olds	4,217	32.1 %	10.3 %

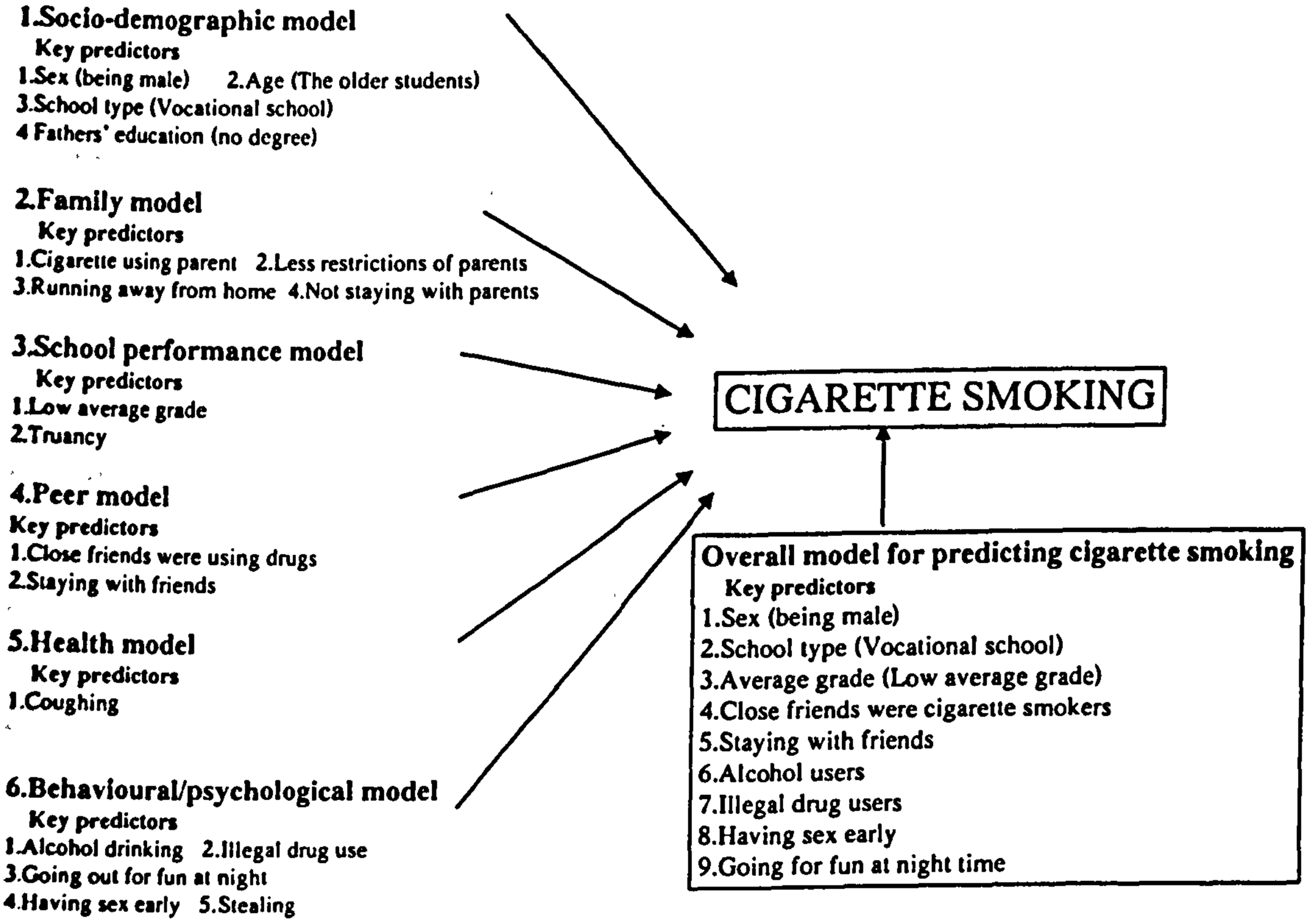
The implication is that the students who were older than other students at their school year (age for school year) were more likely to report engaging in cigarette use behaviours. Byrd (1996) also found that high school students who were older than other students in their school year (Monroe County, New York) were more likely to report being regular smokers than the younger students (136). Therefore, age for school year status is an important marker for cigarette use.

Bivariate analysis (Table 6.2) revealed that fathers' education was significantly associated with cigarette use among Khon Kaen secondary school students whereas fathers' occupation was not. When multivariate logistic regression was used to control for potential confounding factors (Figure 6.2), fathers' education was still significantly associated with cigarette use. Fathers' qualification level (indicated by fathers' education) showed more strength as a predictor of cigarette use among Khon Kaen secondary school students than fathers' income (indicated by fathers' occupation). A variety of studies, like this study, have shown socio-demographic variables associated with cigarette use of school students. Kokkevi and Stefanis (1984) reported that cigarette use by Greece adolescent students 14-18 years was highly correlated with gender (prevalence of cigarette use in males was higher than in females), age (the older students were more likely to use cigarette than the younger), and type of school (higher prevalence of cigarette use was reported in technical-vocational school in comparison to public school) (95). Potthoff et al. (1998) explored the covariation of risk behaviours in a national sample of 7,687 American Indian reservation-based youths in 7th through 12th school years and found that use of cigarette was associated with sex and age (98). A large number of studies also found cigarette use to be associated with gender (97, 103, 120, 137-139), age (81, 103, 120, 133, 139), type of school (96) and socio-economic status (101).

The findings of the present study have several implications for the development of cigarette use prevention programs targeted at Khon Kaen secondary school students. Students who were playing truant and who had low school performance were more likely to use cigarettes (Table 6.21) and those who identified themselves as

aggressive, depressive, or risk taking persons were also more likely to use cigarettes (summary in Figure 6.14).

Figure 6.14: Key predictors of cigarette smoking of Khon Kaen secondary school students.



These results indicate that teachers should show particular concern for students who show such behaviour. Counselling around poor school attendance or behavioural problems may also need to include discussion of cigarette use. Also important is that education programs providing harm related information about the short and long term dangers of cigarette use should be used for students with risk taking characteristic to understand thoroughly and hopefully avoid cigarette use. In the family context, cigarette use was higher in students who had smoking parents (Table 6.16). Conversely, cigarette use was lower in students who were staying with parent (Table 6.16). These findings indicate that parents may be able to help to prevent their children from using cigarettes by providing a good role model at home by not using cigarette. However, this finding needs further examination. Students who reported a higher frequency of going out for fun at night were more likely to use cigarettes (Table 6.9). Parents' would be well informed to pay attention to children who

frequently going out for fun at night. To the same end, entertainment places in the night-time such as discos, bars and pubs, should be more restrictive (perhaps via the police) in controlling age of entering (legal restriction for entering disco, bar, pub, etc at age under 18 years). Finally, because cigarette use was higher in students who were alcohol and illegal drugs users (Table 6.9) any preventive programs should be targeted at all cigarette, alcohol, and illegal drug use together as the characteristics, social or otherwise, linking these behaviours show strong correlations suggesting common route causes.

6.5.3 Key predictors of cigarette smoking

One of the aims of this study is to establish predictor models to aid in identifying high-risk groups of students who have highly probability of using cigarettes. Factors potentially associated with cigarette use were tested by logistic regression analysis. Several predictors of cigarette use were revealed in the models. As these are independent factors, the more of these factors presented in a student, the higher the risk of cigarette smoking. These indicative factors covered a wide range of topics, including socio-demographic characteristics, personal risk behaviours, psychological characteristics, family problems, peer contexts and school activities. In the case of cigarette smoking, students can often not be detected through expecting direct information volunteered by students about their habits. Instead, these models of predictors can be useful as indicators. In addition, these models may help to identify students at risk of cigarette smoking in an early stage of using or before using cigarettes and prevention programs can then be aimed at high-risk groups containing users and potential users.

The overall models for predicting cigarette smoking showed a high value of predicted classification (Figure 6.13). However, some predictors in the overall model may be difficult to detect directly such as alcohol use, illegal drug use, having sex early, stealing, and close friends were smoking cigarettes etc. Here, socio-demographic models, family model, school model, peer model, health model, or behavioural/psychological model can be used instead. Predictive factors may also be useful to teachers who are in an important position to address cigarette use among

school students. Given appropriate intervention tools teachers could intervene in groups with a high index of suspicion for smoking.

Finally, these associations between cigarette use and other variables (such as family factors, school factors, peer factors, and risk behaviours of students) indicate that interventions targeting this age group (15-19 years) should be wide and community-based with an orientation towards the students at risk, the families, the youths' peers, the schools, and national health policies that control availability and accessibility to cigarettes by students or young people.

CHAPTER 6: CIGARETTE USE - PART 2
SOCIAL ASPECTS OF CIGARETTE USE

6.6 Age of first using cigarettes

A retrospective survey was used to determine the age at which Khon Kaen secondary school students began cigarette use and to understand the reasons why. The questions were used as part of the ASTS questionnaire (Appendix 1) eliciting reports of age of first cigarette use behaviour. Students were asked questions regarding the age at which they began smoking cigarettes and their reasons for first smoking and afterward. Chi-square statistics were used to compare the age of initiation of cigarette use and reasons for first time smoking between male and female students. Logistic regression analysis was used to test factors that were potentially associated with starting cigarette use before age 15 years.

Table 6.24: Distribution of age of first use of cigarette by Khon Kaen secondary school students.

Age of first use cigarette	Frequency	Percent	Cumulative percent
6 years	2	0.2	0.2
7 years	2	0.2	0.4
8 years	11	0.8	1.2
9 years	11	0.8	2.0
10 years	31	2.4	4.4
11 years	24	1.8	6.2
12 years	98	7.5	13.7
13 years	139	10.7	24.4
14 years	226	17.4	41.8
15 years	371	28.5	70.3
16 years	207	15.9	86.2
17 years	125	9.6	95.8
18 years	47	3.6	99.4
19 years	8	0.6	100.0
Total	1302	100.0	

* Fifty two individuals (3.8%) did not provide this information.

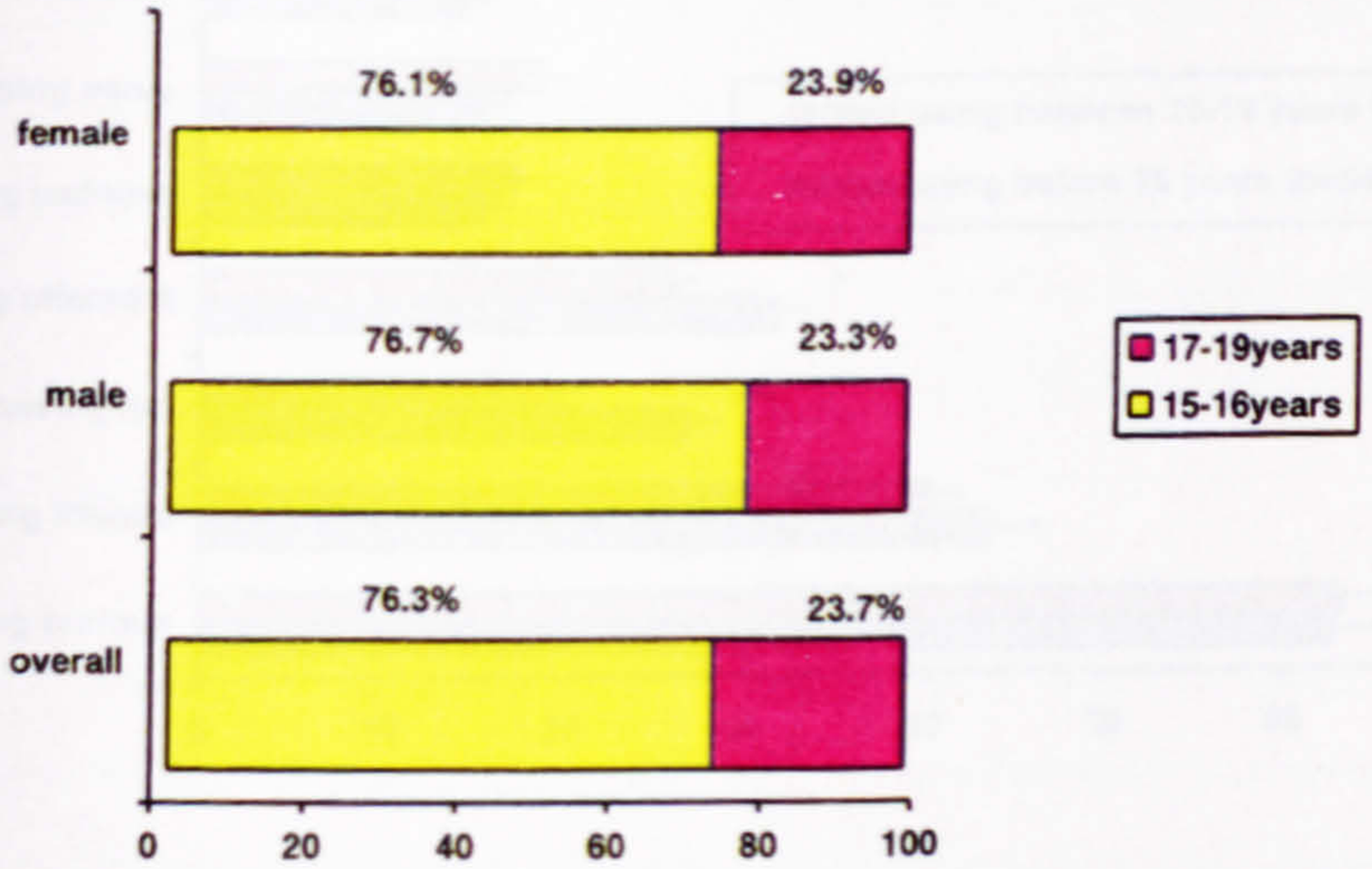
Khon Kaen secondary school students (10th-12th school year) who had ever used cigarettes started to use from 6 to 19 years (Table 6.24). The mean age of first cigarette use was 14.5 years (SD=1.97). Age of first use was divided into two age groups; age group before 15 years (as before 10th school year) and age group 15-19 years (as 10th-12th school years). Over half (58.2 %) the students who had ever used cigarettes started to use at ages 15-19 years (Table 6.25).

Table 6.25: Frequency and percentage of Khon Kaen secondary school students who started using cigarettes before 15 years and between 15-19 years by gender

Age of first use cigarette	**Frequency (%)**		
	Male	**Female**	**Overall**
Before 15 years (before 10th school year)	455 (43.3)	89 (35.3)	544 (41.8)
15-19 years (10th-12th school year)	595 (56.7)	163 (64.7)	758 (58.2)
Total	1050 (100.0)	252 (100.0)	1302 (100.0)

Male students started using cigarettes before age 15 years more frequently than female students (43.3 % of male students started to use cigarettes before age 15 years, compared with 35.3 % of female students, $x^2 = 5.37$ $p<0.05$). Among secondary school students who started using cigarettes between 15-19 years, most did at age 15-16 (see Figure 6.15). This was the same for both male and female students. Most students aged 15-16 years were in the 10th school year suggesting this may be a crucial school stage for smoking.

Figure 6.15: Proportion of secondary school students who started using cigarettes at age between 15-19 years

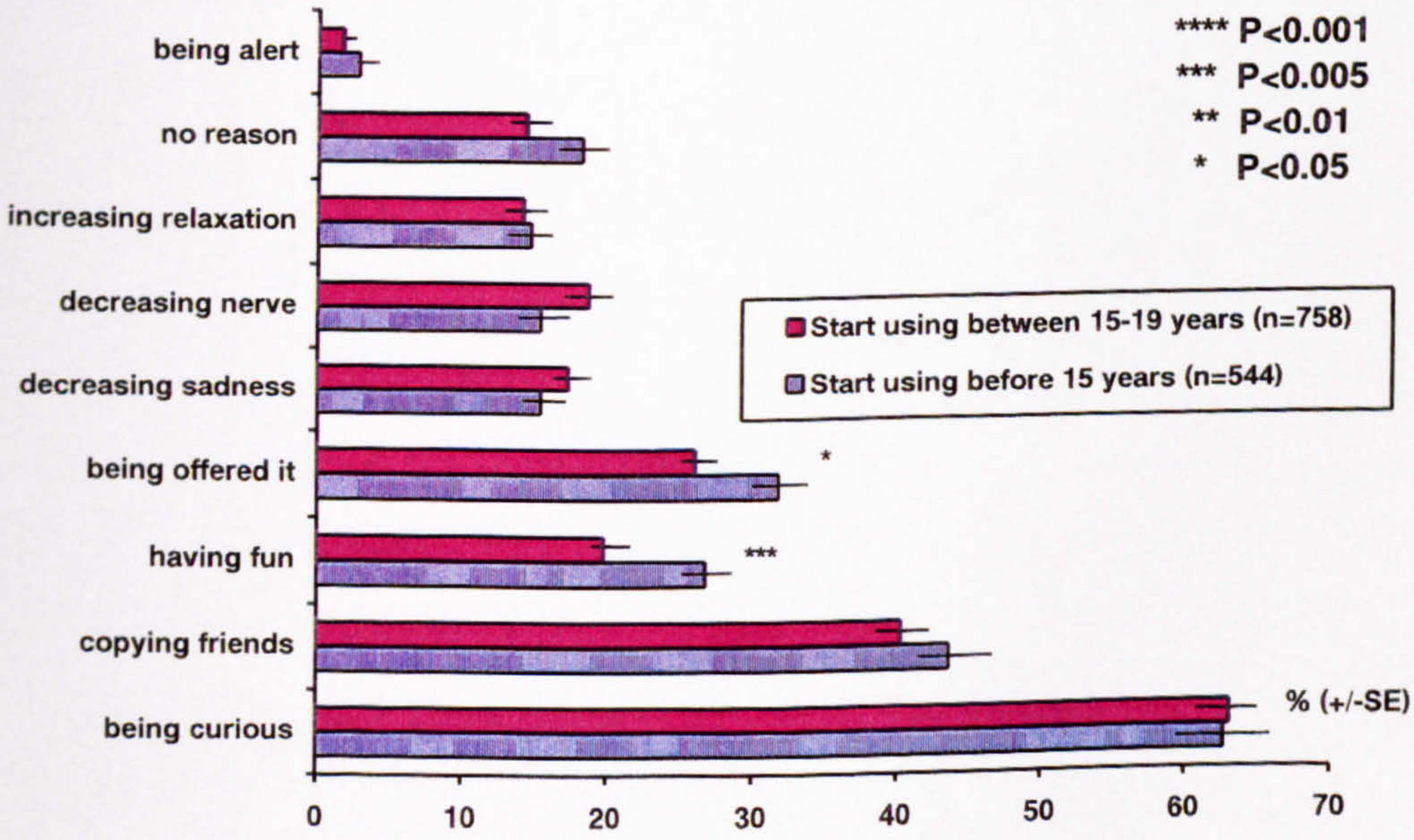


6.7 Reasons for first time smoking cigarettes

Respondents were asked to consider several reasons for why they first smoked cigarettes. In this section, chi-square statistics are used to compare the proportion of students reporting their reasons for using cigarettes the first time between different genders and different ages of first use. The main reasons that contributed to the initiation of cigarette use were: "being curious" (62.0%), "copying friends" (40.5%), "being offered cigarettes" (28.0%) and, "having fun" (22.1%). Almost 1 in 5

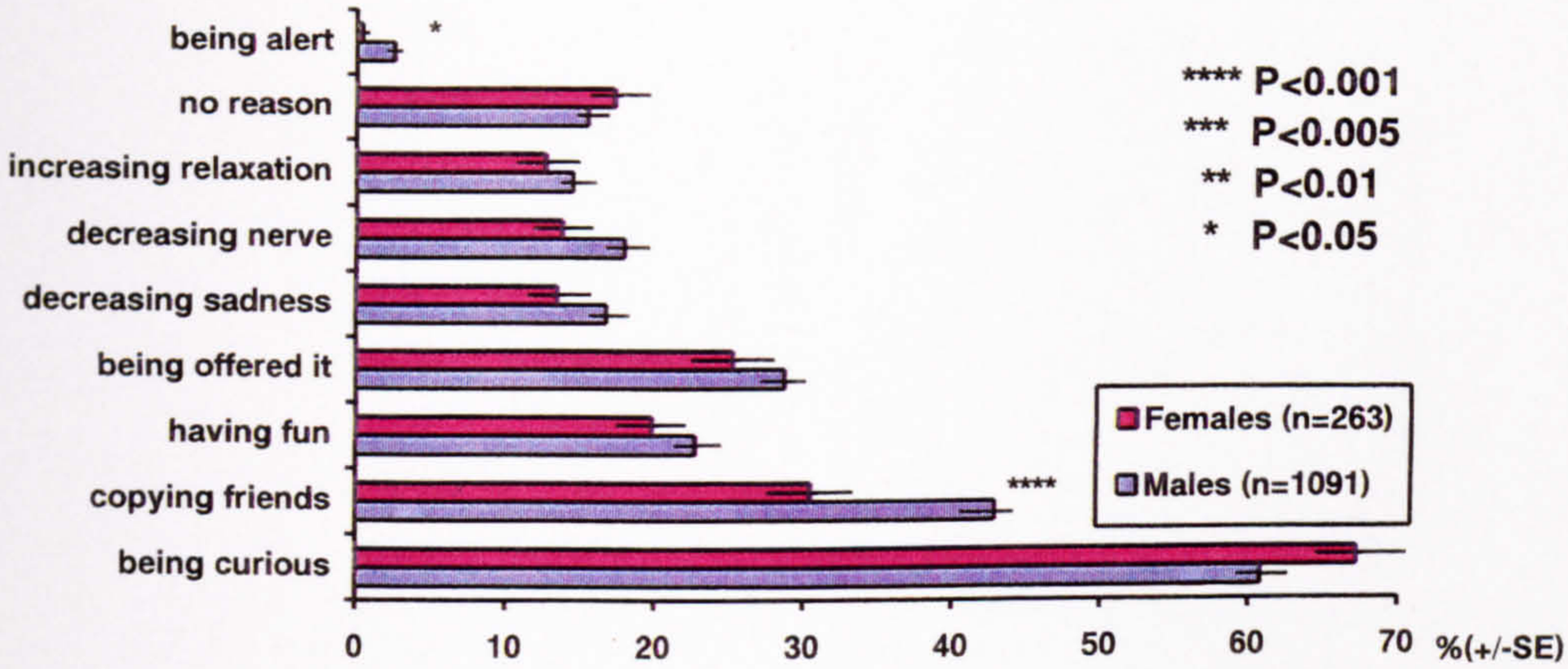
identified smoking cigarettes to decrease nerves (17.1%), decrease sadness (16.1%), and increase relaxation (14.1%). Some students (15.8%) indicated no reasons for the first time smoking of cigarette. Only 2.1% reported "being alert". There were no significant differences in the reasons for first use of cigarettes between the proportion of students who started to used cigarettes before 15 year olds and those who started between 15-19 year olds ($p > 0.05$), except for "having fun" and "being offered cigarettes" which students who started to used cigarette before 15 year olds were more likely to report (Figure 6.16). This may be because the younger smokers were more easily persuaded by peer pressure.

Figure 6.16: Percentage of students by reasons for first time smoking, compared between students who started to use cigarettes before 15 year old and between 15-19 year old



"Being curious to try cigarette" was the most common reason of both male and female students to use cigarettes the first time (cited by 60.8% of male and 67.2% of females) (Figure 6.17). However, male students seem more susceptible to peer group than female students: 42.9 % of male and 30.5 % of female mentioned "copying friends". In addition, males were more likely to report "being alert" as a reason. There were no significant differences in other reasons between males and females ($p > 0.05$).

Figure 6.17: Percentage of students by reasons for first time smoking, compared between sexes

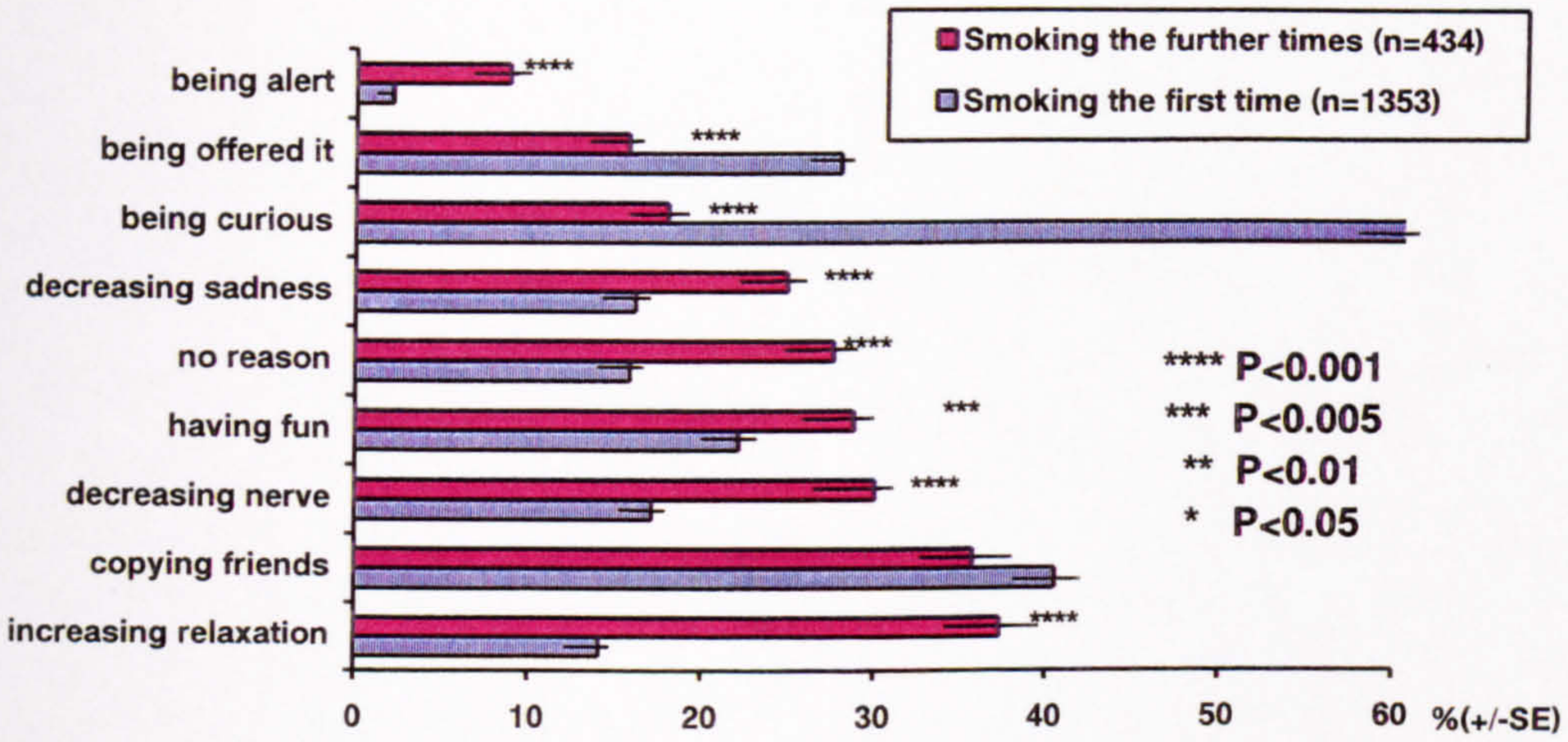


6.8 Reasons for smoking cigarette the further times

The most common reason for smoking further times (continuing to smoke) was "increasing relaxation"(37.3%) (c.f. most common reason for first time smoking was "being curious to try cigarette"). Using bivariate analysis (Chi-square statistic) to compare between reasons for smoking the first time and the further times, a significantly higher percentage of students reported "being curious to try cigarette" and "being offered cigarette" for smoking the first time. (Figure 6.18). Conversely, the percentage of students smoking to "increase relaxation", "decrease nerves", "have fun", "decrease sadness", "stay alert", and "for no reason" were significantly higher for smoking further times than for smoking the first time. There was no significant difference in "copying friends" ($p > 0.05$).

Differences in reasons for using cigarettes between current cigarette users who were occasional users to monthly users (infrequent users) and those who were weekly users to daily users (frequent users) were compared using Chi-square test. There were no significant differences between infrequent users and frequent users for the reasons of using cigarettes further times ($p>0.05$). Also for both males and females, the most common reason for smoking further times was to "increase relaxation". However, bivariate analyses revealed that there were no significant differences between males and females for using cigarettes further times ($p>0.05$).

Figure 6.18: Percentage of students by the reasons for smoking the first time and the further times



The data showed that recreational purposes such as increasing relaxation were the main reasons for continuing cigarette use while, curiosity and friends' influence (such as "copying friends") were the main reasons for using cigarette first time.

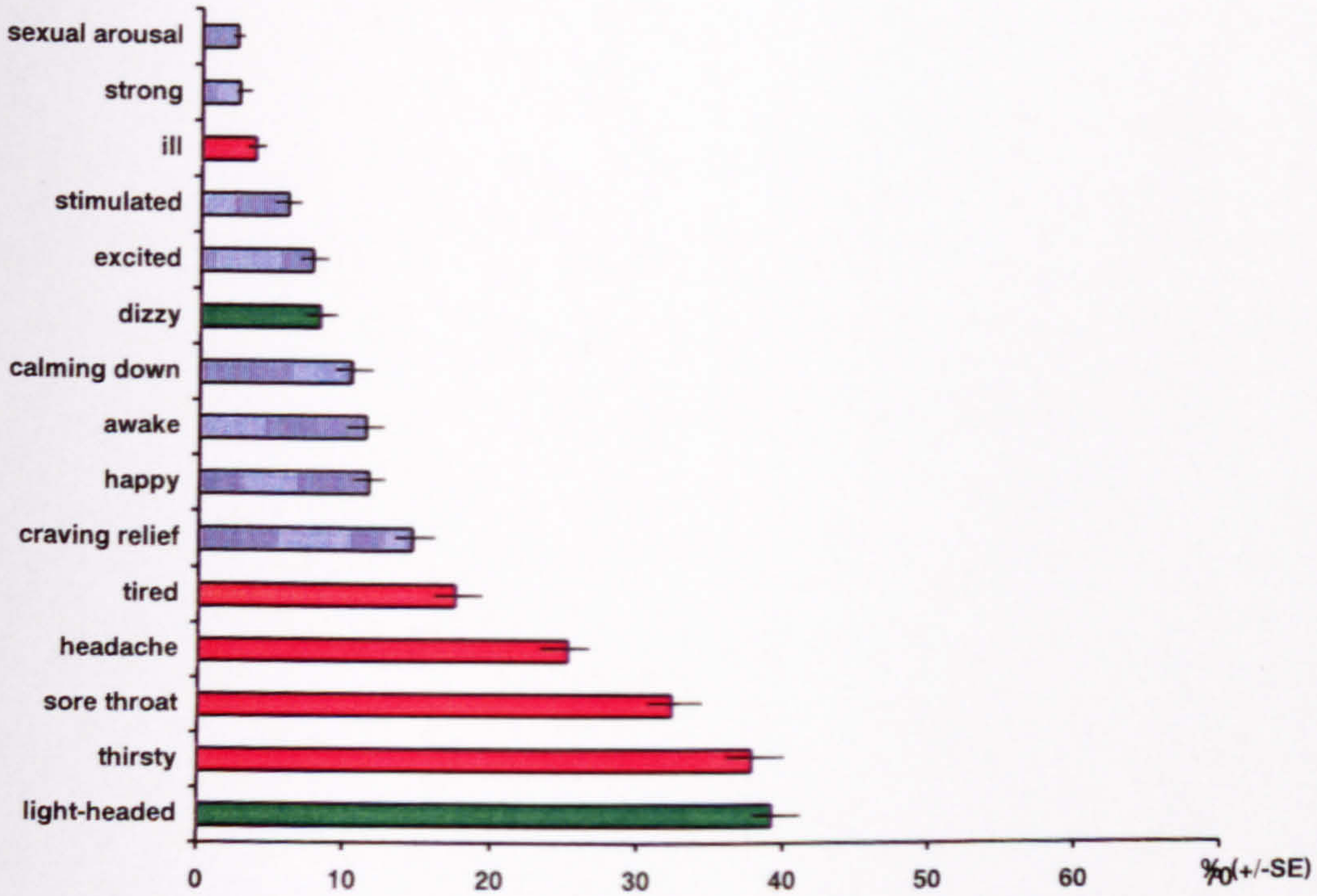
6.9 Effects of cigarette use

Cigarettes are classified as a mild stimulant and nicotine is the main component of cigarette smoke that causes pulse rate and blood pressure to increase and also has an effect of soothing in regular users. Most regular users become dependent on cigarette use. (105, 114, 140). In order to know the effects of cigarettes smoking among Khon Kaen secondary school students, students were asked the question "How did cigarettes make you feel after smoking?" (see Appendix 1). Students who have ever used cigarettes reported both positive effects and negative effects after using cigarettes (Figure 6.19). However, the predominant effects of using cigarette were light-headedness, thirst and a sore throat.

In order to compare the effects of cigarette use between male and female student, chi-square statistic were used. Among students who ever used cigarettes, males were more likely to report effects of "craving relief", "being awake", "calming down", "being stimulated" and "being tired", whereas females were more likely to report effects of "having a sore throat" than males (Figure 6.20). These different effects of cigarette

use may be the result of individual variability (50) with females having a different body weight and body composition from males.

Figure 6.19: Percentage of students who have ever used cigarettes reported effects of smoking cigarettes (n=1353)



Note: Red bars indicate negative effects, blue bars indicate positive effects, and green bars indicate neutral effects which may be positive effects for some individuals and negative effects for other individuals.

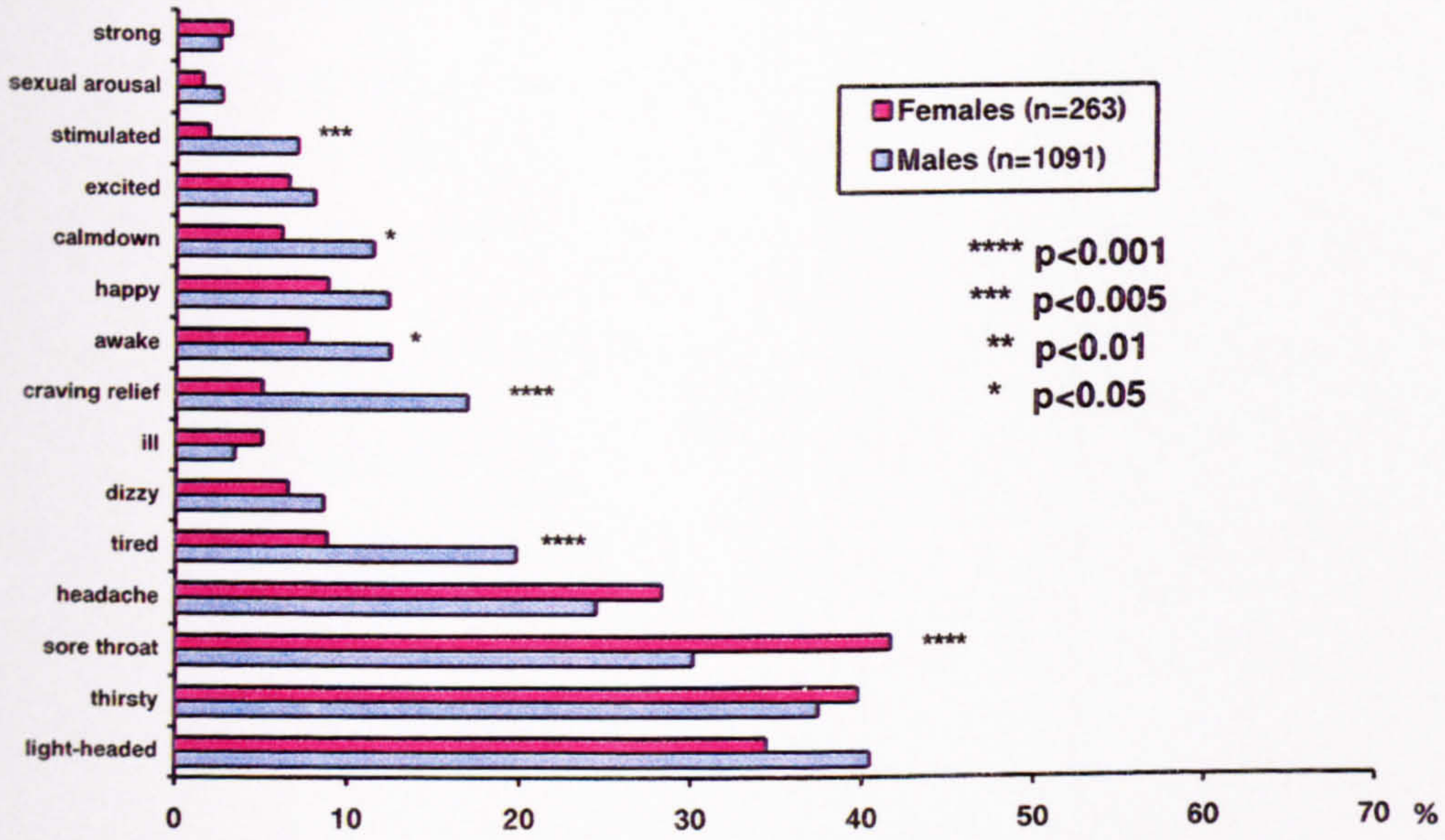
In addition, comparing the effects of cigarette use between males and females, females seem to be more susceptible to the negative effect of "having a sore throat". This may be one of the reasons that females were less likely to use cigarette than males (see also Section 6.2.1).

6.10 Places of using cigarettes

To examine the places where Khon Kaen secondary school students use cigarettes, students who had used cigarettes were asked where they smoked. Bivariate analysis was then used to compare proportion of students reporting place of using cigarettes between different genders and school types. Over one third smoked cigarettes at friends' places (37.3%) and their places of abode (35.0%), over a quarter smoked at parties (29.0%) and disco places (25.9%), only 14.7% and 11.1% smoked cigarette

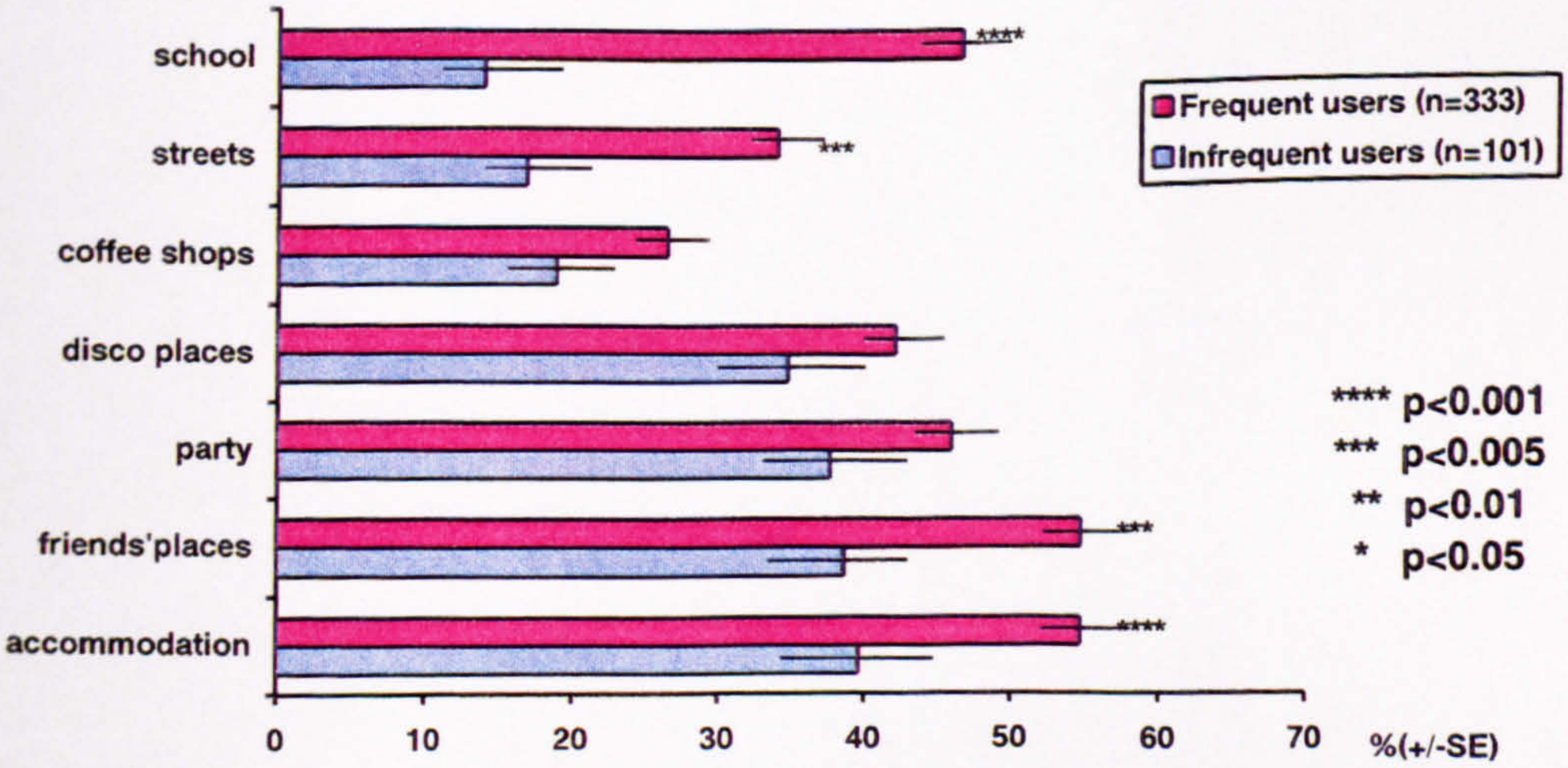
along streets and coffee shops, respectively. There were 21.1% of cigarette users reported smoking cigarettes at their schools.

Figure 6.20: Percentage of male students who reported effects of smoking cigarettes compared with female students



Using bivariate analyses, there was a significantly higher proportion of people smoking at friends' places, place of abode, schools, and streets amongst frequent cigarette users (weekly to daily users) compared with infrequent cigarette users (occasional to monthly users) (Figure 6.21).

Figure 6.21: Percentages of current cigarette users by places where they usually smoked cigarettes, compared between infrequent users and frequent users.



For both male and female students, the most commonly reported places of use were at friends' places, places of abode, and parties. However, males were more likely to smoke at schools, discos and on the streets (Figure 6.22). For both academic and vocational school students, commonly reported places of use were at places of abode, friends' places, and parties (Figure 6.23). However, vocational school students were more likely to smoke cigarettes at school, discos, coffee shops and on the streets.

Figure 6.22: Percentages of current cigarette users by places where they usually smoked cigarettes compared between sexes

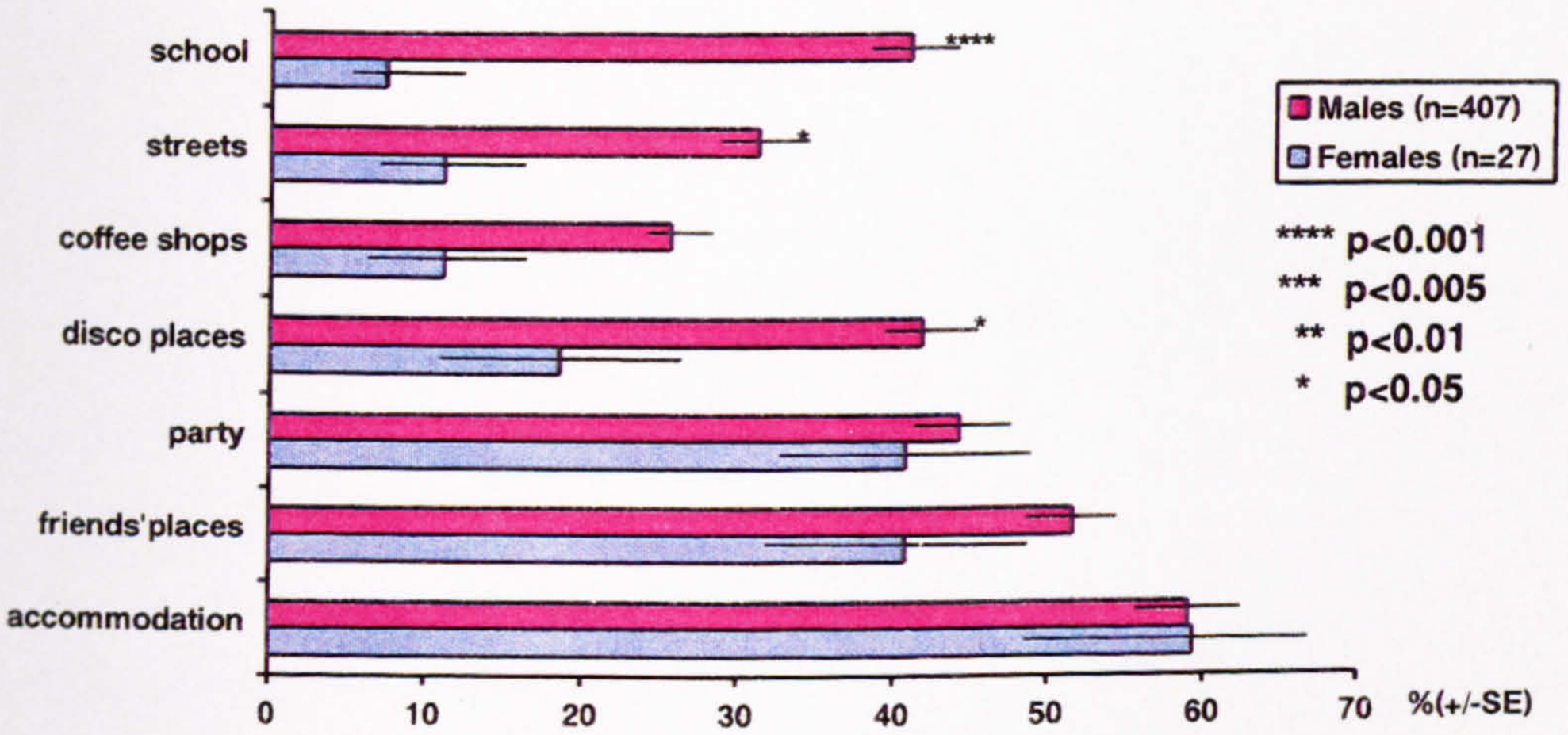
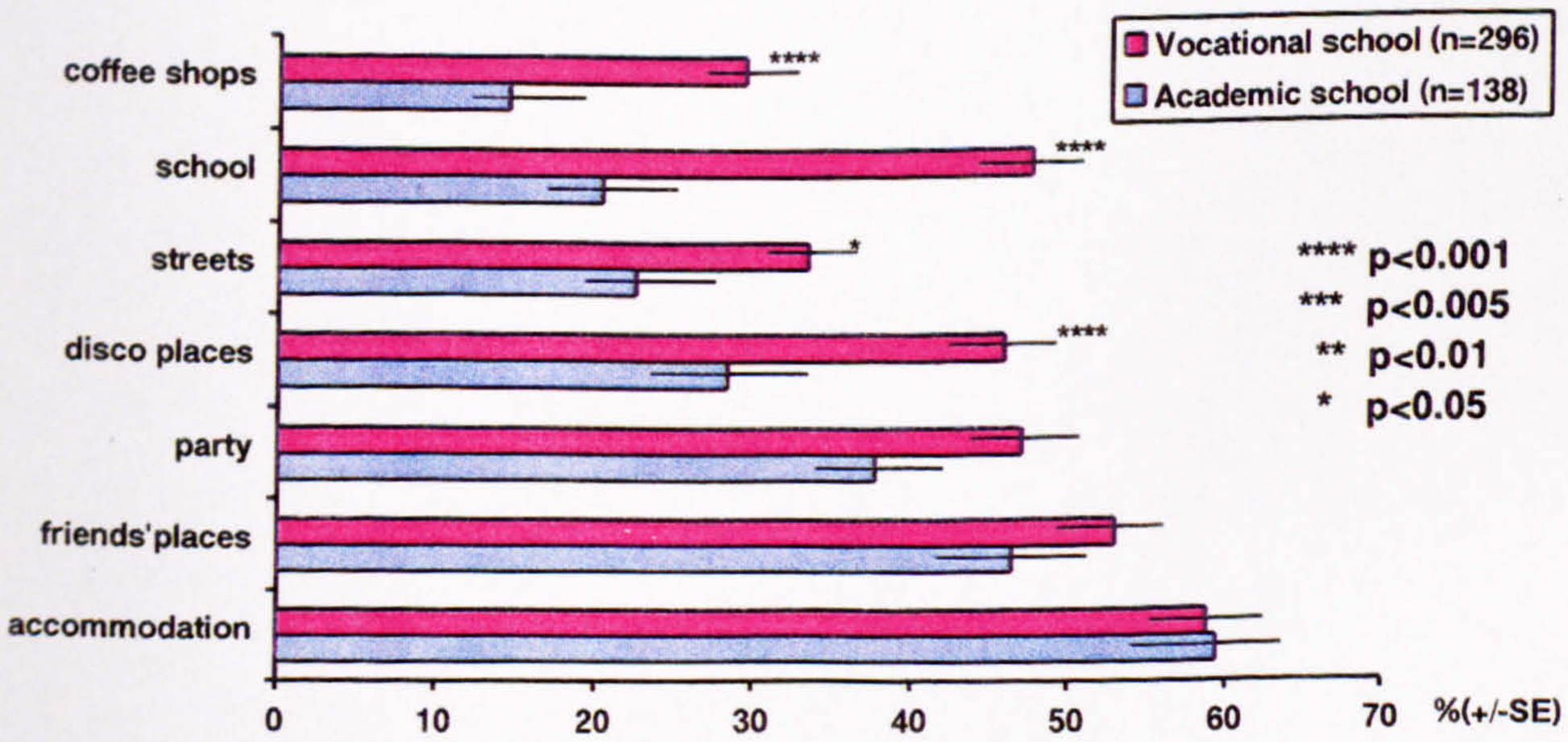


Figure 6.23: Percentages of current cigarette users by places where they usually smoked cigarettes compared between academic and vocational school students



6.11 Attitude towards cigarette use

The attitude towards cigarette smoking of Khon Kaen secondary school students were explored by means of attitudinal questions probing general opinions rather than personal experiences.

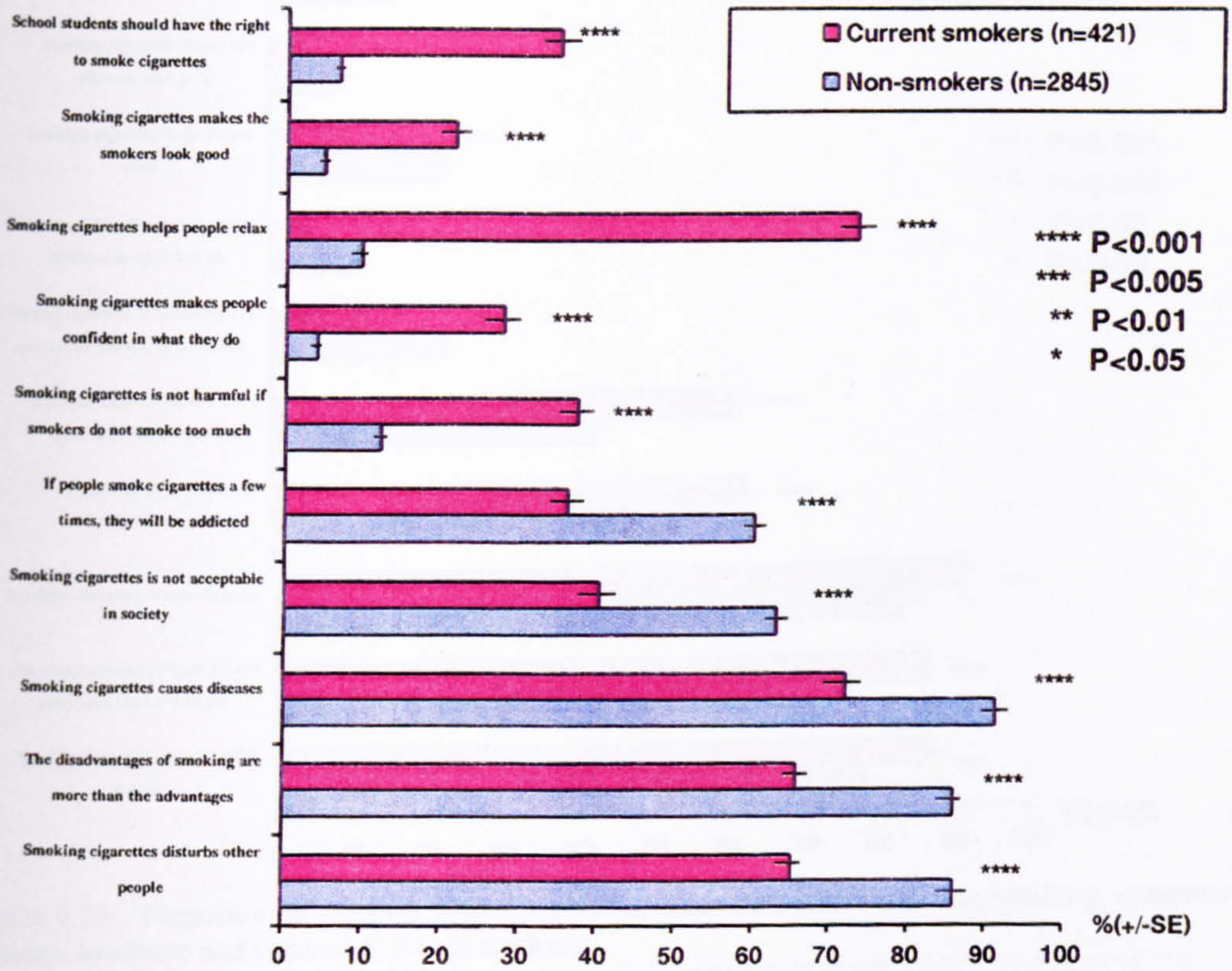
6.11.1 Opinion on smoking cigarettes

Students were asked if they agreed or disagreed with a series of statements about attitudes towards cigarette smoking. Bivariate analysis was used to compare the proportions of students who agreed with statements of attitude towards cigarette smoking between current cigarette smokers and non-smokers, between male and female students and between academic and vocational school students.

Over nine in ten non-smokers agreed that smoking cigarettes caused diseases (91.2% non-users), smoking cigarettes disturbed other people (85.9% non-users), and the disadvantages of smoking cigarettes were more than the advantages (85.8% non-users). Over seven in ten of current cigarette smokers agreed that smoking cigarettes make users relax (73.1% users, 9.6% non-users) although over half of current cigarette smokers agreed that smoking cigarettes caused diseases (72.0% users), smoking cigarettes disturbed other people (65.1% users) and the disadvantages of smoking cigarettes were more than the advantages (65.6% users). In comparison, current cigarette smokers were more likely than non-smokers to agree with the views that "smoking cigarettes helps people relax", "smoking cigarettes makes the smokers look good", "school students should have the right to smoke cigarettes", "smoking cigarettes makes people confident in what they do" and "smoking cigarettes is not harmful if smokers do not smoke too much". Non-smokers were more likely than current smokers to agree with the views that "the disadvantages of smoking cigarettes are more than the advantages", "smoking cigarettes causes diseases", "if people smoke cigarettes a few times, they will be addicted", "smoking cigarettes disturbs other people" and "smoking cigarettes is not acceptable in society" (Figure 6.24).

Male students were more likely than female students to agree with generally smoking positive statements including "smoking cigarettes helps people relax", "smoking cigarettes makes the smokers look good" and "school students should have the right to smoke cigarettes" (Figure 6.25).

Figure 6.24: Proportion of students who agreed with statements about cigarette smoking, comparing between current cigarette smokers and non-smokers



Similarly, vocational school students were more likely than academic students to agree with smoking positive statements including "smoking cigarettes is not harmful if smokers do not smoke too much" while, academic school students were more likely to be smoking negative agreeing more with for instance "if people smoke cigarettes a few times, they will be addicted" (Figure 6.26). There were no significant differences between groups on the views of "smoking cigarettes makes the smokers look good".

In brief, these comparisons in opinion on cigarette use between males and females and between academic and vocational school students suggest that cigarette use has become more normalised among male and vocational school students than female students and academic school students.

Figure 6.25: Proportion of students who agreed with statements about cigarette use, comparing between male and female students.

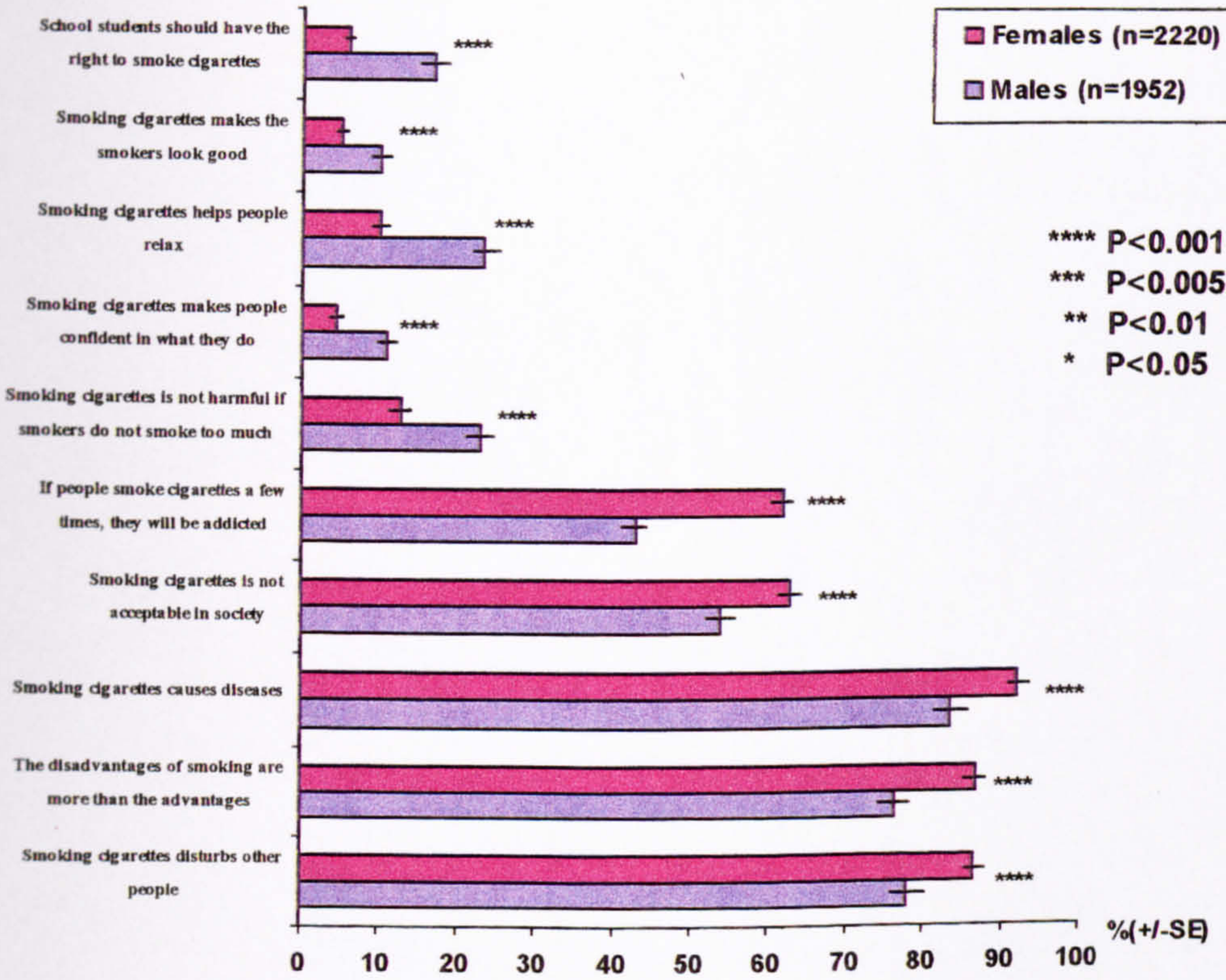
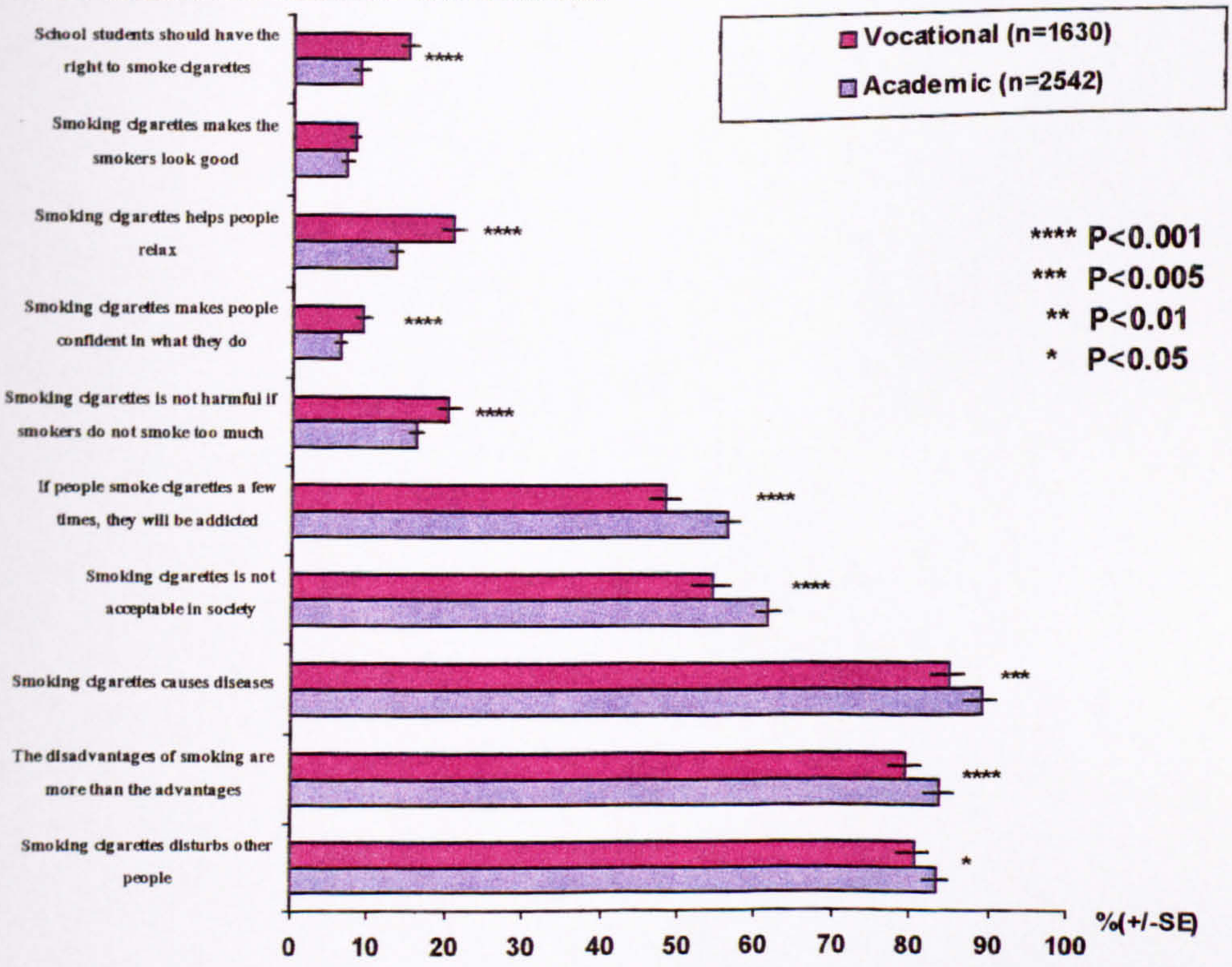


Figure 6.26: Proportion of students who agreed with statements about cigarette smoking, comparing between academic and vocational school students

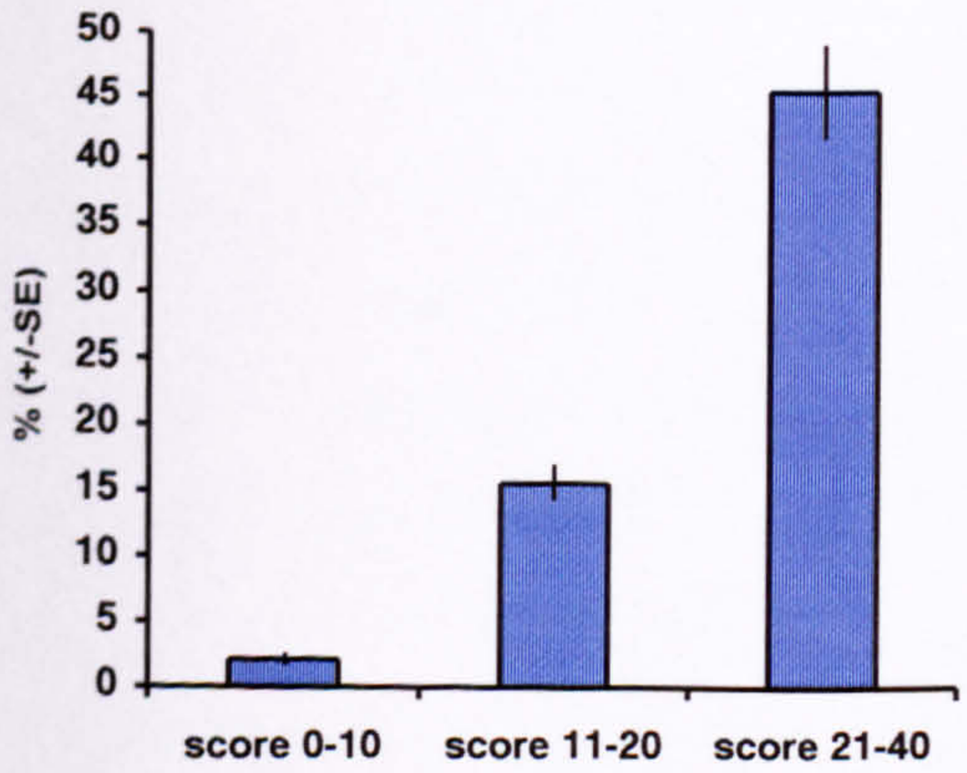


6.11.2 Association between attitude towards cigarette and cigarette smoking

A scale of attitude towards cigarette smoking was created (see Methods). The attitude scale was a 10-item scale; each item having a range of 0 through 4 (see method of measurement section 2.3), with higher scores indicating more positive attitudes towards cigarette smoking. Chi-square statistics were used to explore the relationship between cigarette smoking and attitude towards cigarette smoking. The T-Test statistic was used to compare mean score of attitude towards cigarette smoking between current cigarette smokers and non-smokers, between male and female students and between academic and vocational school students.

A linear association was found in the prevalence of cigarette smoking associated with attitude towards cigarette smoking (x^2 (for a trend) = 483.88, $p<0.001$); students who had higher attitude scores towards cigarette smoking were more likely to smoke cigarettes (Figure 6.27). The mean attitude score towards cigarette smoking for current cigarette smokers was significantly higher than non-smokers [score 17.2 (SD=5.4) for current smokers, score 8.8 (SD=5.8) for non-smokers, t= -29.40 , $p<0.001$].

Figure 6.27: Prevalence of cigarette smoking of students who had different level of attitude towards cigarette smoking



Similarly, the mean score for male students was significantly higher than female students [score 12.64 (SD=6.3) for males, score 8.5 (SD=5.3) for females, t= 22.48 , $p<0.001$]. The mean score of attitude towards cigarette smoking of vocational school students was significantly higher than academic school students [score 11.7 (SD=6.0) for vocational school students, score 9.6 (SD=6.2) for academic school students, t= -10.71 $p<0.001$].

The relationship between smoking and attitudinal score is strong enough for the scale to be used as a simple test in Khon Kaen schools to quickly identify high-risk group of cigarette users. For example, the attitude score was higher in male students and vocational school students. Indicating these groups are at high-risk of using cigarettes.

6.12 Discussion for social aspects of cigarette use

6.12.1 Age of first use and reasons for use

Khon Kaen secondary school students (10th-12th school year) age 15-19 years who have ever used cigarettes started to use cigarettes at age from 6 to 19 years (Table 6.24). Initiating cigarette use at such an early age can have long-term consequences including respiratory dysfunction and cancer in the future (118, 141). The range of ages identified in this study at which Thai students began smoking suggests that prevention efforts or early protection from cigarette use should begin early and continue throughout school years. Among secondary school students who started using cigarettes at secondary school, most started to use cigarettes at age 15-16 years (Figure 6.15). These results indicate that such school students (as 10th school year) are at highest risk for starting cigarette use. Intensive prevention programs should be prepared for students aged 15-16 years at secondary school level or preferably even before.

For both male and female students (Figure 6.17), the most common reason that contributed to the initiation of cigarette using was "being curious to try cigarettes". Similarly, Meijer et al (1996) studied cigarette smoking habits among 847 school students ages 11 to 17 years in the Jerusalem area by using self-completion questionnaires and reported that the most common reason for starting to smoke was "to try something new"(120). In addition however, male students were more likely (than females) to copy friends when smoking the first time. In fact, "copying friends" was the second most common reasons for smoking the first time for secondary school students. Najem et al (1997) (142), Urberg et al (1997) (78), and Zhu et al (1996) (143) all reported that peer influence was one of factor that significantly contributed to the initiation of cigarette smoking.

Compared with reasons for using cigarettes the first time, the main reasons that contributed to the continuing use of cigarettes were recreational purposes such as "increasing relaxation", "decreasing nerves", "having fun", "decreasing sadness", and "being alert" (see Figure 6.18). Similarly, Najem et al (1997) studied the patterns of smoking among 8,900 American high school students in inner-city of New Jersey and

reported that "perceptions that smoking relieves stress and feelings of induced pleasure while smoking" played a major role in progression to regular smoking (142). Results here show that male students starting cigarette use before age 15 years (as before 10th-12th school years) more frequently than females (Table 6.25). Similarly, Warren et al (1997) studied age of initiating selected health-risk behaviours among high school students in the United States and reported that male students initiated cigarette use behaviour earlier than female students (110).

Overall, these results suggest that preventive programs prepared for students age 15-16 years (as 10th school year) among 10th to 12th school years would cover 76.3% of secondary school students who started using cigarettes at age 15-19 years (Figure 6.15). Such programs would miss more males than females as male students are more likely to start using cigarettes at an earlier age. However, any preventative program needs information about why people smoke in order to develop material to counter peer or other pressure to begin. Understanding the reasons for students using cigarettes for the first time and the further times, should help in the development of such effective prevention programs. In addition, preventative programs need also understand the effects individuals experience when smoking in order to, in particular, deal with those already using. Part of the ASTS questionnaire was designed for this purpose.

6.12.2 Effects of cigarette smoking

Males were more likely to report positive effects of "craving relief", "being awake", "calming down", and "being stimulated" after smoking cigarettes than females (see Figure 6.20). Females were more likely to report negative effects of "having a sore throat" than males. These results could suggest that the one of reasons for the higher percentage of cigarette use in males might be explained by the effects of cigarettes on males and females. However, more studies will be needed to elaborate this hypothesis. The harmful effects could be used in some education programs to show the real harms of cigarette that colleagues around have experienced and this approach could be used along with enforcing programs, including forbidding cigarette use at school age.

6.12.3 Places of smoking cigarettes

Cigarettes smoking by Khon Kaen secondary school students occurred most frequently at friends' places (37.3%) (Section 6.10). The results support that peers are still highly involved with cigarette users. One in three (35.0%) smoked cigarette at their places of abode or homes. Thus, parents can help to prevent their children from smoking cigarettes by vigilance and not allowing students to smoke cigarettes at home. Over one in ten users smoked cigarette at discos (25.9%) and coffee shops (11.1%), In particular male students (Figure 6.22) and vocational school students (Figure 6.23) reported a higher use of cigarettes at these places. Alone, minimum-purchase ages being more restricted in cigarette vendors (legal restrictions forbid selling cigarette to young people aged under 18 years) may help this problem. Over one in five of cigarette users smoked cigarettes at schools (21.7%) and forbidding cigarette use among school students should be enforced more effectively. The wide range of settings in which cigarettes are used support that interventions coming from a wide based including not only schools but also the community-based with an orientation toward the family, the students' peers, school, and alcohol suppliers.

6.12.4 Attitude towards cigarette smoking

The results in this study support that there was an association between cigarette use and attitude towards cigarette use; the higher score of the attitude towards cigarette use, the more the chance of using cigarettes (Figure 6.27). Males and vocational school students had significantly higher scores of attitude towards cigarette use (Section 6.12.4) which may, in part, explain why cigarette use among these groups was higher. Not surprisingly, most cigarette non-users favoured statements disagreeing with cigarette use. However, there were a minority of non-smokers who also agreed with "smoking cigarettes will not harmful, if smokers do not smoke too much" (12.2%), "smoking cigarettes helps people relax" (9.6%), "school students should have the right to smoke cigarettes" (6.6%), "smoking cigarettes makes the smokers look good" (4.8%), and "smoking cigarettes makes people confident in what they do" (4.0%) (Figure 6.24). These imply that some non-users who agreed with the benefit of cigarette use were in high-risk group and may be at higher risk of becoming cigarette users in the future.

Barton (1997) surveyed school student smoking attitudes based on a nationally representative sample of students in school year 7 to 11 in England in 1997 and reported that most (80.0%) of smokers agreed "smoking can help to calm down" (144). Similarly, in this study, most of cigarette users agreed that smoking cigarettes will make smokers relax (73.1%), although most also agreed that smoking cigarettes causes diseases (72.0%), smoking cigarettes disturbs other people (65.1%), and the disadvantages of cigarette use are more than the advantages (65.6%) (Figure 6.24). Unfortunately, this implies that the short term benefit views of relaxation and perhaps social pressure may outweigh the other damages of cigarette use in users minds. The results suggest that using only educational programs for preventing cigarette use are not necessarily going to be enough to stop smoking cigarettes. Other supplemental interventions should may have to be used. Some of these mean enforcing legislation both in schools and social settings. Other mean more information for parents so that they are aware of substance use in the home and the effects of role models. Inevitably, some individuals will continue to smoke and therefore harm reduction strategies should also be investigated.

CHAPTER 7: ILLEGAL DRUG USE – PART 1
EPIDEMIOLOGY, ASSOCIATIONS, AND PREDICTIVE MODELS

7.1 Epidemiology of illegal drug use among Khon Kaen students

The epidemic of illegal drug use, such as amphetamine, cannabis, solvents, opium, heroin, ecstasy, cocaine, magic mushroom, and LSD, has become one of the most serious problems facing the Thai people. Puapongskorn et al (1993) estimated the minimum number of drug users in Thailand at about 1.27 million illegal drug users in 1993 (8). One of the high-risk groups for illegal drug use is young people (15). In addition, young people who use illegal drugs may develop into adults with mental and physical problems related to their drug uses (105, 114). Epidemiological study of illegal drug use among Khon Kaen secondary school students was regarded as important and therefore included in the questionnaires.

7.1.1 Prevalence of illegal drug use among Khon Kaen secondary school students

The respondents (n=4,217) were questioned confidentially (see Methods) about their use and extent of use of illegal drugs, including amphetamine, cannabis, solvents, opium, heroin, ecstasy, cocaine, magic mushroom, and LSD. The prevalence of current drug use among Khon Kaen secondary school students was 5.3 percent (+/- 0.7, 95% CI). Nearly a tenth (8.9 % (+/- 0.8, 95% CI)) of students were former users but most (85.8% (+/- 1.05, 95% CI)) students had never used drugs. Amphetamine was the most popular drug among illegal drug users (76.6 % of drug users), followed by cannabis (41.9 %), solvents (11.7 %), opium (1.8 %), ecstasy (1.8 %), heroin (0.9 %), magic mushroom (0.9 %), and cocaine (0.5 %). There were no students who reported using LSD. The prevalence of current use of each illegal drug and 95 % confident intervals of population estimation are also shown in table 7.1.

Current illegal drug users ranged in frequency of use from occasional users to daily users (Table 7.2). The highest proportions of current illegal drug users were occasional users. Former illegal drug users were categorised as students who either tried using drugs once or twice, used a few times, or used several times in their past. The highest proportions of former illegal drug users were students who had just tried drugs once or twice.

Table 7.1: Prevalence of illegal drug use and confidence intervals of the population.

Illegal drugs*	Prevalence**	95 % Confidence Intervals	Population estimation*** (CI 95%)
Amphetamine	4.17 %	3.59 - 4.82%	2276 – 3056
Cannabis	2.20 %	1.79 - 2.70%	1135 – 1712
Solvents	0.62 %	0.41 - 0.91%	260 – 577
Ecstasy	0.10 %	0.03 - 0.26%	19 – 165
Opium	0.10 %	0.03 - 0.26%	19 – 165
Heroin	0.05 %	0.01 - 0.19%	6 – 120
Magic mushroom	0.05 %	0.01 - 0.19%	6 – 120
Cocaine	0.02 %	0.00 - 0.15%	0 – 95

*Students could say yes to more than one drug.

**Because of the small proportion of students who used illegal drugs, two decimal places were used to present prevalence of each illegal drug use.

***Population estimations for each illegal drug are calculated according to the calculated prevalence and population of Khon Kaen secondary school students (n = 63,407).

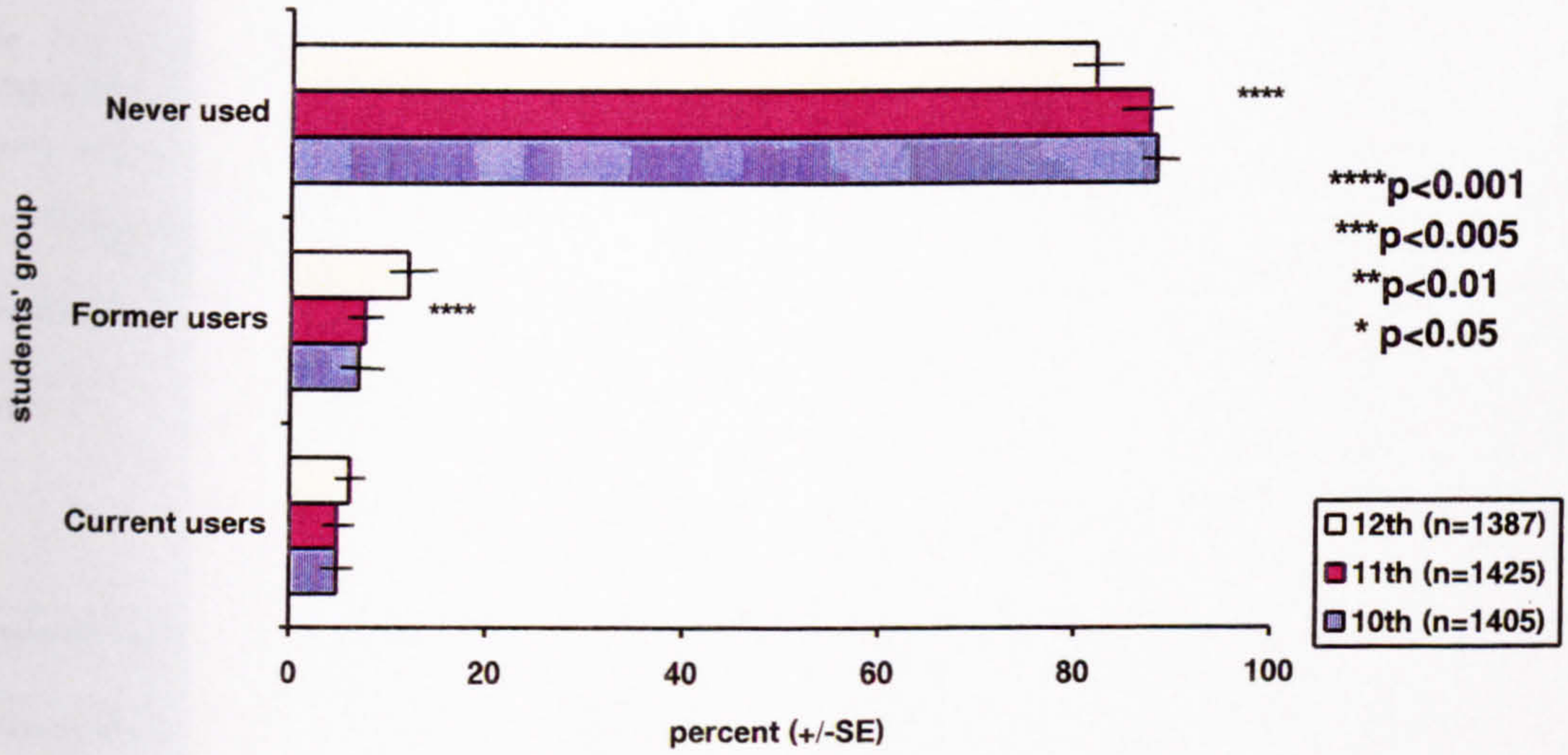
7.1.2 Tendency towards illegal drug use among Khon Kaen secondary school students through 10th-12th school years

The percentage of current illegal drug users was used to determine the size of the illegal drug use problems among Khon Kaen secondary school students. Using chi-square test, there was no significant increase in the proportion of current illegal drug users through 10th, 11th, and 12th school years with 4.8%, 4.8%, and 6.1% respectively (Figure 7.1). There was significant increase in the proportion of the former users who had given up using illegal drug in the 10th, 11th, and 12th school year (7.0%, 7.6%, and 12.0% respectively). In contrast, there was a significant decrease in the proportion of students who never used illegal drugs in the 10th, 11th, and 12th school years (88.2%, 87.5%, and 81.9%, respectively). The rate at which students gave up illegal drugs (through 10th, 11th, and 12th school year) was approximately the same as the rate at which new users began and therefore, overall there was a relatively consistent level of illegal drug use among Khon Kaen secondary school students from 10th and 11th to 12th school year.

Table 7.2: Proportions of current users, former users, and students who have never used amphetamine, cannabis, solvent, opium, heroin, ecstasy, cocaine, and magic mushroom.

Students	Amphetamine		Cannabis		Solvents		Opium		Heroin		Ecstasy		Cocaine		Magic mushroom	
	Freq-uency	Per-cent	Freq-uency	Per-cent	Freq-uency	Per-cent	Freq-uency	Per-cent	Freq-uency	Per-cent	Freq-uency	Per-cent	Freq-uency	Per-cent	Freq-uency	Per-cent
Current users																
Occasional users	85	48.3	60	64.5	22	84.7	4	100.0	2	100.0	2	50.0	1	100.0	2	100.0
Monthly Users	35	19.9	18	19.4	1	3.8	0	0.0	0	0.0	1	25.0	0	0.0	0	0.0
Weekly Users	44	25.0	10	10.7	1	3.8	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Daily Users	12	6.8	5	5.4	2	7.7	0	0.0	0	0.0	1	25.0	0	0.0	0	0.0
Total Users	176	100.0	93	100.0	26	100.0	4	100.0	2	100.0	4	100.0	1	100.0	2	100.0
Former users																
Tried once or twice	128	43.0	107	43.7	51	52.6	5	55.6	10	50.0	8	57.2	2	66.7	3	100.0
Used a few times	103	34.5	90	36.7	27	27.8	3	33.3	3	15.0	3	21.4	1	33.3	0	0.0
Used several times	67	22.5	48	19.6	19	19.6	1	11.1	7	35.0	3	21.4	0	0.0	0	0.0
Total	298	100.0	245	100.0	97	100.0	9	100.0	20	100.0	14	100.0	3	100.0	3	100.0
Never used																
Never Used	3742	100.0	3879	100.0	4094	100.0	4204	100.0	4195	100.0	4198	100.0	4213	100.0	4212	100.0

Figure 7.1: Percentage of students who were current illegal drug users, former illegal drug users and who never used illegal drugs by each school years



7.2 Association between socio-demographic variables and Illegal drug use

A variety of studies have shown that socio-demographic variables such as gender, age, school type, school year level, and socio-economic status (fathers' occupation, fathers' education) are associated with illegal drug use of school students (34, 95, 97, 133, 145). The following section examines the relationship between illegal drug use among Khon Kaen secondary school students and socio-demographic variables by using bivariate analyses. Later, multivariate logistic regression analysis is used to control for potential confounding factors and explore the relationships between illegal drug use and a variety of socio-demographic variables at once. The results of the bivariate analyses are shown in table 7.3.

Illegal drug use among secondary school students in Khon Kaen was associated with Socio-demographic characteristics of gender, age, type of school, and fathers' education. Male students were more likely to use illegal drugs with rate of frequent illegal drug use being 10 times as high in males as in females (Table 7.3). Vocational school students also reported a higher prevalence of illegal drug use. The prevalence of illegal drug use among students in inner cities was not significantly higher than students in district areas; although the difference approached significance (p=0.072). There was a linear trend in the prevalence of illegal drug use with age (x^2 $_{\text{(for a trend)}}$ = 52.45, $p < 0.001$), older students being more likely to use illegal drugs as well as a

significant association between illegal drug use and father's education. The highest prevalences of illegal drug use was 13.9 % in students whose fathers had no educational degree.

Table 7.3: Prevalence and 95 % confidence intervals for illegal drug use according to socio-demographic variables

Socio-demographic Variables		Prevalence* % (sample size)	95% confidence interval	Statistical difference within demographic variable
Gender	Male	10.0 (1988)	8.7-11.4	
	Female	1.1 (2229)	0.7-1.6	x^2 =166.26 p<0.001
Age	<=15 years	1.9 (517)	0.9-3.5	
	16 years	3.9 (1262)	2.9-5.1	x^2 = 73.80 p<0.001
	17 years	5.1 (1297)	4.0-6.5	
	18 years	6.6 (924)	5.1-8.4	
	>=19 years	16.7 (203)	12.1-22.4	
Type of school	Academic	3.3 (2562)	2.6-9.8	
	Vocational	8.3 (1655)	7.1-9.8	x^2 = 51.61 p<0.001
School zone	District	4.6 (2090)	3.7-5.6	
	Inner city	5.9 (2127)	4.9-7.0	x^2 = 3.23 p=0.072
School year	Tenth	4.8 (1405)	3.7-6.0	
	Eleventh	4.8 (1425)	3.7-6.0	x^2 = 3.10 p=0.213
	Twelfth	6.1 (1387)	4.9-7.5	
Father's occupation				
Increasing Income ↓	No job	5.9 (51)	1.5-17.2	x^2 = 5.78 p=0.448
	Labourer	4.7 (509)	3.1-7.2	
	Farmer	5.1 (1984)	4.2-6.2	
	Private office employee	6.2 (146)	3.0-11.7	
	Government/enterprise	6.3 (798)	4.7-8.2	
	Own business	5.7 (492)	3.9-8.2	
Father's education				
	No degree	13.9 (36)	5.2-30.3	x^2 = 17.53 p<0.005
	Primary school	5.4 (2757)	4.6-6.3	
	Secondary school	6.1 (691)	4.5-8.2	
	First degree	2.6 (573)	1.5-4.4	
	Higher than first degree	10.0 (70)	4.4-20.1	

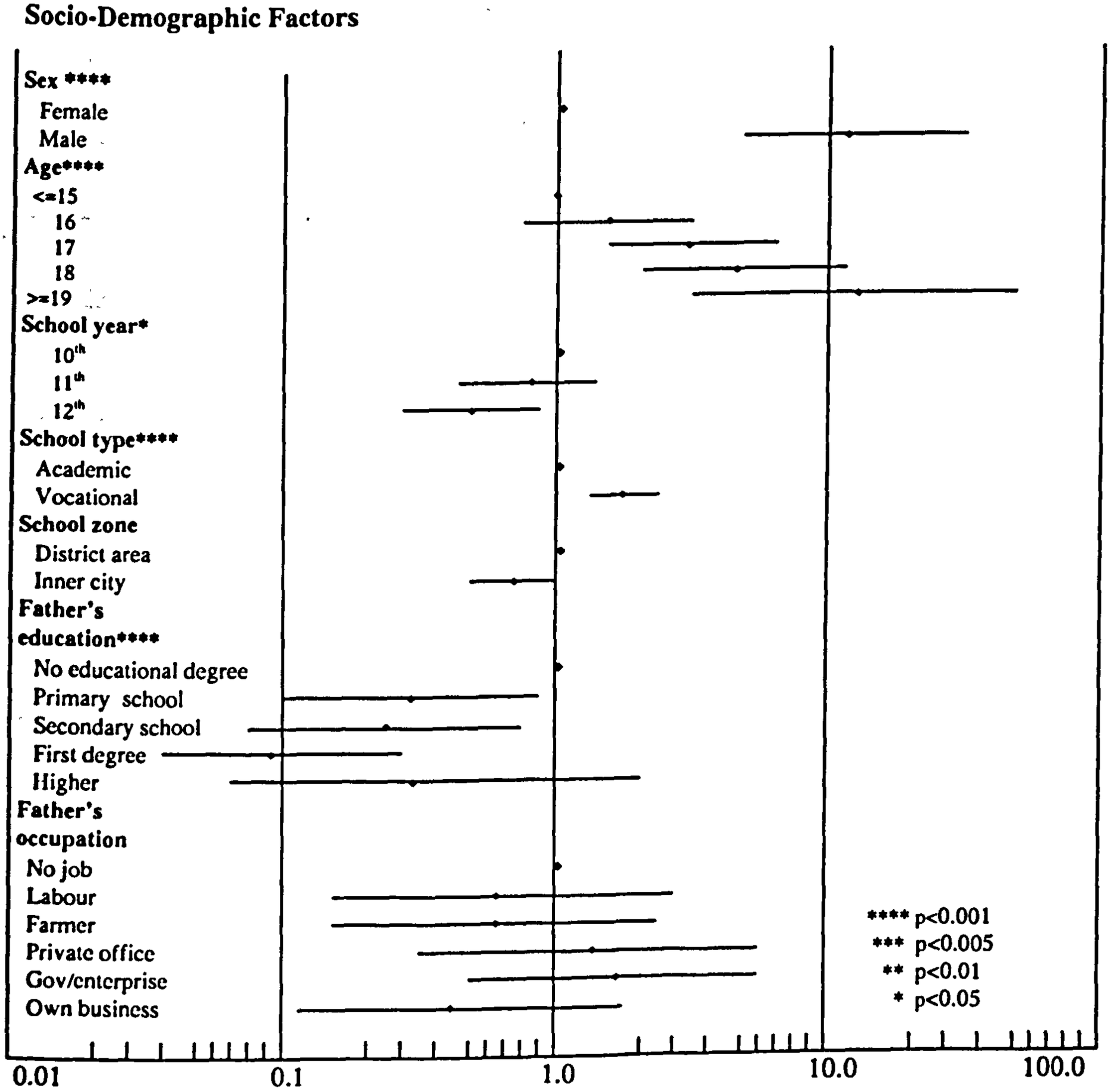
* The prevalence of illegal drug use in this study means the prevalence of individuals who were current illegal drug users.

7.2.1 Multivariate logistic regression analysis for illegal drug use and socio-demographic factors

The effects of socio-demographic factors on the likelihood of illegal drug use were explored by using logistic regression analysis. The results of the logistic regression are shown as adjusted odds ratios and their 95 % confidence interval after adjustment for all other factors in the model (Figure 7.2). Using the 0.05 level, five of the coefficients were significant, gender, age, type of school, school year level, and father's education. The association between higher fathers' education and lower

illegal drug use was also apparent in the logistic regression analysis. However, the relationship was linear with an increase in illegal drug use with lower levels of education except for students whose father had a higher degree. When corrected for age, the likelihood of illegal drug use of students in lower school years trended to be higher than students in higher school years (see discussion Section 7.3.7). Illegal drug use was not associated with school zone (school location was in inner city or district areas) and fathers' occupation in logistic regression model.

Figure 7.2: Adjusted odds ratios with 95 % confidence intervals for illegal drug use among Khon Kaen secondary school students



Note: The above figure shows the adjusted odds ratios for current illegal drug use according to each socio-demographic factor. Odds ratios were calculated using logistic regression analysis and significant relationships are identified by asterisks.

7.2.2 Associations between illegal drug use and school year by socio-demographic sub-groups

Multivaliate analysis revealed a significant association between illegal drug use and school year after controlling for other socio-demographic variables (e.g. age, sex, and school type); students in lower school years were more likely to use illegal drugs than students in higher school years (Figure 7.2). Bivariate analysis however revealed no significant association (Table 7.3). To explore such hidden relationships in more detail, this following section additionally explores the different relationship between school years and illegal drug use in different sub-groups of other socio-demographic variables.

Table 7.4: Prevalences of illegal drug use according to school years categorised by different sub-groups of each socio-demographic which were associated with illegal drug use (by bivariate analysis).

Demographic variables		Prevalence of illegal drug use % (sample)			Significance within each sub-group of demographic variables
		10th year	11th year	12th year	
Sex	Male	9.3 (642)	9.8 (681)	10.7 (665)	$x^2 = 0.66$ $p = 0.718$, $x^2_{\text{for a trend}} = 0.65$ $p = 0.421$
	Female	1.0 (763)	0.3 (744)	1.9 (722)	$x^2 = 9.61$ $p < 0.05$, $x^2_{\text{for a trend}} = 2.62$ $p = 0.105$
Age	<= 15 years	2.0 (502)	0.0 (15)	---	$x^2 = 0.30$ $p = 0.581$, $x^2_{\text{for a trend}} = 0.30$ $p = 0.581$
	16 years	4.4 (781)	3.1 (481)	---	$x^2 = 1.22$ $p = 0.270$, $x^2_{\text{for a trend}} = 1.21$ $p = 0.270$
	17 years	11.6 (69)	4.9 (824)	4.5 (404)	$x^2 = 6.48$ $p < 0.05$, $x^2_{\text{for a trend}} = 2.66$ $p < 0.05$
	18 years	15.8 (19)	12.5 (80)	5.8 (825)	$x^2 = 7.94$ $p < 0.05$, $x^2_{\text{for a trend}} = 7.75$ $p < 0.05$
	>= 19 years	40.0 (30)	18.2 (22)	11.9 (151)	$x^2 = 14.19$ $p < 0.005$, $x^2_{\text{for a trend}} = 13.34$ $p < 0.001$
Type of school					
	Academic	2.3 (863)	3.4 (854)	4.1 (845)	$x^2 = 4.54$ $p = 0.103$, $x^2_{\text{for a trend}} = 4.49$ $p = 0.054$
	Vocational	8.9 (542)	7.0 (571)	9.2 (542)	$x^2 = 2.07$ $p = 0.354$, $x^2_{\text{for a trend}} = 0.05$ $p = 0.826$
Fathers' education					
	No degree	20.0 (5)	16.7 (18)	7.7 (13)	$x^2 = 0.69$ $p = 0.708$, $x^2_{\text{for a trend}} = 0.62$ $p = 0.430$
	Primary school	4.3 (822)	5.1 (937)	6.6 (998)	$x^2 = 5.11$ $p = 0.078$, $x^2_{\text{for a trend}} = 5.00$ $p = 0.055$
	Secondary school	7.7 (259)	3.7 (218)	6.5 (214)	$x^2 = 3.52$ $p = 0.172$, $x^2_{\text{for a trend}} = 0.40$ $p = 0.529$
	First degree	3.2 (247)	2.5 (204)	1.6 (122)	$x^2 = 0.85$ $p = 0.652$, $x^2_{\text{for a trend}} = 0.85$ $p = 0.356$
	Higher	5.9 (34)	19.0 (21)	6.7 (15)	$x^2 = 2.74$ $p = 0.255$, $x^2_{\text{for a trend}} = 0.20$ $p = 0.653$

The higher school year students were less likely to use illegal drugs than the lower school year in all age groups, except for age group of 15 and 16 years, (which had no students in the 12th school year). There were no significant linear associations between illegal drug use and school year in all sub-groups of school type, fathers' education, and sex; although for female students alone there were differences in prevalences of illegal drug use by different school year. The association between illegal drug use and school year was mainly effected by age groups; older students in lower school years were more likely to use illegal (Table 7.4). This supported results from the logistic regression analysis (see also discussion in Section 7.5).

7.3 Established associations between illegal drug use and other risk variables

A wide range of risk variables, based on research literature (Table 7.5), were explored for association with illegal drug use. These included psychological characteristics, personal risk behaviours, health problems, peer contexts, family problems, and school activities. Variables were tested by bivariate analysis. In addition to those references in Table 7.5, Fuller and Cavanaugh (1995) (15) stated that some adolescents with physical signs or symptoms may have these attributed to the effects of substance use, cigarette use or alcohol. These factors were also included in the analyses.

7.3.1 Association between illegal drug use and psychological characteristics

Students were asked to evaluate whether they were aggressive, depressive, or risk taking people (see questions in Appendix 1). The results showed that students who reported such characteristics were more likely to use illegal drugs (Table 7.6). Both male and female students who reported being aggressive and risk taking people were more likely to use illegal drugs. However, only male students who reported being a depressive person were more likely to use illegal drugs (Table 7.7).

Table 7.5: Summary of studies that identify risk variables associated with illegal drug use among adolescents.

Risk variables	Country's study (sample size)	Authors	Year
Friends were using illegal drugs	-Taiwan, Kaohsiung city (1358 school students aged 16-18 years)	-Yang (79)	1998
	-USA (630 high school students 10th school yr)	-Farrell (146)	1998
	-France, Paris (233 high school students)	-Menares (68)	1997
	-USA, Ohio (2229 school students, 8th, 10th, and 12th school year)	-Jenkins (147)	1996
	-USA, Wisconsin and North California (6500 high school students)	-Steinberg (148)	1994
	-Zimbabwe (3061secondary school students)	-Eide (149)	1994
	- USA, Florida (482 school students)	- Yarnold (150)	1992
Students were not staying with parents	-UK (7722 secondary school students)	- Miller (80)	1997
Restriction of parent (parental monitoring)	-USA, Wisconsin and North California (6500 high school students)	- Steinberg (148)	1994
Parent used cigarettes, alcohol, or drugs	-USA, Florida (482 school students)	-Yarnold (150)	1992
	-Chile, Santiago (1240 secondary school students)	-Florenzano (151)	1981
Poor school performance (average grade)	-USA, New York (7611 school students, 7th-12th school year)	-Kendal (27)	1996
	-Brazil, Sao Paulo (1836 school students 9-18 years)	-Carlini (152)	1988
Truancy	- Switzerland, (3324 secondary school students)	-Michaud et al (83)	1998
	-Australia, Sydney (1270 school students 7th, 10th, and 11th school year)	-Rob (153)	1990
Using cigarette	-USA, California (1936 High school students)	-Sussman et al (84)	1997
	-Japan, Tokyo(4171 high school students)	-Oh et al (125)	1996
	-Switzerland, (9273 school students and apprenticeship program)	-Konings et al (34)	1993
Using alcohol	-UK (5383 school students aged 11-16 years)	-Sutherland (154)	1998
	-France, Paris (233 high school students)	-Menares (68)	1997
	- Japan, Tokyo. (4171 high school students)	- Oh et al (125)	1996
Premature sexual activity	-USA, (12118 school students 7th-12th school year)	-Resnick (155)	1997
	-South Africa Cape Peninsula (7340 high school students)	-Flisher (126)	1996
	-USA (8321 high school students)	-Weinbender (87)	1996
Depression	-USA, California (1936 High school students)	-Sussman et al (84)	1997
Suicide	-USA (7,687 school students 7th-12th school year)	-Potthoft (98)	1998
	-USA, North Carolina (3064 school students)	-Felts (156)	1992
	-USA (3,054 9th-12th graders, average age 16 +/- 1.2 years)	-Woods et al (128)	1993
	-Switzerland, (9273 school students and apprenticeship program)	-Konings et al (34)	1993

Table 7.6: Prevalence of illegal drug use according to psychological characteristics

Variables		Prevalence % (sample size)	Statistical difference within variable
Aggressive	No	4.1 (3115)	$x^2 = 42.63$
	Yes	9.4 (996)	$p<0.001$
Depressive	No	4.3 (2673)	$x^2 = 17.29$
	Yes	7.3 (1465)	$p<0.001$
Risk takin	No	3.4 (2903)	$x^2 = 78.38$
	Yes	10.4 (1162)	$p<0.001$

Table 7.7: Prevalence of illegal drug use according to psychological characteristics categorised by sex

Variables		Male		Female	
		Prevalence % (sample)	Significance within variable	Prevalence % (sample)	Significance within variable
Aggressive	No	7.8 (1490)	$x^2= 40.4$	0.7 (1625)	$x^2= 10.71$
	Yes	18.2 (446)	$p < 0.001$	2.4 (550)	$p < 0.005$
Depressive	No	7.8 (1312)	$x^2= 23.57$	0.9 (1361)	$x^2= 1.56$
	Yes	14.8 (641)	$p < 0.001$	1.5 (824)	$p = 0.212$
Risk-taking	No	7.1 (1321)	$x^2= 43.12$	0.4 (1582)	$x^2= 30.70$
	Yes	16.8 (612)	$p < 0.001$	3.3 (550)	$p < 0.001$

The relationship between self-identified aggressive characteristics and illegal drugs was investigated across each age group (Table 7.8). A significant relationship was not found in age group 18 years; although the relationship approached significance (p=0.057). Students aged 17 and 18 years, who had the depressive characteristic, were more likely to use illegal drugs. This significant relationship was absent in other age groups. The most consistent relationship however was risk taking where students in all age groups who self-identified the risk-taking characteristic were more likely to use illegal drug.

7.3.2 Association between illegal drug use and personal risk behaviours

Students were also asked their experiences of personal risk behaviours including: alcohol use, cigarette use, having sex early, hurting oneself, going out for fun at night time and stealing (see Appendix 1). Students who were current alcohol users or cigarette users showed a significantly higher percentage of illegal drug use (Table 7.9). Similarly, students who reported having had early sexual intercourse, having tendencies to hurt themselves and having stolen were more likely to use illegal drugs. A higher frequency of going out for fun at night was also associated with the use of illegal drugs. In particular, those who used cigarettes were more than 23 times more likely to use illegal drugs.

Table 7.8: Prevalence of illegal drug use according to psychological characteristics categorised by current age groups.

Variables	<=15 Years		16 years		17 Years		18 years		>=19 Years	
	Prevalence % (sample)	Significance within variable	Prevalence % (sample)	Significance within variable	Prevalence % (sample)	Significance within variable	Prevalence % (sample)	Significance within variable	Prevalence % (sample)	Significance within variable
Aggressive										
No	1.1 (362)	x^2= 5.04	2.8 (924)	x^2= 12.82	3.9 (965)	x^2= 12.45	5.9 (706)	x^2= 3.64	10.8 (148)	x^2=16.67
Yes	4.2 (143)	p < 0.05	7.4 (311)	p < 0.001	9.1 (296)	p < 0.001	9.8 (193)	p = 0.057	36.0 (50)	p < 0.001
Depressive										
No	1.6 (322)	x^2= 0.80	3.3 (815)	x^2= 2.45	3.9 (822)	x^2= 7.47	5.2 (575)	x^2= 5.63	14.0(129)	x^2= 2.39
Yes	2.7 (185)	p = 0.370	5.1 (429)	p = 0.118	7.4 (443)	p < 0.01	9.3 (333)	p < 0.05	22.5 (71)	p = 0.122
Risk-taking										
No	0.9 (346)	x^2= 8.20	2.7 (898)	x^2= 16.04	2.9 (890)	x^2= 33.19	4.8 (631)	x^2= 14.06	12.5 (128)	x^2= 5.10
Yes	4.9 (143)	p < 0.005	7.8 (321)	p < 0.001	11.0(356)	p < 0.001	11.7(266)	p < 0.001	25.0 (72)	p < 0.05

Table 7.9: Prevalence of illegal drug use according to personal risk behaviours

Variables		Prevalence % (sample size)	Significant (statistical difference within variable)
Alcohol use	No	1.2 (3139)	$x^2 = 412.33$
	Yes	17.2 (1075)	p<0.001
Cigarette use	No	1.6 (3782)	$x^2 = 1011.34$
	Yes	37.6 (434)	p<0.001
Having sex early	No	3.2 (3745)	$x^2 = 301.26$
	Yes	22.7 (444)	p<0.001
Hurting oneself	No	4.5 (3671)	$x^2 = 36.43$
	Yes	10.8 (529)	p<0.001
Going out for fun at night			
	No	0.7 (1334)	$x^2 = 283.78$
	< 1 time/week	4.3 (1775)	p<0.001
	1-2 time/week	9.1 (809)	x^2 (for a trend) = 234.88
	> 2 time/week	25.5 (247)	p<0.001
Stealing	No	3.5 (3306)	$x^2 = 93.47$
	Yes	11.7 (900)	p<0.001

The relationships between illegal drug use and personal risk behaviours were then examined by different genders. Both male and female students who reported higher frequencies for each behaviour were more likely to use illegal drugs (Table 7.10).

Table 7.10: Prevalence of illegal drug use according to frequencies of going out for fun at night categorised by male and female students

Variables		Male		Female	
		Prevalence % (sample)	Significant within variable	Prevalence % (sample)	Significant within variable
Alcohol use	No	2.2 (1205)	x^2= 203.28	0.5 (1934)	x^2= 43.52
	Yes	21.8 (783)	p < 0.001	4.8 (292)	p < 0.001
Cigarette use	No	2.8 (1580)	x^2= 443.23	0.7 (2202)	Fisher exact test
	Yes	37.8 (407)	p < 0.001	33.3 (27)	p < 0.001
Going out for fun at night			x^2= 127.5		x^2= 30.66
	No	1.9 (377)	p < 0.001	0.2 (957)	p < 0.001
	<1time/week	7.7 (869)	x^2 (for a trend) = 08.10	1.0 (906)	x^2 (for a trend) = 25.98
	1-2times/week	12.5 (535)	p<0.001	3.8 (339)	p<0.001
	>2times/week	31.3 (182)			
Having sex early	No	6.6 (1604)	x^2= 113.16	0.7 (2141)	Fisher exact test
	Yes	25.1 (366)	p < 0.001	11.5 (78)	p < 0.001
Hurting oneself	No	8.4 (1779)	x^2= 50.35	0.8 (1892)	Fisher exact test
	Yes	24.1 (203)	p < 0.001	2.5 (326)	p < 0.05
Stealing	No	6.8 (1524)	x^2= 76.25	0.8 (1782)	Fisher exact test
	Yes	20.7 (459)	p < 0.001	2.3 (441)	p < 0.05

The significant relationship between illegal drug use and stealing may have been confounded by socio-economic status of family. Therefore, this association was examined by different fathers' occupations (see Table 7.11). The association between illegal drug use and stealing was significant in students whose fathers were farmers, private office employees, government /enterprise services and running their own

businesses. However, it was not found in students whose fathers were unemployed persons and labourers. Analyses were also repeated for each age group independently. Here, (Table 7.12), students in all age groups who reported higher frequencies of going out for fun at night time, being alcohol users and being cigarette users were more likely to use illegal drugs.

Table 7.11: Prevalence of illegal drug use according to the experience of stealing categorised by fathers' occupation.

Fathers' occupation	Prevalence of illegal drug use % (sample)		Significant
	Students who have no stealing experience	Students who have stealing experience	
No job	2.6 (38)	15.4 (13)	Fisher exact test p = 0.156
Labourers	4.0 (420)	8.0 (87)	Fisher exact test p = 0.159
Farmers	3.6 (1633)	12.4 (348)	x^2= 44.90 p < 0.001
Private office employees	3.5 (115)	16.1 (31)	Fisher exact test p<0.05
Government/enterprise services	3.2 (597)	15.6 (199)	x^2= 38.95 p < 0.001
Own business	3.6 (330)	10.0 (160)	x^2= 8.10 p < 0.005

7.3.3 Association between illegal drug use and health problems

Students were questioned about their health problems in the last three months including: having a small appetite, coughing, having chest pains, having a cold, having a sore throat, having a sore nose and being wheezy (see Appendix 1). There were linear associations between prevalence of illegal drug use and having a small appetite, coughing, having chest pains and having a sore nose (Table 7.13). These significant associations were checked independently for each sex. Among male students, there were associations between illegal drug use and appetite problem, coughing, chest pains and having a sore nose. These effects were not found to be significant in female students (Table 7.14).

Being cigarette and alcohol users possibly confounded the significant associations between illegal drug use and appetite, cough, chest pain, and sore nose problem. Therefore, these associations were independently examined by cigarette use status (cigarette user or cigarette non-user) and alcohol use status (alcohol user or alcohol non-user).

Table 7.12: Prevalence of illegal drug use according to risk behaviour variables categorised by current age groups.

Variables	<=15 Years		16 years		17 years		18 years		>=19 years	
	Prevalence % (sample)	Significance within variable	Prevalence % (sample)	Significance within variable	Prevalence% (sample)	Significance within variable	Prevalence % (sample)	Significance within variable	Prevalence % (sample)	Significance within variable
Alcohol use		Fisher exact test								
No	1.1 (449)		0.8 (1021)	x^2= 138.24	1.5 (961)	x^2= 102.05	1.3 (616)	x^2= 84.29	2.3 (86)	x^2= 22.26
Yes	7.4 (68)	p < 0.01	17.1 (240)	p < 0.001	15.6 (334)	p < 0.001	17.2 (308)	p < 0.001	27.4 (117)	p < 0.001
Cigarette use		Fisher exact test		Fisher exact test						
No	1.0 (504)		0.8 (1180)		1.6 (1166)	x^2= 286.01	2.4 (794)	x^2= 162.13	4.7 (128)	x^2= 36.15
Yes	41.7 (12)	p < 0.001	47.6 (82)	p < 0.001	35.9 (131)	p < 0.001	32.3 (130)	p < 0.001	37.3 (75)	p < 0.001
Going out for fun at night		Fisher exact test		x^2= 66.38		x^2= 110.19		x^2= 66.33		x^2= 8.18
No	*		0.0(472)	p < 0.001	0.8(382)	p < 0.001	1.8(218)	p < 0.001	0.0 (24)	p < 0.05
<1time/week	1.2 (412)	p < 0.05	4.7(516)	$x^2_{(\text{for a trend})}$ =	3.8(584)	$x^2_{(\text{for a trend})}$ =	3.4(406)	$x^2_{(\text{for a trend})}$ =	14.9(87)	$x^2_{(\text{for a trend})}$ =
1-2times/week			6.7(208)	55.05	8.1(247)	77.74	11.3(221)	53.36	21.2(52)	7.31
>2times/week	5.2 (96) *		21.6(51)	p < 0.001	30.0(70)	p < 0.001	26.9(67)	p < 0.001	26.3(38)	p <0.01

Note: * Because the Chi-squared distribution which provided the expected values were not large enough (less than 80% of expected frequencies exceed 5), the frequencies of going out for fun at night were then grouped into two categories to give bigger expected values.

Table 7.13: Prevalence of illegal drug use according to health problem in the last three months

Variables		Prevalence % (sample size)	Significant (statistical difference within variable)
Small appetite	Never	3.9 (2432)	$x^2 = 28.24$, $p<0.001$
	Occasional	6.6 (1429)	$x^2_{\text{(for a trend)}} = 28.12$
	Often	10.0 (310)	$p<0.001$
Cough	Never	3.1 (1373)	$x^2 = 29.17$, $p<0.001$
	Occasional	6.0 (2493)	$x^2_{\text{(for a trend)}} = 28.29$, $p<0.001$
	Often	10.4 (268)	
Chest pains	Never	3.8 (2261)	$x^2 = 24.22$
	Occasional	7.1 (1526)	$p<0.001$
	Often	7.7 (351)	$x^2_{\text{(for a trend)}} = 21.76$, $p<0.001$
Cold	Never	4.3 (951)	$x^2 = 3.49$
	Occasional	5.4 (2714)	$p=0.174$
	Often	6.6 (487)	$x^2_{\text{(for a trend)}} = 3.49$, $p=0.062$
Wheezy	Never	5.0 (3306)	$x^2 = 4.54$
	Occasional	6.9 (649)	$p=0.103$
	Often	6.3 (174)	$x^2_{\text{(for a trend)}} = 3.46$, $p=0.063$
Sore throat	Never	4.8 (1313)	$x^2 = 3.26$
	Occasional	5.1 (2490)	$p=0.196$
	Often	7.2 (333)	$x^2_{\text{(for a trend)}} = 1.90$, $p=0.168$
Sore nose	Never	4.5 (2800)	$x^2 = 14.96$
	Occasional	7.0 (1204)	$p<0.005$
	Often	9.6 (114)	$x^2_{\text{(for a trend)}} = 14.95$, $p<0.001$

Table 7.14: Prevalence of illegal drug use according to frequencies of having a small appetite, a cough, chest pains, and a sore nose categorised by male and female students

Variables		Male		Female	
		Prevalence % (sample)	Significant within variable	Prevalence % (sample)	Significant within variable
Small appetite	Never	6.9 (1192)	$x^2= 42.51$	1.0 (1240)	$x^2= 0.03$
	Occasional	13.6 (633)	$p< 0.001$	1.1 (796)	$p = 0.984$
	Often	22.3 (130)	$x^2_{\text{(for a trend)}} = 43.19$ $p<0.001$	1.1 (180)	$x^2_{\text{(for a trend)}} = 0.02$ $p=0.878$
Cough	Never	5.8 (599)	$x^2= 29.74$	0.8 (772)	$x^2= 1.13$
	Occasional	11.1 (1219)	$p < 0.001$	1.3 (1276)	$p = 0.569$
	Often	21.1 (123)	$x^2_{\text{(for a trend)}} = 27.76$ $p<0.001$	1.4 (145)	$x^2_{\text{(for a trend)}} = 1.02$ $p= 0.311$
Chest pains	Never	7.0 (1129)	$x^2= 30.05$	0.8 (1135)	$x^2= 2.29$
	Occasional	14.1 (681)	$p < 0.001$	1.3 (844)	$p = 0.318$
	Often	16.8 (125)	$x^2_{\text{(for a trend)}} = 28.60$ $p<0.001$	1.8 (224)	$x^2_{\text{(for a trend)}} = 2.20$ $p = 0.332$
Sore	Never	8.1 (1360)	$x^2= 23.67$	1.0 (1440)	$x^2= 2.29$
	Occasional	15.0 (513)	$p < 0.001$	1.0 (687)	$p = 0.319$
	Often	19.1 (47)	$x^2_{\text{(for a trend)}} = 23.37$ $p<0.001$	3.0 (67)	$x^2_{\text{(for a trend)}} = 0.58$ $p=0.446$

There were significant associations between illegal drug use and appetite, cough, chest pain, and sore nose problems in both cigarette users and cigarette non-users (Table 7.15). Among alcohol users, there were significant associations between illegal drug

use and appetite, cough, chest pain, and sore nose problems (Table 7.16). However, these associations were not significant in alcohol non-users, except for the association between illegal drug use and sore nose problems.

Table 7.15: Prevalence of illegal drug use according to frequencies of having a small appetite, cough, chest pains and a sore nose categorised by cigarette smokers and non-smokers

Variables	Cigarette smokers		Non-smokers	
	Prevalence % (sample)	Significant within variable	Prevalence % (sample)	Significant within variable
Small appetite		$x^2 = 10.22$		$x^2 = 7.09$
Never	31.4 (220)	$p < 0.01$	1.2 (2211)	$p < 0.05$
Occasional	44.6 (157)	$x^2_{\text{(for a trend)}} = 9.83$	2.0 (1272)	$x^2_{\text{(for a trend)}} = 7.03$
Often	51.1 (45)	$p<0.005$	3.0 (265)	$p < 0.01$
Cough		$x^2 = 9.03$		$x^2 = 8.81$
Never	26.3 (95)	$p < 0.05$	1.3 (1276)	$p < 0.05$
Occasional	40.5 (289)	$x^2_{\text{(for a trend)}} = 8.92$	1.5 (2205)	$x^2_{\text{(for a trend)}} = 4.87$
Often	51.4 (37)	$p<0.005$	3.9 (231)	$p<0.05$
Chest pains		$x^2 = 6.07$		$x^2 = 11.92$
Never	32.3 (201)	$p < 0.05$	1.0 (2059)	$p < 0.005$
Occasional	43.8 (178)	$x^2_{\text{(for a trend)}} = 5.20$	2.2 (1348)	$x^2_{\text{(for a trend)}} = 11.58$
Often	45.0 (40)	$p<0.05$	2.9 (311)	$p<0.005$
Sore nose		$x^2 = 17.20$		$x^2 = 101.04$
Never	32.5 (268)	$p < 0.001$	1.5 (2531)	$p < 0.001$
Occasional	53.8 (130)	$x^2_{\text{(for a trend)}} = 9.73$	1.3 (1070)	$x^2_{\text{(for a trend)}} = 3.67$
Often	30.8 (13)	$p<0.005$	6.9 (101)	$p<0.05$

Although air pollution in big cities such as Khon Kaen inner city (13), may have been a confounder, there were significant association between illegal drug use and coughs, chest pain, and sore nose problems in students from both inner city and district areas (Table 7.17).

Table 7.16: Prevalence of illegal drug use according to frequencies of having a small appetite, cough, chest pains and a sore nose categorised by alcohol drinkers and non-drinkers

Variables		Alcohol drinkers		Non-drinkers	
		Prevalence % (sample)	Significant within variable	Prevalence % (sample)	Significant within variable
Small appetite	Never	14.2 (543)	$x^2 = 13.23$	1.0 (1889)	$x^2 = 2.82$
	Occasional	19.8 (394)	$p < 0.05$	1.6 (1033)	$p = 0.244$
	Often	27.9 (104)	$x^2_{\text{(for a trend)}} = 13.02$, $p<0.001$	1.0 (205)	$x^2_{\text{(for a trend)}} = 1.11$, $p = 0.292$
Cough	Never	11.2 (276)	$x^2 = 15.33$	0.9 (1095)	$x^2 = 2.29$
	Occasional	19.2 (673)	$p < 0.001$	1.2 (1819)	$p = 0.317$
	Often	28.2 (85)	$x^2_{\text{(for a trend)}} = 15.27$, $p<0.001$	2.2 (183)	$x^2_{\text{(for a trend)}} = 1.82$, $p = 0.177$
Chest pains	Never	14.3 (491)	$x^2 = 8.47$	0.8 (1767)	$x^2 = 3.75$
	Occasional	20.8 (432)	$p < 0.05$	1.6 (1094)	$p = 0.153$
	Often	22.4 (107)	$x^2_{\text{(for a trend)}} = 7.65$, $p<0.01$	1.2 (244)	$x^2_{\text{(for a trend)}} = 2.21$, $p = 0.137$
Sore nose	Never	15.3 (641)	$x^2 = 12.10$	1.3 (2157)	$x^2 = 34.59$
	Occasional	24.1 (336)	$p < 0.005$	0.3 (863)	$p < 0.001$
	Often	13.5 (37)	$x^2_{\text{(for a trend)}} = 5.82$, $p<0.05$	7.8 (77)	$x^2_{\text{(for a trend)}} = 1.05$, $p=0.305$

Table 7.17: Prevalence of illegal drug use according to frequencies of having a small appetite, cough, chest pains and a sore nose categorised by students in inner city and district area.

Variables	Inner city area		District area	
	Prevalence % (sample)	Significant within variable	Prevalence % (sample)	Significant within variable
Cough		x^2= 16.60		x^2= 16.56
Never	3.3 (710)	p < 0.001	2.1 (661)	p < 0.001
Occasional	6.6 (1250)	x^2 (for a trend) = 15.06	5.5 (1245)	x^2 (for a trend) = 16.52
Often	11.6 (127)	p<0.001	8.5 (141)	p < 0.001
Chest pains		x^2= 19.92		x^2= 7.42
Never	3.9 (1134)	p < 0.001	3.6 (1127)	p < 0.05
Occasional	8.7 (769)	x^2 (for a trend) = 14.38	5.4 (757)	x^2 (for a trend) = 7.34
Often	7.6 (185)	p<0.001	7.8 (165)	p < 0.01
Sore nose		x^2= 10.94		x^2= 11.54
Never	4.8 (1366)	p < 0.005	4.1 (1434)	p < 0.005
Occasional	8.6 (639)	x^2 (for a trend) = 7.88	5.2 (561)	x^2 (for a trend) = 2.34
Often	6.2 (65)	p<0.01	14.3 (49)	p< 0.05

7.3.4 Association between illegal drug use and family problems

Respondents were asked whether their fathers or mothers were cigarette users and were also asked whether their fathers or mothers were alcohol users (see Appendix 1). The proportion of current illegal drug use in students whose fathers or mothers were cigarette users was significantly higher. However, there was no significant difference in proportion of illegal drug users between students whose fathers or mothers were current alcohol users and students whose fathers or mothers were not (Table 7.18).

Table 7.18: Prevalence of illegal drug use according to family problem variables

Variables		Prevalence % (sample size)	Significant (statistical difference within variable)
Cigarette smoking parent	No	4.2 (1907)	x^2 = 8.26
	Yes	6.2 (2278)	p<0.005
Alcohol drinking parent	No	4.8 (1374)	x^2 = 0.97
	Yes	5.5 (2803)	p=0.325
Financial problem in family	No problem	5.8 (469)	x^2 =4.74
	Some problems	4.6 (2839)	p=0.093
	Many problems	6.5 (723)	x^2 (for a trend) = 0.883, p=0.347
Fighting among family members	Never	4.6 (713)	x^2 = 6.26
	Sometimes	5.1 (3093)	p < 0.05
	Often	7.9 (391)	x^2 (for a trend) = 4.18, p < 0.05
Restriction of parent	Not at all	10.6 (217)	x^2 = 16.98
	A little	5.3 (2996)	p<0.005
	A lot	5.1 (594)	x^2 (for a trend) = 10.04
	All the time	2.8 (389)	p<0.005
Run away from home	No	3.8 (3613)	x^2 = 117.56
	Yes	14.6 (574)	p<0.001
Parents staying together	No	6.8 (739)	x^2 = 3.98
	Yes	5.0 (3468)	p < 0.05
Students stay with parent	No	6.5 (1079)	x^2 = 4.24
	Yes	4.9 (3127)	p<0.05

Respondents were also questioned about whether their parents had stayed together (i.e. not separated) and whether they were still living with their parents. Students whose parents were not staying together were more likely to use illegal drugs. In addition, students who were not staying with their parents were also more likely to use illegal drugs (Table 7.18). Conflicts between their family members and restrictions placed on them by their parents were also related to levels of drug use. Thus, there was a positive association between prevalence of illegal drug use and fighting among family members and a negative association between prevalence of illegal drug use and greater restriction placed on students by parents (Table 7.18). As another measure of family problems, students were asked about their experience of running away from home. Students who reported having ever run away from home were more likely to use illegal drugs. Financial problems of students' families were also included in the analyses as one possible reason for family problems. However, there was no significant difference in illegal drug use between students whose family had financial problems and students whose family did not (Table 7.18) as reported by students.

The significant associations between illegal drug use and family problems were also examined within categories of age and sex. When analysed by age group the association between restrictions of parents and prevalence of illegal drug use of students remained significant in those aged 16 years or under (Table 7.19). However, this significant relationship was not found in age group 17 years and up. Students aged 16 or under and 18 years and up, whose fathers or mothers were cigarette users, were more likely to use illegal drug. This significant association was not found in age group 17 years. Among students aged 16 years or under, those not staying with their parents were more likely to use illegal drugs. This significant association was not found in other age groups. In all age groups, prevalences of illegal drug use among students whose parents were not staying together were not significantly higher although the relationship approached significance (P=0.066) in age group 16 years or under. There was a correlation between illegal drug use and conflict among family members only in age group 18 years and up; the more the fighting among family members the more chance to use illegal drugs.

Table 7.19: Prevalence of illegal drug use according to family variables that were associated with illegal drug use categorised by current age groups

Variables	<=16 years		17 Years		>=18 Years	
	Prevalence % (sample)	Significance within variable	Prevalence %(sample)	Significance within variable	Prevalence % (sample)	Significance within variable
Cigarette smoking parent						
No	2.4 (845)	x^2=4.78	4.9 (586)	x^2=0.06	6.3 (474)	x^2=4.75
Yes	4.2 (920)	p< 0.05	5.2 (706)	p=0.812	10.0 (640)	p< 0.05
Parents stay together						
No	5.0 (321)	x^2=3.37	5.5 (217)	x^2=0.10	10.6 (198)	x^2=1.44
Yes	3.0 (1455)	p=0.066	5.0(1076)	p=0.755	8.0 (926)	p= 0.230
Student stay with parents						
No	5.0 (422)	x^2= 4.69	5.4 (354)	x^2=0.07	9.5 (295)	x^2=0.57
Yes	2.8 (1352)	p<0.05	5.0 (939)	p=0.792	8.1 (830)	p=0.451
Conflict among family members		x^2=0.77 p=0.680		x^2=4.75 p=0.093		x^2=6.92 p=0.062
Never	3.8 (287)	$x^2_{(for\ a\ trend)}$ =	3.7 (216)	$x^2_{(for\ a\ trend)}$ =	5.9 (205)	$x^2_{(for\ a\ trend)}$
Sometimes	3.1 (1288)	0.00	5.0 (966)	3.70	8.4 (832)	= 5.74
Several times	4.1 (196)	p= 0.994	9.3 (108)	p= 0.054	15.3 (85)	p<0.05
Restriction Of parents		x^2=25.89		x^2=1.59		x^2=1.72
Not at all	12.7 (79)	p< 0.001	8.1(74)	p=0.662	8.6 (58)	p=0.634
A little	3.1 (1241)	$x^2_{(for\ a\ trend)}$	5.1(930)	$x^2_{(for\ a\ trend)}$	8.9 (819)	$x^2_{(for\ a\ trend)}$
A lot	3.7 (271)	=9.17	4.5(176)	=0.72	8.2 (146)	=1.27
All the times	0.6 (177)	p<0.005	4.5(112)	p=0.395	5.1 (99)	p=0.259

When analysed by sex, male students whose fathers or mothers were cigarette users were more likely to use illegal drugs (Table 7.20). This significant association was not found in female students.

Table 7.20: Prevalence of illegal drug use according to family variables categorised by male and female students.

Variables		Male		Female	
		Prevalence % (sample)	Significant within variable	Prevalence % (sample)	Significant within variable
Cigarette smoking parent	No	7.4 (942)	x^2= 13.19	0.9 (964)	x^2= 0.36
	Yes	12.3 (1029)	p < 0.001	1.2 (1250)	p = 0.548
Parents stay together	No	11.3 (355)	x^2= 0.78	2.6 (1841)	Fisher exact test
	Yes	9.7 (1627)	p = 0.376	0.8 (1841)	p < 0.005
Family conflict	Never	6.5 (446)	x^2= 16.31,p<0.001	*	
	Sometimes	10.3 (1394)	$x^2_{(for\ a\ trend)}$	[1]0.9 (1966)	Fisher exact test
	Several times	18.1 (138)	= 14.90, p < 0.001	2.4 (253)	p < 0.05
Restriction of parents	Not at all	14.1 (128)	x^2= 5.87, p = 0.118	5.6 (89) *	x^2= 18.08
	A little	10.2 (1424)	$x^2_{(for\ a\ trend)}$	0.8 (1572)	p < 0.001
	A lot	9.9 (263)	= 4.67, p<0.05	[1]1.1 (559)	$x^2_{(for\ a\ trend)}$
	All the times	5.6 (161)			= 2.83, p = 0.092
Run away from home	No	7.6 (1617)	x^2= 53.92	0.7 (1996)	Fisher exact test
	Yes	20.4 (357)	p < 0.001	5.1 (217)	p < 0.001

Note: * Because the Chi-squared distribution which provided the expected values were not large enough (less than 80% of expected frequencies exceed 5), the frequencies of conflict among family members were then grouped into two categories to give bigger expected values. Similarly, the frequencies of parent restriction were grouped into three categories.

Female students whose parents were not staying together were more likely to use illegal drugs. This significant association was not found in males. Conflicts between members of students' families and restrictions placed on students by their parents were also significantly related to levels of drug use in both male and female students (Table 7.20). Both sexes who reported having ever run away from home were also more likely to use illegal drugs.

7.3.5 Association between illegal drug use and peer variables

Students were asked whether their close friends were using illegal drugs (see question in Appendix 1). Illegal drug use was strongly associated with peer influences. Students whose close friends were illegal drug users had significantly higher prevalences of illegal drug use (Table 7.21). Students were also asked whether they were currently staying with their friends. Significantly, higher rates of frequent illegal drug use were also found in this group. The significant associations between illegal drug use and peer variables (including "close friends were illegal drug users" and "students were staying with friends") were examined by different sex. Both male and female students whose close friends were illegal drug users were more likely to use illegal drugs (Table 7.22). Female students who were staying with their friends were more likely to use illegal drug. There was no similar significant effect in male students.

Table 7.21: Prevalence of illegal drug use according to peer variables.

Variables		Prevalence % (sample size)	Significant (statistical difference within variable)
Close friends were illegal drug users	No	1.9 (3033)	$x^2 = 274.44$
	Yes	15.2 (1081)	$p<0.001$
Students were staying with friends	No	5.0 (3834)	$x^2 = 9.02$
	Yes	8.6 (372)	$p<0.005$

Table 7.22: Prevalence of illegal drug use according to peer variables categorised by male and female students

Variables		Male		Female	
		Prevalence % (sample)	Significant within variable	Prevalence % (sample)	Significant within variable
Close friends were illegal drug users	No	4.0 (1315)	$x^2= 175.70$	0.3 (1718)	$x^2= 42.29$
	Yes	23.5 (621)	$p < 0.001$	3.9 (460)	$p < 0.001$
Students stay with friends	No	9.6 (1777)	$x^2= 2.26$	0.9 (2057)	$x^2= 6.49$
	Yes	12.9 (209)	$p = 0.133$	3.1 (163)	$p < 0.05$

7.3.6 Association between illegal drug use and school activity variables

Students were questioned about their average grade in school class (see question in Appendix 1). There was linear association between average grades and illegal drug use; students who had higher than average grades were less likely to use illegal drugs (Table 7.23). Students were also asked to assess whether they had attention difficulty in their classes. Although the association approached significance (p=0.072), there were no significant differences in levels of self-assessed attention difficulty between those who used illegal drugs and those who did not. Finally in this section, students were asked how often they played truant. There was a linear positive association between prevalence of illegal drug use and students' truancy. The association between illegal drug use and average grade was consistent across different sex (Table 7.24) and also occurred in students' aged 16-17 years, but was not found in students' age 15 years or under and 18 years or over (see Figure 7.3). Overall however, students who had higher than average grades were less likely to use illegal drugs than those who had lower average grades (Table 7.23).

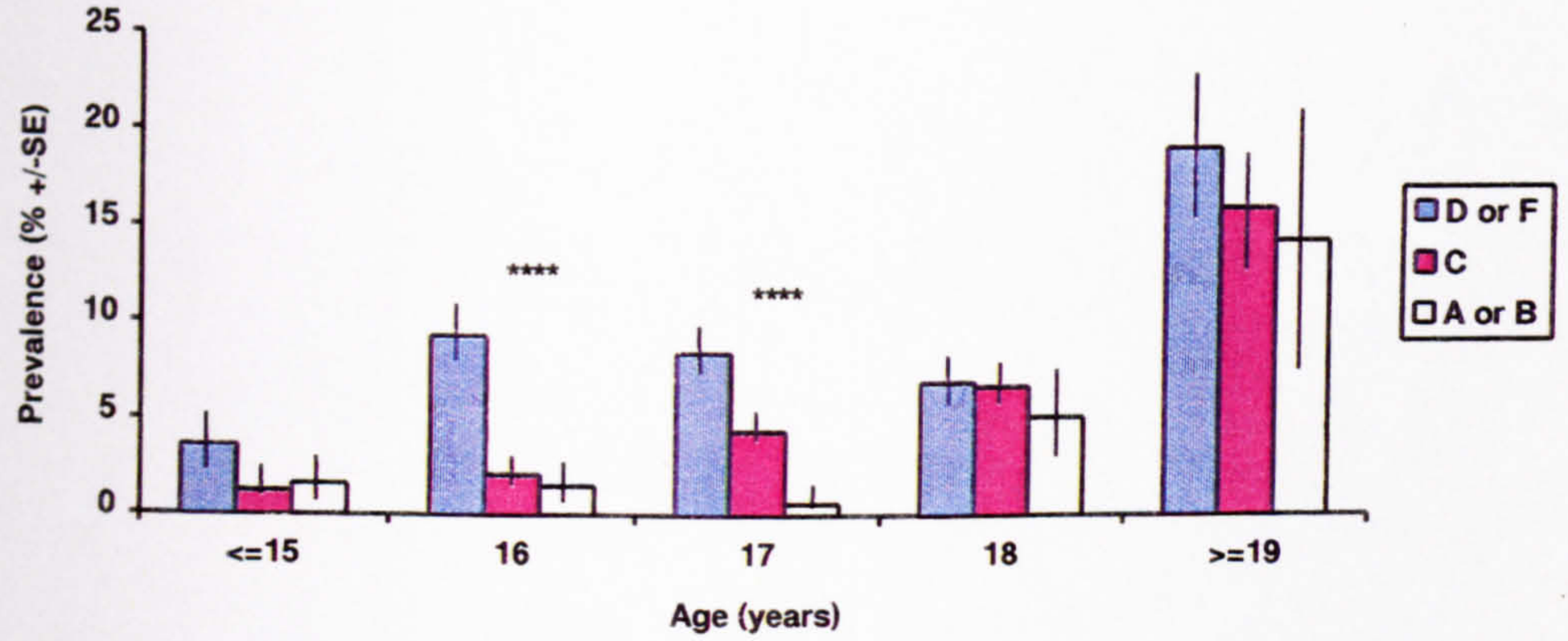
Table 7.23: Prevalence of illegal drug use according to school activity variables

Variables		Prevalence % (sample size)	Significant (statistical difference within variable)
Average grade	D, F	8.3 (1293)	$x^2 = 37.92$, $p<0.001$
	C	4.4 (2305)	$x^2_{\text{(for a trend)}} = 36.68$, $p<0.001$
	A, B	2.2 (596)	
Attention difficulty	No	4.7 (2308)	$x^2 = 3.24$
	Yes	6.0 (1892)	$p=0.072$
Truancy	Never	1.5 (2703)	$x^2 = 393.08$, $p<0.001$
	1-5 times	8.3 (1189)	$x^2_{\text{(for a trend)}} = 371.68$, $p<0.001$
	6-12 times	25.1 (175)	
	> 12 times	29.5 (132)	

Table 7.24: Prevalence of illegal drug use according to school grade and truancy categorised by male and female students.

Variables	Male		Female	
	Prevalence % (sample)	Significant within variable	Prevalence % (sample)	Significant within variable
Grade		$x^2 = 21.02$		$x^2 = 11.12$
D, F	13.8 (673)	$p<0.001$	2.3 (620)	$p<0.05$
C	8.9 (1053)	$x^2_{\text{(for a trend)}} = 20.99$	0.6 (1252)	$x^2_{\text{(for a trend)}} = 8.16$
A, B	4.4 (251)	$p<0.001$	0.6 (345)	$p<0.005$
Truancy				
Never	3.2 (1065)	$x^2 = 225.93$	0.4 (1638)	$x^2 = 40.21$
1-5 times	12.4 (702)	$p<0.001$	2.5 (487)	$p<0.001$
6-12 times	34.8 (115)	$x^2_{\text{(for a trend)}} = 213.19$	6.2 (97)	$x^2_{\text{(for a trend)}} = 38.90$
> 12 times	38.9 (95)	$p<0.001$		$p<0.001$

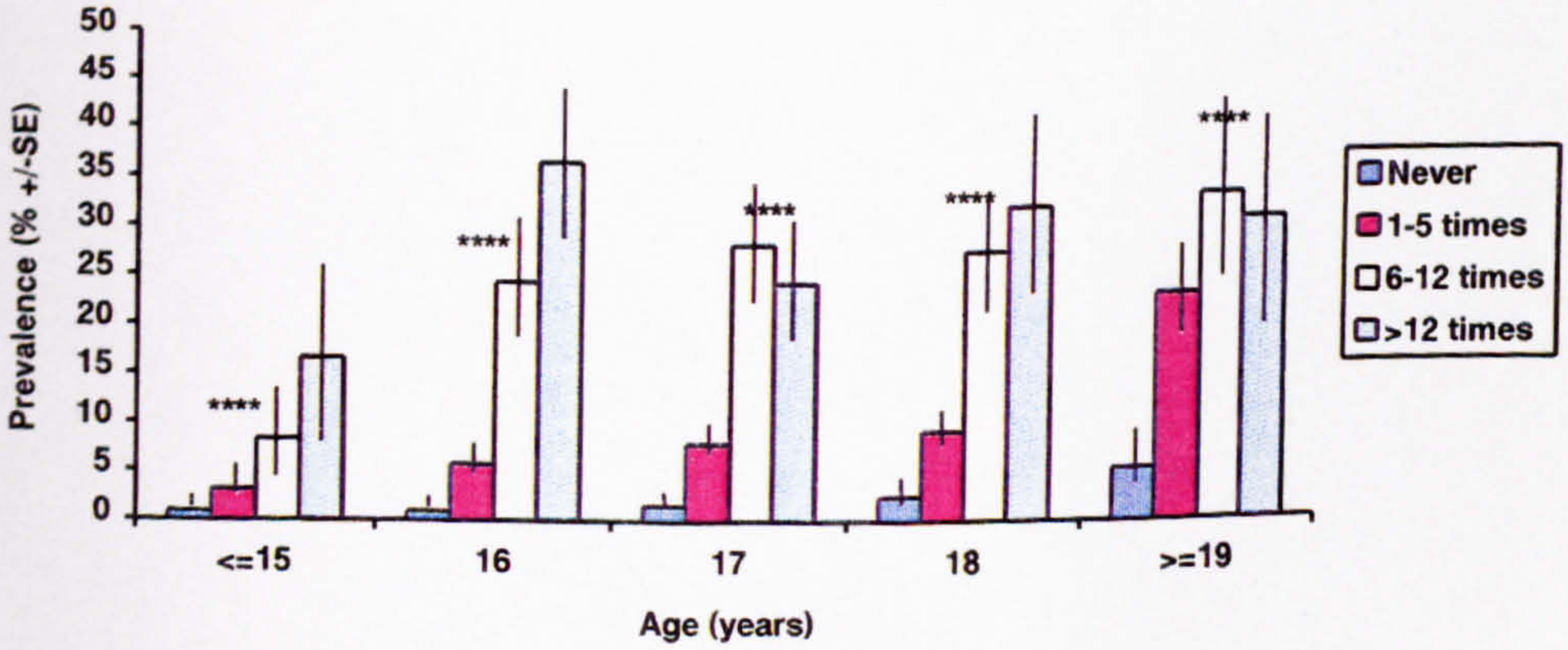
Figure 7.3: Prevalence of illegal drug use according to different school performances (average grade) categorised by current age groups.



Note: **** indicates p<0.001, *** indicates p<0.005, ** indicates p<0.01, * indicates p<0.05

In all age groups, there were linear associations between illegal drug use and students' truancy: the higher the number of truancy episodes, the higher the prevalence of illegal drug use (Figure 7.4).

Figure 7.4: Prevalence of illegal drug use according to different frequency of truancy categorised by current age groups



Note: **** indicates p<0.001, *** indicates p<0.005, ** indicates p<0.01, * indicates p<0.05

Furthermore, the significant association between illegal drug use and average grade was present in both academic and vocational school students (Figure 7.5). Also in both academic and vocational school, there were linear associations between illegal drug use and students' truancy (Figure 7.6).

Figure 7.5: Prevalence of illegal drug use according to different school performances (average grade) categorised by school type

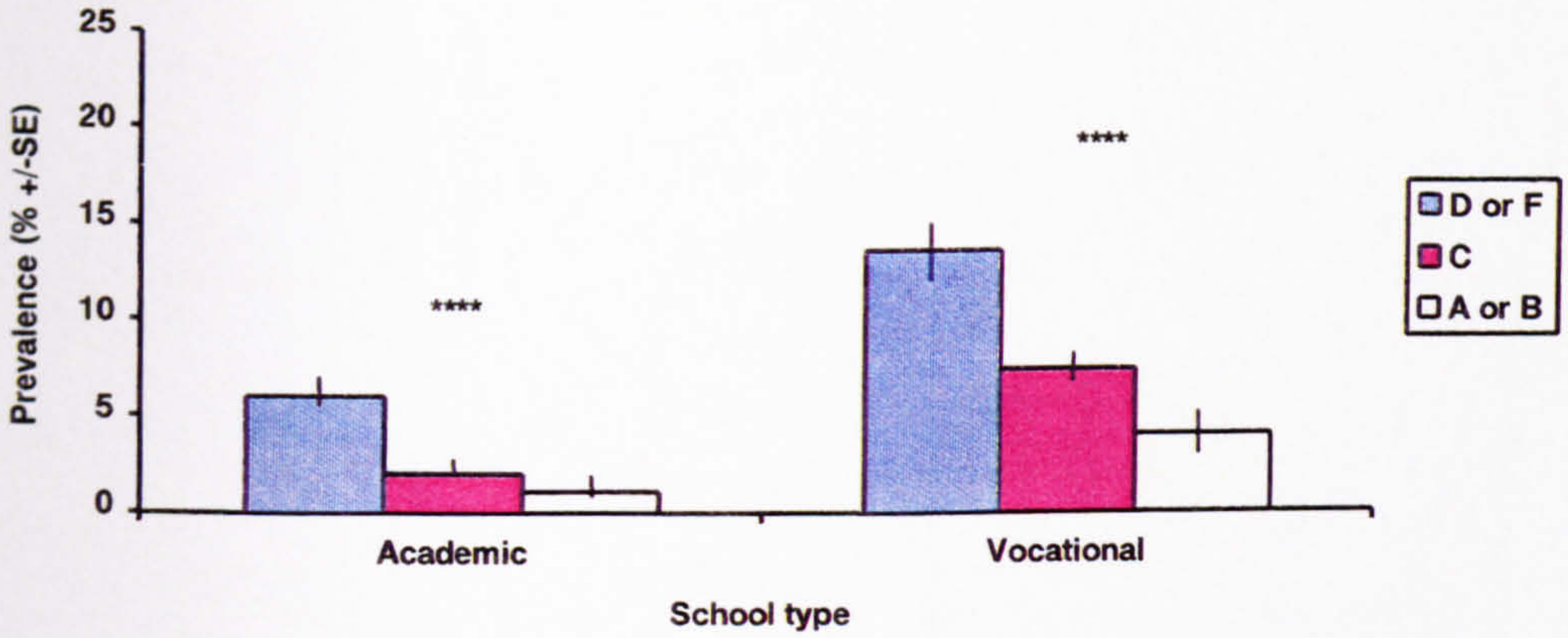
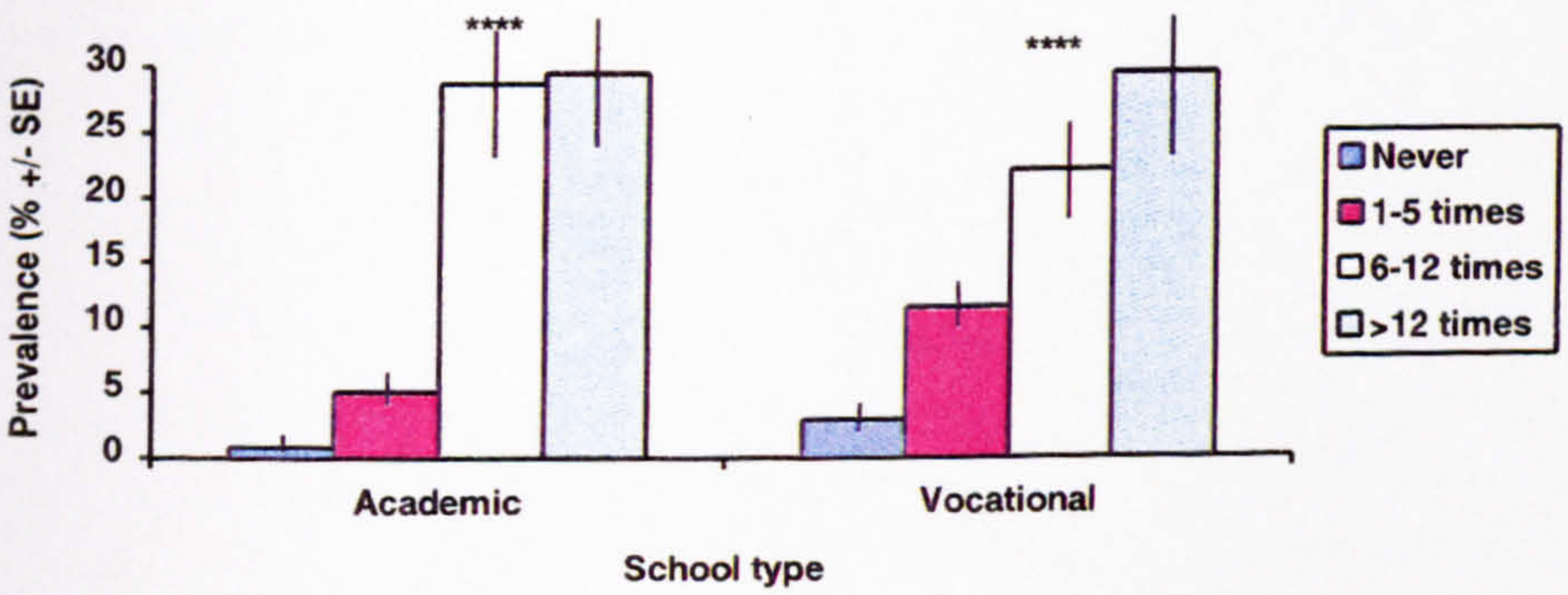


Figure 7.6: Prevalence of illegal drug use according to different frequency of truancy categorised by school type.



Note for both figures: **** indicates p<0.001, *** p<0.005, ** p<0.01, * p<0.05

7.3.7 Discussion of bivariate analyses

The result identified that most current illegal drug users among Khon Kaen secondary school students were amphetamine users (Section 7.1.1) followed by cannabis users and solvent users. Very few were using opium, heroin, ecstasy, cocaine, and magic mushroom (less than 2% of illegal drug users). It should be noted that in Thailand, amphetamine, cannabis, and solvents seem to be easier to get from inside or outside of school when compared with other illegal drugs (90). In addition, amphetamine, cannabis and solvents are not too expensive for students to buy them when compared with other illegal drugs (90). Overall, these drugs represent the main problems of illegal drug use among Khon Kaen secondary school students.

The bivariate analysis revealed that illegal drug use was associated with sex, age, school type and fathers' education (Table 7.3). Students who were males, older

students, and vocational were more likely to use illegal drugs. Students whose father had no formal education or a degree/higher than first degree were more likely to use illegal drugs. However, there were no significant associations between illegal drug use and school zone (inner city or district area), school years (10th-12th year), and fathers' occupation; although the relationship between illegal drug use and school zone approached significance (5.9% in inner city and 4.6% in district area, p=0.072). Multivariate logistic regression analysis supported that sex, age, school type, and fathers' education were independently associated with illegal drug use (Figure 7.2). In addition, multivariate analysis also revealed the significant association result between illegal drug use and school year; the older students in early years were more likely to use drugs (Figure 7.2). This can be explained by effect of "age for school year (older students in school year)". For example, students aged 19 years in 10th and 11th school year were more likely to use illegal drugs than students aged 19 years in 12th school year (Table 7.4). This effect of older students in younger age groups was consistent across age groups. Resnick et al (1997) and Byrd (1996) also found that American high school students who were older than other students at their school year were more likely to report being illegal drug users (136, 155). Therefore, "age for school year" status is a potentially important marker for illegal drug use.

Risk-taking characteristics were strongly associated with illegal drug use (see Table 7.6). Thus, risk-taking was significantly associated with illegal drug use in all age groups and both male and female students (Table 7.7 and 7.8). Students who reported being aggressive were also more likely to use illegal drugs. However, only male students who reported being a depressive person were more likely to use illegal drugs (Table 7.7). One possibility is depressive characteristics may be caused by illegal drug use. It is possible therefore that there are different effects of drugs on male and female students because of biological variation (see alcohol and cigarette chapters for discussion).

Variables measuring personal risk behaviours such as alcohol use, cigarette use, going out for fun at night and having sex early seem to be strongly associated with illegal drug use (Table 7.9) and were consistent across different sex and age groups (Table 7.10 and 7.12). The association between illegal drug use and stealing was significant

in students whose fathers were farmers, private office employees, government/enterprise services, and running their own businesses (see Table 7.11). However, it was not found in students whose fathers were unemployed persons and labourers. Students from families with lower socio-economic status such as father having no job or being labourers may steal for other reasons such as their own money problems. In other words, they might not steal money for buying illegal drugs but to supplement other aspects of living. This effect may confound the relationship in the lower socio-economic groups. However, in other groups results suggest that students who are caught up with stealing may be also associated with drug use.

The results also revealed that there were positive associations between illegal drug use and appetite problems, coughing, chest pains and having a sore nose (Table 7.13). Because amphetamine and cannabis were mostly taken by smoking and solvents were used by inhalation, the respiratory tract of users may be irritated by smoking and inhalation leading to such possible associations. In addition, most illegal drugs such as amphetamine and solvents also reduce the onset of hunger (45, 157). However in contrast, some cannabis users also report greater appetites (158). The associations between illegal drug use and appetite problems, coughing and chest pains were confounded by alcohol use. Among alcohol users there were significant associations between illegal drug use and appetite, coughing and chest pain problem (Table 7.16) but these associations were not found in alcohol non-users. It was possible that such health problems may be caused by alcohol drinking and using illegal drugs together. However, alcohol use did not effect the association between illegal drug use and having a sore nose (Table 7.16). Because alcohol is used almost exclusively orally, it is probable that alcohol use is less likely to confound the association between illegal drug use and having a sore nose. Also of interest was that among male students, there were clear associations between illegal drug use and appetite problems, coughing, chest pains and having a sore nose, (Table 7.14) but these effects were not significant in females. This may be the effect of levels of alcohol use. The data showed that 58.3% of female illegal drug users were using alcohol while 86.4% of male illegal drug users were using alcohol (see Table 5.10).

When analysed by age group the association between restrictions by parents and prevalence of illegal drug use of students remained significant in those aged 16 years or under (see Table 7.19). However, this significant relationship was not found in age group 17 years or over. One interpretation is that restrictions by parents placed on students are effective at stopping students using illegal drugs only at younger ages (<=16 years). Parental restrictions placed on their children age over 16 years may be not enough to stop misbehaviours like illegal drug use and alternative strategies such as stronger enforcement of legislation, appropriate education and counselling may be needed. Consistently among students aged 16 years or under, those not staying with their parents were more likely to use illegal drugs (Table 7.19). It seem that having parents stay with students may effectively help students not use illegal drugs at younger student ages. Male students whose fathers or mothers were cigarette users were also more likely to use illegal drugs (Table 7.20). This significant association was not found in female students. Although male students could be more susceptible than females in copying the behaviour of parents, perhaps female students are also more controlled by their parents despite what role model they display. This parental control would be less likely to be apparent when students do not live with their parents and female students whose parents were not staying together were more likely to use illegal drugs (Table 7.20). The same association was not found in male students. Illegal drug use of students was strongly associated with illegal drug use of their close friends (see Table 7.21). Therefore, both male and female students whose close friends were illegal drug users were more likely to use illegal drugs than those whose close friends were not (Table 7.22).

Playing truant was strongly associated with illegal drug use (Table 7.23) and this association was consistent in all ages and sex groups (Figure 7.4, 7.6). There was a linear association between average grade and illegal drug use; students who had higher than average grade were less likely to use illegal drugs (see Table 7.23). It should be noted that both illegal drug use and low average grade could be either cause or effect. Illegal drug use produces psychological disturbance such as mental illness, and other brain damage (47, 158). However, students who had low average grade may be minded for other reasons to use illegal drugs for purposes of boredom relief,

temporary happiness or they may even use drugs for stimulating their work performances (amphetamine for studying). Whatever the relationship educational counselling programs or educational advising programs should be established for students who have lower than average grades. These programs can help guide student but may also address substance use from perspectives of educational success and happier study.

Finally, although the results showed that there were associations between illegal drug use and psychological characteristics, taking risks, having health problems, having family problems, having school problems and peer influence, the result also showed that there were interrelations between these associations. For example, the associations between illegal drug use and appetite, chest pains cough problem was confounded by alcohol use (Table 7.16). In order to identify key variables that were independently associated with illegal drug use and to explore these relationships in more detail, multivariate analyses were used in next section..

7.4 Indicative factors for illegal drug use among students

In order to identify significant independent predictors of illegal drug use among Khon Kaen secondary school students, a series of logistic regression models were developed. These examined which risk variables remained potentially associated with the use of illegal drugs separately for amphetamine, cannabis, solvents, and other hard drugs (opium, heroin, ecstasy, magic mushroom, and cocaine). However because there were very small number of current opium (four current users), heroin (two current users), ecstasy (four current users), cocaine (one current user) and magic mushroom users (two current users) from 4,217 respondents, these drugs were included in the same category of other hard drugs. Again, seven logistic regression models were developed as predictor models for each illegal drug use; a socio-demographic model, a family model, a school performance model, a peer model, health model and a behavioural/psychological model. Backward stepwise elimination was used to determine those variables that were independently associated with each illegal drug and to remove confounding factors. Models shown include only significant independent variables (92). These independent variables that appear in each model can

be used as predictors of amphetamine, cannabis, solvent, and other hard drug use among Khon Kaen secondary school students depending on the information available.

7.4.1 Socio-demographic model for predicting illegal drug use

The results of the logistic regression for socio-economic variables are shown as adjusted odds ratios and their 95% confidence interval after adjustment for all other socio-demographic factors in the models. Multivariate logistic regression analysis revealed five key predictors for amphetamine use, three key predictors for cannabis use and one key predictor for solvents (Table 7.25). The statistical significance of all variables left in the models was greater than 0.05.

Table 7.25: Adjusted odds ratios with 95% confidence intervals for socio- demographic factors associated with amphetamine, cannabis, solvents and other hard drugs.

Predictors	Amphetamine use (% correctly classified by model = 95.8)		Cannabis use (% correctly classified by model = 97.8)		Solvent use (% correctly classified by model = 99.4)		Other hard drug use	
	Odds*	95% CI	Odds*	95% CI	Odds*	95% CI	Odds*	95% CI
Sex								
Male	9.96	5.8-17.1	16.0	7.0-36.9	4.8	1.8-12.8	***	---
Female	Ref		Ref**		Ref			
Age								
>=19 years	8.2	3.1-21.3	---	---	---	---	---	---
18 years	5.8	2.3-15.0	---	---	---	---	---	---
17 years	3.4	1.4-8.4	---	---	---	---	---	---
16 years	2.2	0.9-5.2	---	---	---	---	---	---
<=15 years	Ref							
School type								
Vocational	2.0	1.4-2.8	2.7	1.6-4.6	---	---	---	---
Academic	Ref		Ref					
School year								
12th	0.4	0.2-0.7	---	---	---	---	---	---
11th	0.6	0.4-1.1	---	---	---	---	---	---
10th	Ref							
Fathers' education								
Higher	0.6	0.2-2.4	0.2	0.04-1.4	---	---	---	---
First degree	0.2	0.1-0.5	0.1	0.02-0.3	---	---	---	---
Secondary school	0.3	0.1-0.8	0.2	0.05-0.5	---	---	---	---
Primary school	0.3	0.1-0.9	0.2	0.07-0.7	---	---	---	---
No educational degree	Ref		Ref					

* Adjusted odds ratio

** Ref. indicates Reference category which represents an adjust odds ratio of 1.

*** All hard drug users were male students

Multivariate analysis revealed that sex, age, school type, school year, and fathers' education were independently associated with amphetamine use in the socio-demographic model. One interesting finding similar to that for alcohol and tobacco was that students in lower school years were more likely to use amphetamine in each age group. This indicates that older students in each school year are more likely to use amphetamine. Based on adjusted odds ratios, being males, older, from a vocational school, in a lower school year for your age (10^{th} year) and having a father with no educational degree increases the high odds of having used amphetamine. Sex, school type, and fathers' education were independently associated with cannabis use in the socio-demographic model. Unlike amphetamine use, cannabis use was not significantly independently associated with age. Only sex was independently associated with solvent use in socio-demographic model. Based on adjusted odds ratios, being males identified students with high odd of using solvents. However small sample sizes here are likely to effect the probability of significant results. Finally because all other drug users were male students and sample size was small multivariate logistic regression analysis was not undertaken for the socio-demographic model.

The difference between drugs in the socio-demographic model may have resulted from sample size. However, drugs are used for different purposes. Amphetamine is used for recreational purposes but also for stimulating work and studying while cannabis and solvents are generally used for recreational purposes only. This may also lead to different patterns of use. These patterns are explored in the following sections.

7.4.2 Family model for predicting illegal drug use

Using multivariate logistic regression analysis, there were two key predictors for amphetamine use as well as for solvents. However, only one factor having run away from home was a key predictor for cannabis use and other hard drug use (Table 7.26). The statistical significance of all other variables disappeared in the model.

Multivariate logistic regression analysis revealed that cigarette smoking parents and running away from home were independently associated with amphetamine use and

solvent use in the family model. Solvents and amphetamine have the same relationship in the family model. This may be because both drugs have some effects in common, both are easier to buy around school, easier to use, and cheaper than other illegal drugs. "Running away from home" was independently associated with all illegal drug use including cannabis and had high odds ratios for all types of illegal drugs. Thus, work with this group of students should be a priority group for including prevention and education programs for illegal drug use.

Table 7.26: Adjusted odds ratios with 95% confidence intervals for family factors associated with amphetamine, cannabis, solvents and other hard drugs in the family model

Predictors	Amphetamine use (% correctly classified by model = 95.9)		Cannabis use (% correctly classified by model = 97.9)		Solvents use (% correctly classified by model = 99.4)		Other hard drugs use (%correctly classified by model = 99.8)	
	Odds*	95%CI	Odds*	95%CI	Odds*	95%CI	Odds*	95%CI
Cigarette using Parent Yes	1.6	1.1-2.2	---	---	3.5	1.2-10.4	---	---
No	Ref				Ref			
Running away from home Yes	4.7	3.4-6.6	4.7	3.0-7.4	4.3	1.8-10.0	5.2	1.4-19.4
No	Ref		Ref		Ref		Ref	

* Adjusted odds ratio

7.4.3 School performance model for predicting drug use

Multivariate logistic regression analysis of school performance model revealed three key predictors for solvent use and two key predictors for amphetamine use. One key predictor for cannabis use and other hard drug use (Table 7.27). Truancy was the only key predictor that was appeared in all illegal drug use categories.

Table 7.27: Adjusted odds ratios with 95% confidence intervals for school factors associated with amphetamine, cannabis, solvents, and other hard drugs in the school performance model

Predictors		Amphetamine use (% correctly classified by model = 95.8)		Cannabis use (% correctly classified by model = 97.8)		Solvents use (% correctly classified by model = 99.4)		Other hard drugs use (% correctly classified by model = 99.8)	
		Odds*	95%CI	Odds*	95% CI	Odds*	95% CI	Odds*	95%CI
Grade	A or B	0.4	0.2-0.8	---	---	0.2	0.02-1.5	---	---
	C	0.7	0.5-1.1	---	---	0.4	0.2-0.9	---	---
	D or F	Ref				Ref			
Attention difficulty	Yes	---	---	---	---	30.0	4.1-222.1	---	---
	No					Ref			
Truancy	>12 times	28.8	16.5-49.9	31.5	15.3-64.9	9.7	3.6-26.1	10.7	0.9-118.1
	6-12 times	22.0	13.0-37.3	20.5	9.9-42.4	2.1	0.5-9.7	23.4	3.9-140.8
	1-5 times	6.5	4.2-10.2	7.4	4.0-13.6	1.1	0.4-2.7	4.6	0.8-24.9
	Never	Ref		Ref		Ref		Ref	

* Adjusted odds ratio

Average grade and truancy were independently associated with amphetamine use in school model. Particularly for work within schools these variables can be used for predicting drug use. However, only truancy was independently associated with cannabis use and other hard drug use in school model. Solvent use had an enormous odds ratio of 30 times higher likelihood of attention difficulty for users. It is known that solvents mostly affect the nervous system and the main adverse effects of solvent use include confusion, movement disorders, and intellectual impairment (50). Across all drugs, truancy was independently associated in the school model and had high odds ratios. Thus, this group of students should also be prioritised for prevention and cessation programs for illegal drug use among school students.

7.4.4 Peer model for predicting drug use

Multivariate logistic regression analysis of peer related factors revealed two key predictors for amphetamine use and cannabis use and one key predictor for solvent use and other hard drug (Table 7.28). "Close friends were using illegal drugs" was a key predictor for all illegal drugs.

Table 7.28: Adjusted odds ratios with 95% confidence intervals for peer factors associated with amphetamine, cannabis, solvents and other hard drugs in the peer model

Predictors		Amphetamine use (%correctly classified by model = 95.7)		Cannabis use (%correctly classified by model = 97.7)		Solvents use (% correctly classified by model = 99.4)		Other hard drugs use (% correctly classified by model = 99.8)	
		Odds*	95% CI	Odds*	95% CI	Odds*	95% CI	Odds*	95% CI
Close friends were using drugs	Yes	9.4	6.6-13.4	6.8	4.4-10.7	7.7	3.2-18.4	11.3	2.4-53.2
	No	Ref		Ref		Ref		Ref	
Staying with friends	Yes	1.8	1.2-2.9	2.3	1.3-4.0	---	---	---	---
	No	Ref		Ref					

* Adjusted odds ratio

7.4.5 Health model for predicting drug use

Two key predictors for amphetamine use and cannabis use and one key predictor for solvent use and other hard drug use remained in the final logistic regression equation (Table 7.29). The statistical significance of all other variables disappeared in the model. "Having cough" appeared as a predictor in all illegal drug use. Multivariate logistic regression analysis revealed that appetite problems and coughing were independently associated with amphetamine use in the health model. Amphetamine

produces strong effects of appetite suppression (46) and this is consistent with the independent effect of amphetamine in the health model and no effect of the other drugs.

Table 7.29: Adjusted odds ratios with 95% confidence intervals for health factors associated with amphetamine, cannabis, solvents, and other hard drugs in the health model

Predictors		Amphetamine use (% correctly classified by model = 95.8)		Cannabis use (% correctly classified by model = 97.8)		Solvents use (% correctly classified by model = 99.4)		Other hard drugs (% correctly classified by model = 99.8)	
		Odds*	95% CI	Odds*	95% CI	Odds*	95% CI	Odds*	95% CI
Small appetite									
	Several	2.3	1.4-3.8	---	---	---	---	---	---
	A few	1.6	1.2-2.3	---	---	---	---	---	---
	No	Ref							
Cough	Several	3.6	2.0-6.1	3.0	1.4-6.6	10.7	3.2-35.8	15.8	1.6-152.7
	A few	1.8	1.2-2.6	1.8	1.1-3.1	1.8	0.6-5.6	2.8	0.3-23.8
	No	Ref		Ref		Ref		Ref	
Chest pains	Several	---	---	1.9	0.9-3.7	---	---	---	---
	A few	---	---	1.7	1.1-2.7	---	---	---	---
	No			Ref					

* Adjusted odds ratio

Coughing and chest pains were independently associated with cannabis use in health model and again since these are commonly associated with smoking this link is also consistent. Only coughing was independently associated with solvent use and other hard drug use.

7.4.6 Behavioural/psychological model for predicting drug use

Multivariate logistic regression analysis of behavioural/psychological model revealed seven key predictors for amphetamine use, five key predictors for cannabis use, three key predictors for other hard drug use and two predictors for solvents (Table 7.30). "Cigarette use" and "stealing" were the key predictors which appeared in all illegal drug use.

Multivariate logistic regression analysis revealed that cigarette use, alcohol use, going out for fun at night, stealing, having sex early, risk taking, and depression were independently associated with amphetamine in behavioural / psychological model. Cigarette use, alcohol use, going out for fun at night, stealing, and risk taking were independently associated with cannabis use and only cigarette use and stealing were independently associated with solvent use.

Table 7.30: Adjusted odds ratios with 95% confidence intervals for behavioural/psychological factors associated with amphetamine, cannabis, solvents and other drugs

Predictors		Amphetamine use (% correctly classified by model = 95.8)		Cannabis use (% correctly classified by model = 97.7)		Solvents use (% correctly classified by model = 99.3)		Other hard drugs (% correctly classified by model = 99.7)	
		Odds*	95% CI	Odds*	95% CI	Odds*	95% CI	Odds*	95% CI
Cigarette use	Yes	12.2	7.9-18.8	15.1	8.1-28.0	10.3	4.6-22.8	12.3	3.1-48.8
	No	Ref		Ref		Ref		Ref	
Alcohol use	Yes	4.7	2.8-7.8	5.7	2.5-12.6	---	---	---	---
	No	Ref		Ref					
Going out for fun at night	>3 times/w	2.9	1.2-7.4	3.9	1.1-14.2	---	---	---	---
	2-3times/w	1.7	0.7-4.1	2.1	0.6-7.6	---	---	---	---
	<1time/w	1.6	0.7-3.8	1.5	0.4-5.2	---	---	---	---
	Never	Ref		Ref					
Stealing	Yes	2.7	1.9-3.9	1.9	.2-3.0	2.3	1.1-5.0	3.4	0.9-12.4
	No	Ref		Ref		Ref		Ref	
Having sex early	Yes	2.0	1.3-2.9	---	---	---	---	---	---
	No	Ref							
Risk taking	Yes	1.7	1.2-2.5	2.3	1.4-3.7	---	---	6.5	1.3-31.0
	No	Ref		Ref				Ref	
Depression	Yes	1.5	1.1-2.2	---	---	---	---	---	---
	No	Ref							

* Adjusted odds ratio

One important factor is that the rarer drugs are generally associated with the higher risk taking odds ratios. Thus, students with risk taking characteristics had the higher odds ratio in the rarer drugs (6.5 for other hard drug use, 2.3 for cannabis use, 1.7 for amphetamine use, no significant difference for solvent use).

7.4.7 Overall model for predicting illegal drug use

The effects of risk variables (personal risk behaviours, psychological characteristics, family problems, and school activities) and socio-demographic variables, were all included as independent variables for comparison with the use of each illegal drug. Again, logistic regression analysis was used in order to identify significant predictors of each illegal drug. Results are shown as before. Multivariate logistic regression analysis of overall model revealed nine key predictors for amphetamine use, seven key predictors for cannabis use, four key predictors for solvent use, and three predictors for other hard drug use (Table 7.31). "Cigarette use" and "close friends were using illegal drugs" appeared as key predictors in all illegal drug use.

Table 7.31: Adjusted odds ratios with 95% confidence intervals for all factors associated with amphetamine, cannabis, solvents, and other hard drugs in the overall model

Predictors	Amphetamine use (% correctly classified by model = 96.3)		Cannabis use (% correctly classified by model = 97.7)		Solvents use (% correctly classified by model = 99.4)		Other hard drugs use (% correctly classified by model = 99.8)	
	Odds*	95%CI	Odds*	95%CI	Odds*	95%CI	Odds*	95% CI
Sex Males	2.7	1.4-5.1	3.0	1.2-7.6	---	---	---	---
Females	Ref		Ref					
Cigarette using Parent Yes	---	---	---	---	2.7	0.9-7.2	---	---
No					Ref			
Truancy								
>12 times	4.2	2.1-8.7	---	---	---	---	---	---
6-12 times	3.6	1.8-7.1	---	---	---	---	---	---
1-5 times	2.0	1.2-3.4	---	---	---	---	---	---
Never	Ref							
Close friends were using illegal drugs Yes	4.4	2.9-6.7	2.5	1.5-4.2	3.9	1.6-9.8	5.1	1.1-25.6
No	Ref		Ref		Ref		Ref	
Cough Several	2.8	1.4-5.6	---	---	6.2	1.8-21.6	---	---
A few	1.1	0.7-1.9	---	---	1.3	0.4-4.0	---	---
No	Ref				Ref			
Cigarette use								
Yes	7.5	4.7-11.9	9.6	5.0-18.6	6.7	2.9-15.5	9.4	2.3-38.9
No	Ref		Ref		Ref		Ref	
Alcohol use Yes	4.3	2.5-7.5	5.0	2.2-11.4	---	---	---	---
No	Ref		Ref					
Going out for fun at night								
>3 times/week	---	---	2.6	0.7-9.7	---	---	---	---
2-3times/week	---	---	1.4	0.4-5.2	---	---	---	---
<1 time/ week	---	---	0.9	0.2-3.4	---	---	---	---
Never			Ref					
Stealing Yes	2.1	1.4-3.2	1.9	1.2-3.1	---	---	---	---
No	Ref		Ref					
Having sex early								
Yes	1.7	1.1-2.6	---	---	---	---	---	---
No	Ref							
Risk taking Yes	1.9	1.2-2.8	2.8	1.7-4.6	---	---	6.0	1.2-29.3
No	Ref		Ref				Ref	

* Adjusted odds ratio

Comparing between the overall model and the previous separated models (such as socio-demographic model, family model, school model, etc.), some key predictors in the separate models were removed. However, predictors in overall models have a high, independent validity for making predictions for each drug of use. Factors such as cigarette use, friends using illegal drugs are clearly associated with drug problems including the use of harder drugs. Cannabis use on the other hand shows a positive

relationship with going out for fun which other drugs do not. In contrast, amphetamine is strongly related to higher levels of truancy unlike other drugs.

7.4.8 Summary of indicative factor related to illegal drug use

Key predictors of illegal drug use among Khon Kaen secondary school students are summarised for amphetamine (Figure 7.7), cannabis (Figure 7.8), solvents (Figure 7.9), and other hard drugs (opium, heroin, ecstasy, magic mushroom, and cocaine) (Figure 7.10).

Figure 7.7: Key predictors of amphetamine use of Khon Kaen secondary school students

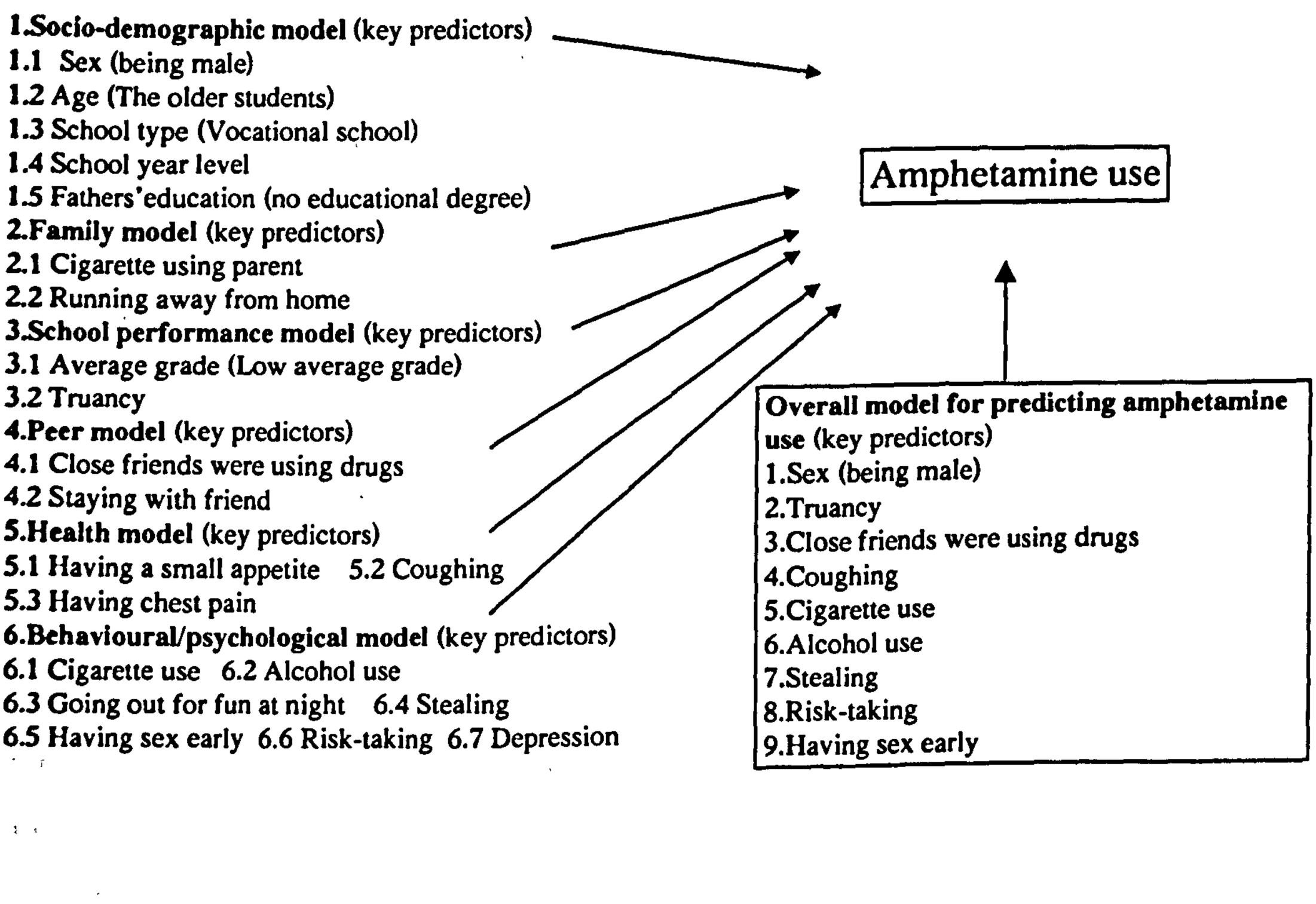


Figure 7.8: Key predictors of cannabis use of Khon Kaen secondary school students.

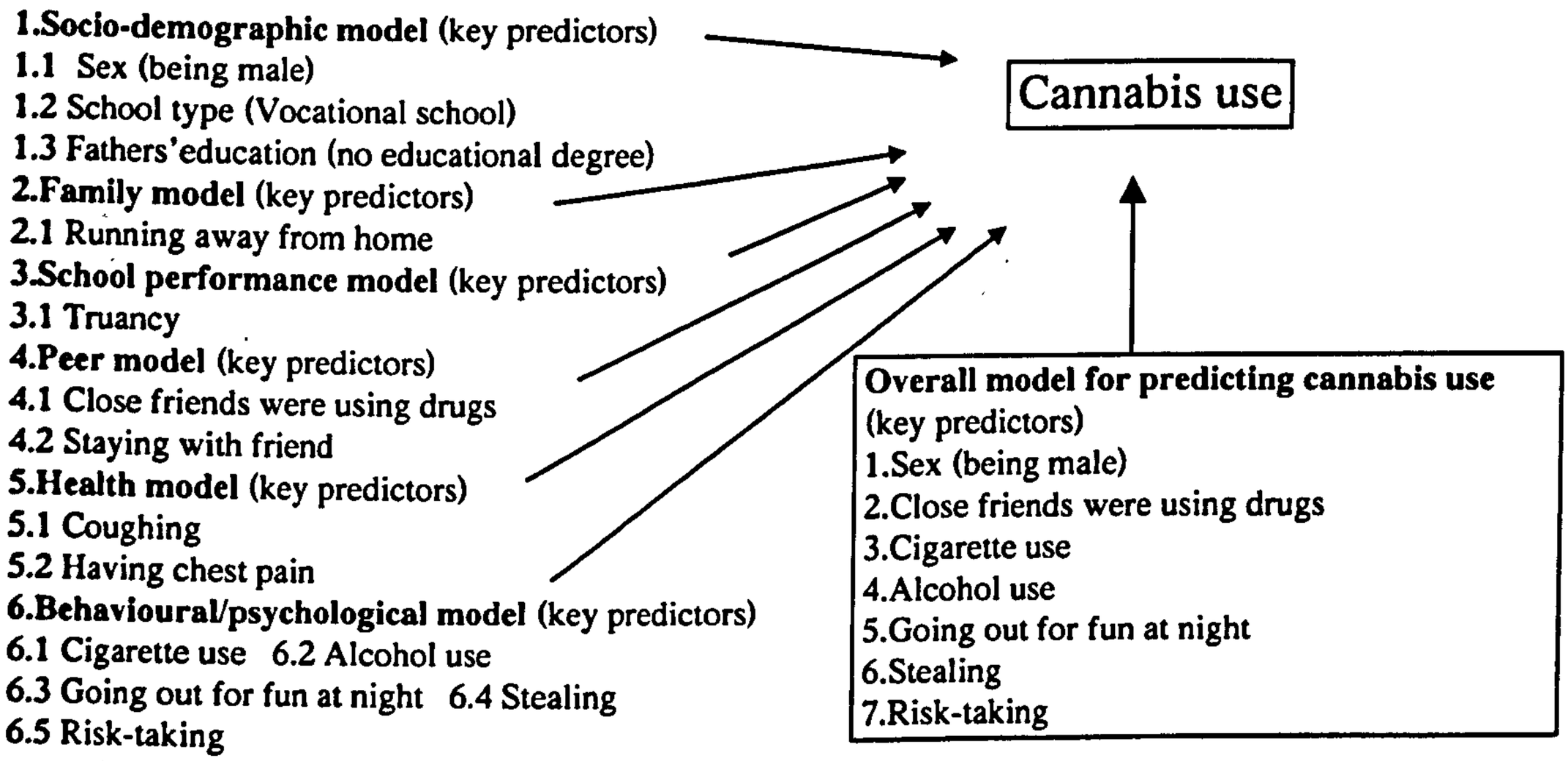


Figure 7.9: Key predictors of solvent use of Khon Kaen secondary school students

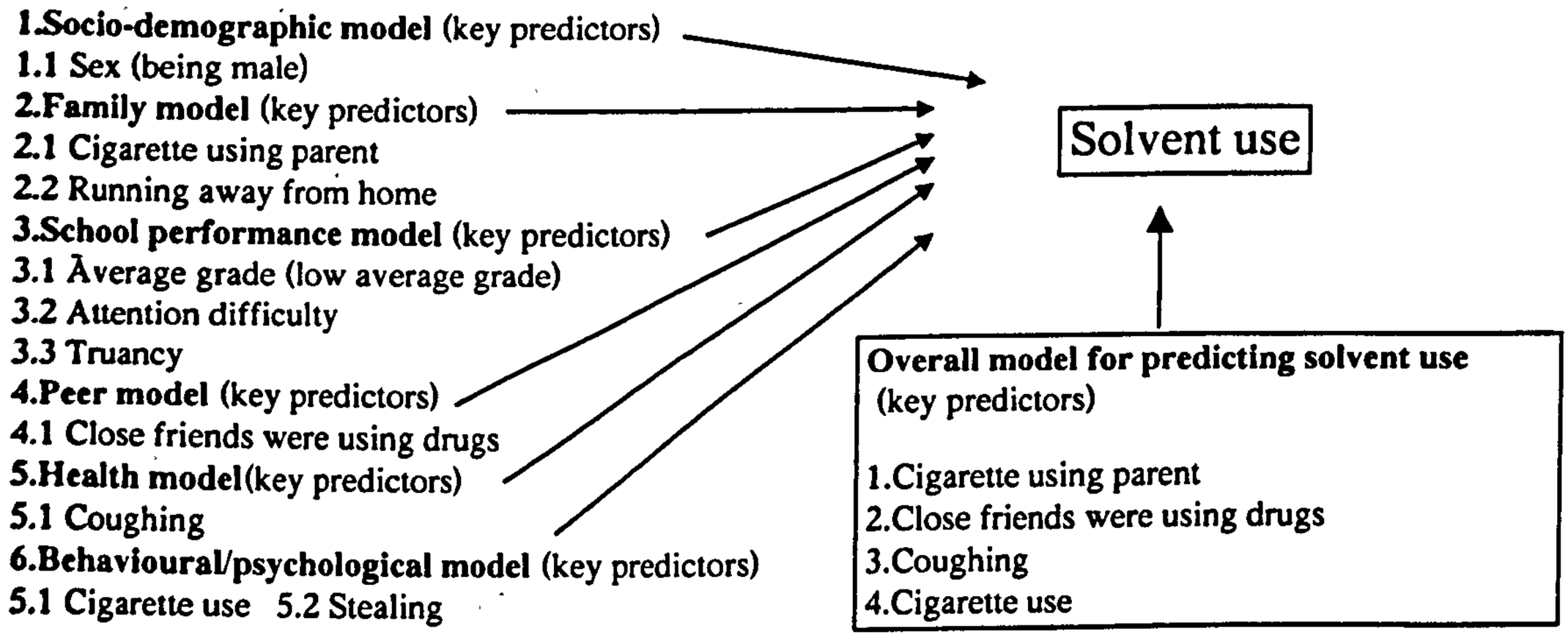
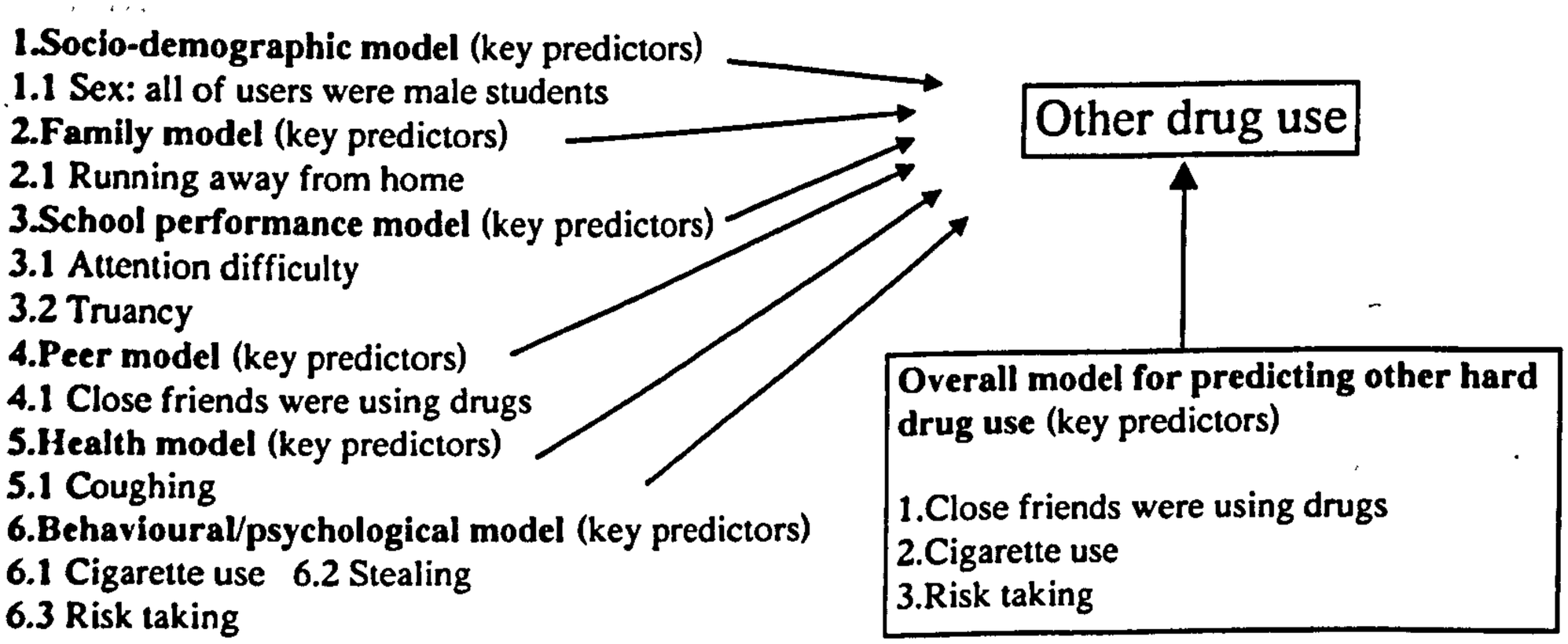


Figure 7.10: Key predictors of other drug use of Khon Kaen secondary school students



7.5 Discussion - Epidemiology, associations and predictive models of illegal drug use

7.5.1 Prevalence of illegal drug use

It was estimated that 14.2% of Khon Kaen secondary school students have experienced using illegal drugs with one in twenty (5.3%) continuing to use illegal drugs and 8.9% having given up use. Most (76.6%) current illegal drug users were amphetamine users. The province of Khon Kaen has a population of secondary school students of 63,407 15-19 year olds. Therefore, from this analysis about 3,361 Khon Kaen secondary school students would be current illegal drug users according to the calculated prevalence. In particular 2,276-3,056 current illegal drug users would be amphetamine users (Table 7.1). A large number of these students may be at risk of drug dependence with associated mental and physical disorder. In the short term analysis also indicates that school attendance and performance may suffer although cause and effect were not examined here. Tendency towards illegal drug use among Khon Kaen secondary school students (Figure 7.1) was consistently present throughout the higher school year-(4.8%, 4.8%, and 6.1% in 10th, 11th, and 12th school year, respectively). These findings suggest that existing projects concerning illegal drug use among Khon Kaen secondary school students are still needed and should concentrate on both prevention of incoming illegal drug users (new users) and persuading the current illegal drug users to give up using illegal drugs.

Levels of current illegal drug using of Khon Kaen secondary school students was much higher than those in the national survey by Medical Science Department, Thai Ministry of Public Health in 1996 (Table 7.32). However, when compared with other international studies of illegal drug use among adolescents aged 15-20 years between 1995 and 1998, the prevalence of current illegal drug use was generally lower than in other countries (Table 7.32). There were however two exceptions to this; current cannabis users in secondary school in Bo, Sierra Leone and students who ever used amphetamine of secondary school students in Lugo, Spain. Although the prevalence of current illegal drug use among Khon Kaen secondary school students (age 15-20 years) was not higher than many countries, the epidemic of amphetamine use appears to have increased substantially from national school survey in Thailand 1996 with

amphetamine firmly established as the most popular illegal drug for Thai school students. Consequently, amphetamine-related problems, such as mental illness and violence (163), may be a growing problem facing school students in Thailand.

7.5.2 Associations between illegal drug use and other factors

Among Khon Kaen secondary school students, the associations between illegal drug use and socio-demographic variables will be useful for identifying students at risk of illegal drug use (Table 7.3). For example, male students were more likely to use illegal drugs than female students, the older students are more likely to use illegal drugs and vocational school students rather than academic. Students whose fathers had no education degree were also more likely to use illegal drugs.

Bivariate analysis (Table 7.3) revealed that fathers' education was significantly associated with illegal drug use among Khon Kaen secondary school students whereas fathers' occupation was not . When logistic regression was used to control for potential confounding factors (Figure 7.2), fathers' education was still significantly associated with illegal drug use. Fathers' qualification level (indicated by fathers' education) showed more strength of association with illegal drug use than fathers' income (indicated by fathers' occupation) and this distinction may be important when trying to identify groups at potentially high risk.

A variety of studies like this, have shown socio-demographic variables associated with illegal drug use of school students. Sutherland and Willner (1998) described associations between illicit drug use in English adolescent students (n=5,383) and demographic factors such as sex, and age. They also identified that illegal drug use was more prevalent in male students than female students (154). Potthoff et al. (1998) explored the covariation of risk behaviours in a national sample of 7,687 American Indian reservation-based youths in 7th through 12th school year and found that the use of drugs associated with sex and age (98). A large number of studies also found illegal drug use to be associated with gender (31, 34, 63, 95-97, 133, 145, 164) age (34, 97, 133, 165-166).

Table 7.32: Summary of epidemiological studies of illegal drug use among adolescents aged 15 to 20 between 1995 to 1998

Country	Year	Author	Level/Age	Sample	Percentage of students who ever used illegal drugs	Percentage of students who currently use illegal drugs
Taiwan, Kaoh-siung city	1998	Yang et al (79)	Secondary school students 16-18 years	1,358	---	Illicit drug use (6.4 %)
Puerto Rico	1998	Parrrilla et al.(102)	high school students	7,687	---	Illegal drug use (14 %)
Brazil, Ribeirao Preto	1997	Muza et al (133)	Students year 8-11 (age15-18)	1,025	Solvents (31.1 %) Cannabis (6.8 %) Cocaine (2.7%) Opiate substance (0.3%)	---
USA	1997	Kann et al (159)	High school students (12-21)	33 states	---	Cannabis (26.2%)
New Zealand	1997	Coggan et al (160)	High school students >=16 years	471	Cannabis (34.0%)	---
UK	1996	Miller and Plant (82)	Secondary school students age 15-16	7,722	Illicit drugs (42.3 %)	---
Zim-babwe	1996	Khan and Arnott (161)	Secondary school students	1000	Solvents (6.9%), Cannabis (34.9%)	
Japan	1996	Matsushita et al (86)	high school, 15-18 year olds	14,438	---	Paint thinner (1.0 %)
Thailand	1996	Medical science depart-ment (36)	Secondary school students age 15-19 years	96,753	---	Amphetamine (1.3%)
Lugo, Spain	1996	Martinez et al. (81)	Secondary school students, 15-18 years	805	Cannabis (12.3 %), Amphetamine (7.5 %), Cocaine (2.1 %), LSD (1.9 %), heroin (1.5 %)	---
Sierra Leone, Bo	1995	Abul and Lisk (162)	Secondary school students mean age 17.6 +/- 1.5 years	713	---	Cannabis (2.2%)
Switzer-land	1993	Konings et al (34)	School adolescents	9,273	Heroin (3.1%) Cocaine (3.1%) Cannabis (27.7%)	
Khon Kaen, Thailand	1998	Daosodsai	Secondary school, 15-19 year olds	4,217	Illegal drugs (14.20%) Amphetamine (11.26%) Cannabis (8.02%) Solvents (2.92%) Ecstasy (0.31%) Opium (0.45%) Heroin (0.52%) Magic mushroom (0.12%) Cocaine (0.10%)	Illegal drugs (5.30%) Amphetamine (4.17%) Cannabis (2.20%) Solvents (0.62%) Ecstasy (0.10%) Opium (0.10%) Heroin (0.05%) Magic mushroom (0.05%) Cocaine (0.02%)

Similar to this study's results, Kokkevi and Stefanis (1984) reported that illegal drug use among sample of 11,058 Greece adolescent students 14-18 years was also associated with type of school (higher rate in technical-vocational school compared to public school) and socio-economic level (rates of illegal drug use increased with socio-economic level) (95).

The findings of the present study have several implications for the development of illegal drug use prevention programs targeted at Khon Kaen secondary school students. Students who were playing truant and students and who had low school performance are more likely to use illegal drugs. (Table 7.23). Students who identify themselves as aggressive, depressive, or risk taking persons are more likely to use illegal drugs (Table 7.6) and teachers and educationalists should be concerned with strategies as well as health intervention for individuals showing some or all these factors.

In the family context, illegal drug use was higher in students who had a smoking parent. Conversely, illegal drug use was lower in students who were staying with their parent (Table 7.18). Parents do influence their children and should do so away from using illegal drugs by providing a good role model at home including potentially no cigarettes (167). Illegal drug use was higher in students who were staying with friends not parents (Table 7.21) and again parents should be aware of this association. Students who reported a higher frequency of going out for fun at night were more likely to use illegal drugs (Table 7.9). Parents should also be aware of this link. Optimally, any preventive programs should be targeted at all cigarette use, alcohol use, and illegal drug use because of the strong association between these habits (see Table 7.9).

7.5.3 Key predictors of illegal drug use

In recent times, school students who are found with addiction of illegal drugs were helped and referred to drug dependence treatment centres for cessation and rehabilitation programs. After they recover and stop using illegal drugs, they are permitted to continue their study in school. All students are given health education

about illegal drug use in class for preventing illegal drug use. However, programs dealing with illegal drug use among school students seem to lack focus on high-risk students who have high probability to use illegal drugs. One aim of this study was to establish predictor models to aid in identifying high risk groups of student who have highly probable to use illegal drug.

In the case of illegal drug use by secondary school students, individuals can not be detected directly as there is little chance of compliance with direct questions. These models developed here should be useful as indicators of possible illegal drug use of school students. In addition, the basic factors identified in these models can be used by teachers and health workers to help identify students at risk of illegal drug use in an early stage of using or even before using illegal drugs allowing more directed prevention programs at earlier stages. The results also help reveal that illegal drug use is associated with many factors other than school and including students' behaviours and psychological characteristics, family problems, peer pressure, and school factor. Thus, interventions targeting this age group (15-19 years) should be widely based with an orientation towards the students at risk, the families, the youths' peers, and the schools.

The overall models for predicting illegal drug use showed a high predictive value for current classification (Table 7.31). However, some predictors in the model may be difficult to detect directly such as alcohol use, cigarette use, having sex early, stealing, and close friends using illegal drugs. In these cases a range of other models have been provided including socio-demographic models, family model, school model, peer model, health model, or behavioural/psychological models (see Sections 7.4). These can be used alone to predict amphetamine, cannabis, solvent, and other hard drug use. Consequently, in most circumstance and with minimal information, the models can be used to identify populations at risk and promote timely and appropriate prevention programs. Such prevention and education programs should be directed by an understanding of why people start and continue to use each substance; the topic of the next section.

CHAPTER 7: ILLEGAL DRUG USE - PART 2
SOCIAL ASPECTS OF ILLEGAL DRUG USE

7.6 Age of first using illegal drugs and comparison between sexes

A retrospective survey was used to determine the age at which Khon Kaen secondary school students began illegal drug use and to understand the reasons why they used them. The students were asked questions regarding the age at which they began using illegal drugs including amphetamine, cannabis, solvents, opium, heroin, ecstasy, magic mushroom, cocaine, and LSD and their reasons for first using and then continuing afterward. Chi-square statistics were used to compare the age of initiation of each illegal drug and reasons for first time using between male and female students.

Table 7.33: Distribution of age of first use of illegal drugs

Age of first use (years)	Amphetamine		Cannabis		Solvents	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
8	---	---	---	---	1	0.9
9	1	0.2	---	---	---	---
10	1	0.2	1	0.3	1	0.9
11	1	0.2	2	0.6	3	2.6
12	5	1.1	7	2.2	8	6.9
13	17	3.8	10	3.1	9	7.8
14	48	10.6	40	12.4	16	13.8
15	129	28.6	123	38.2	44	37.9
16	108	23.9	70	21.7	19	16.4
17	82	18.2	43	13.4	12	10.3
18	48	10.6	20	6.2	3	2.6
19	11	2.4	6	1.8	---	---
Total	451	100.0	322	100.0	116	100.0

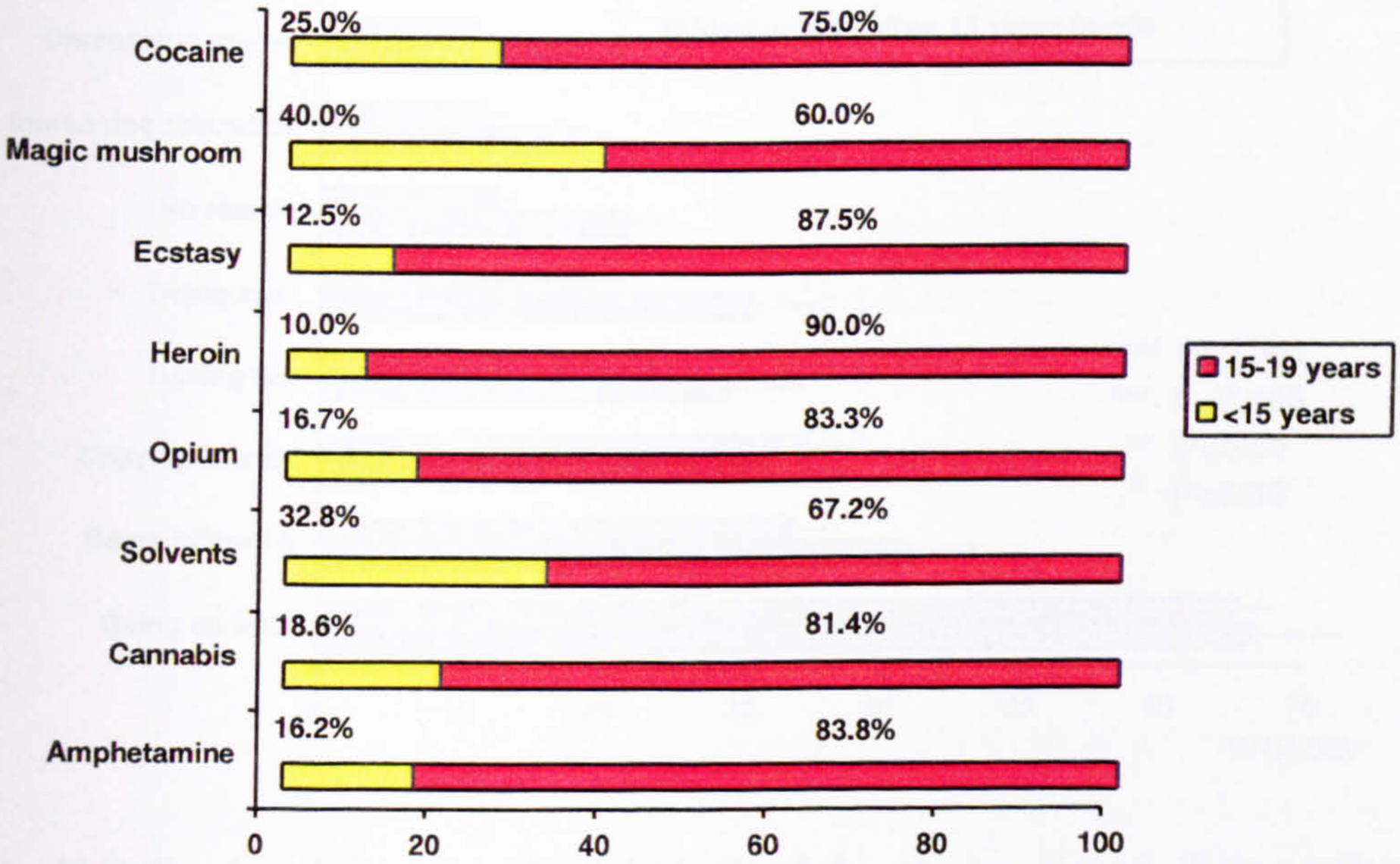
Khon Kaen secondary school students (10th-12th school year) who had ever used illegal drugs started to use from 8 to 19 year olds (Table 7.33). Age of first use of each illegal drug was divided into two age groups; before 15 years (i.e. before 10th school year) and age 15-19 years (i.e. 10th-12th school years). Most (varying from 60%-90%) students who had ever used illegal drugs started to use them between the ages 15-19 years (Figure 7.11). Comparing between male and female students, there were no significant differences in starting use at age before 15 years and 15-19 years.

7.7 Reasons for first time using illegal drugs

Respondents were asked to select what they considered to be the reasons they first tried each illegal drug. In this section, chi-square statistics are used to compare the

proportion of students reporting their reasons for using each illegal drug the first time between different genders and different ages of first use.

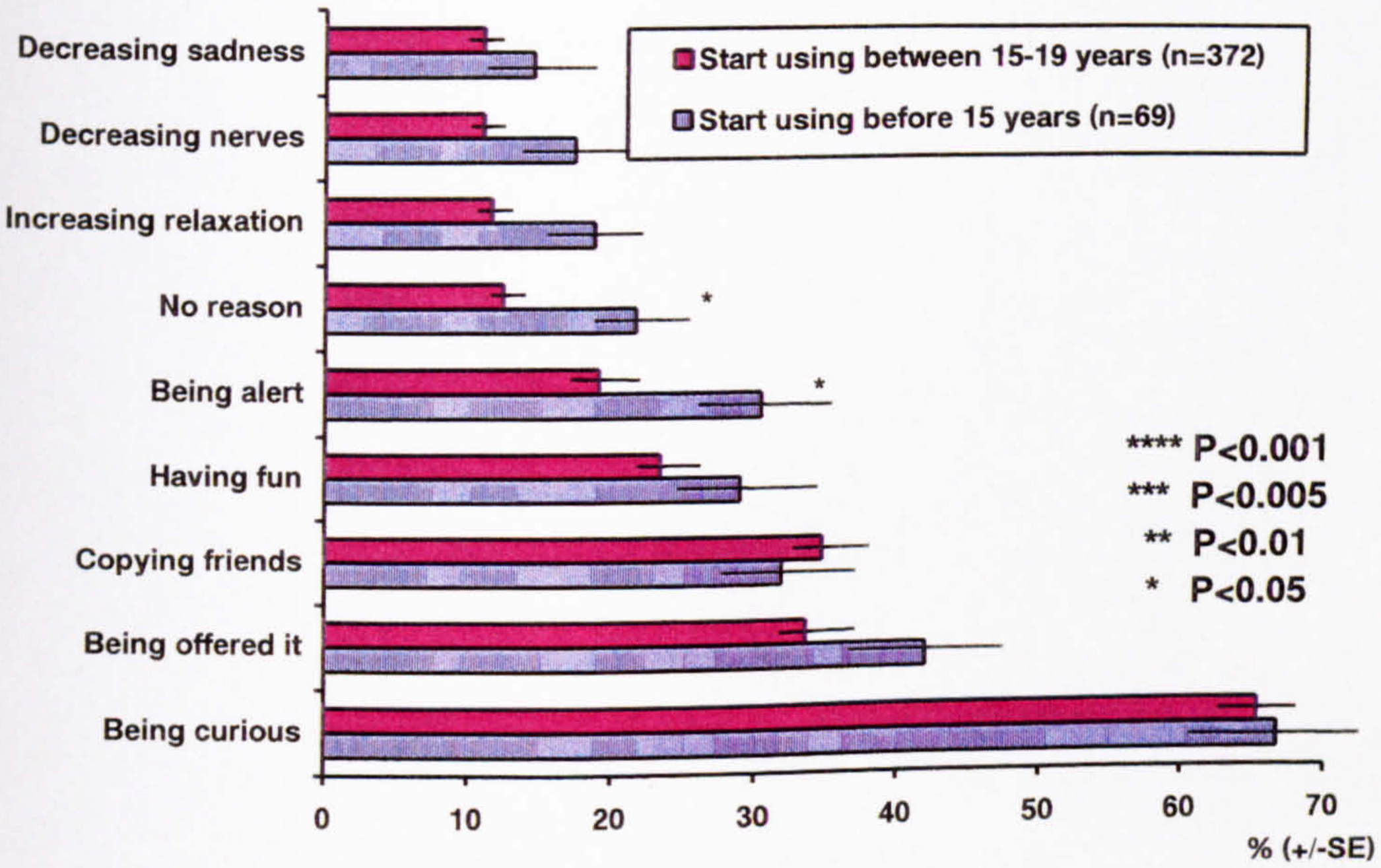
Figure 7.11: Proportion of secondary school students who started using illegal drugs at different ages. (Analyses limited only to those having claimed to use the drug)



The main reasons for initiation of amphetamine use were: "being curious to try amphetamine" (64.1%), "being offered amphetamine" (33.9%) and "copying friends" (33.5%). Over one in ten started using amphetamine to "decrease nerves" (12.3%), "decrease sadness" (11.4%), and "increase relaxation" (12.3%). Some students (13.6%) indicated that there were no reasons for their first time using amphetamine. There were no significant differences in the reasons for first use of amphetamine between the proportion of students who started to use amphetamine before 15 year old and those who started after, except for "being alert" and "no reason". In these cases, students who started to use amphetamine before 15 year olds were more likely to report "being alert" and "no reason" (Figure 7.12).

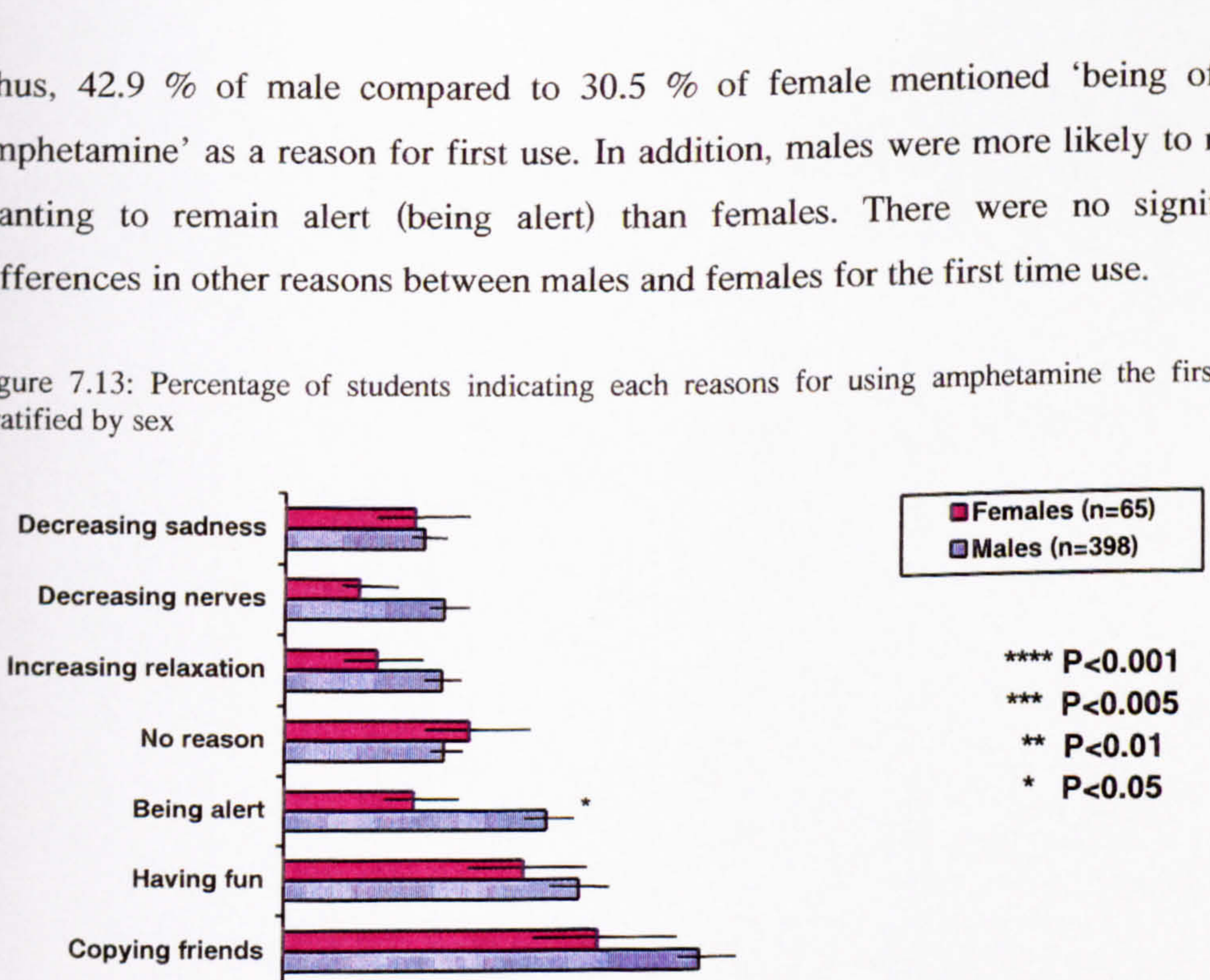
"Being curious to try amphetamine" was the most common reason of both male and female students for first time using amphetamine (Figure 7.13). However, male students seemed more susceptible to peer pressure as a reason to try the drug.

Figure 7.12: Percentage of students by the reasons for the first time use of amphetamine compared between students who started to use before 15 year old and between 15-19 year old



Thus, 42.9 % of male compared to 30.5 % of female mentioned 'being offered amphetamine' as a reason for first use. In addition, males were more likely to report wanting to remain alert (being alert) than females. There were no significant differences in other reasons between males and females for the first time use.

Figure 7.13: Percentage of students indicating each reasons for using amphetamine the first time stratified by sex



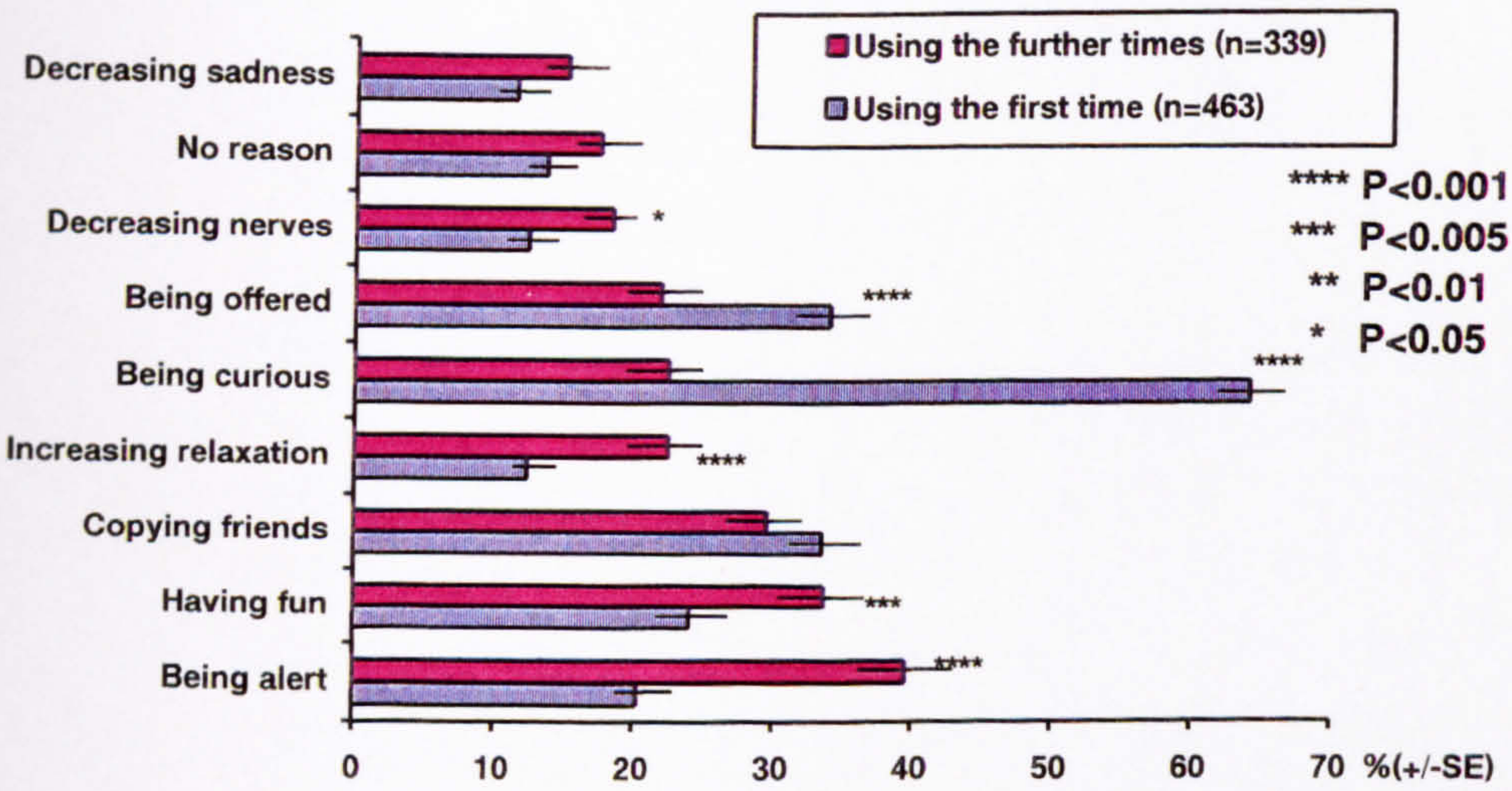
The main reasons that contributed to the initiation of cannabis use were: "being curious to try cannabis" (63.8%), "copying friends" (38.9%), "being offered cannabis" (29.2%), "having fun" (27.1%), and "increasing relaxation" (22.5). Over one in ten also started using cannabis the first time to "decrease nerves" (17.0%) or "decrease sadness" (17.0%). Some students (15.5%) indicated no reasons for the first time using cannabis. Only 5.8 % reported "being alert". There were no significant differences in the reasons for first use of cannabis between the proportion of students who started to used cannabis before 15 year olds and those who started after ($p>0.05$). Similarly, there were no significant differences in the reasons for first use of cannabis between male students and female students ($p>0.05$).

The main reasons that contributed to the initiation of solvents use were: "being curious to try solvents" (59.3%), "having fun" (28.0%), "being offered solvents" (24.6%) and "copying friends" (22.0%). Almost 1 in 5 started using solvents to "decrease sadness" (17.8%), "decrease nerves" (16.1%), and "increase relaxation" (12.7%). Again there were no significant differences in the reasons for first use of solvents between the proportion of students who started to use solvents before 15 year olds and after. Similarly, there were no significant differences in the reasons for first use of solvents between sexes ($p>0.05$).

7.8 Reasons for using illegal drugs the further times

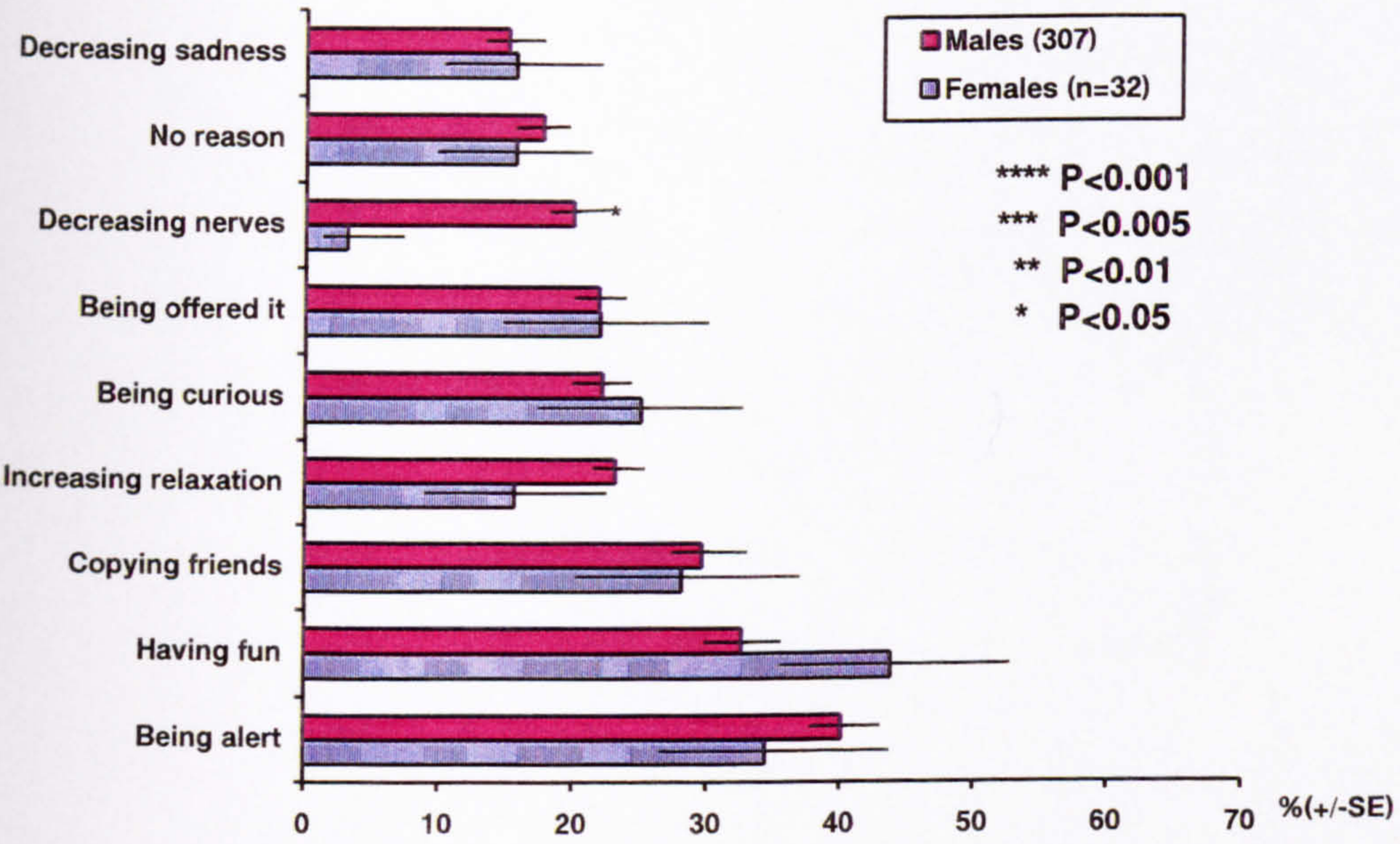
The most common reason for using amphetamine further times was " to be alert" (39.5%). Using bivariate analysis (Chi-square statistic) to compare between reasons for using the first time and the further times, not surprisingly significantly higher percentages of students reported "being curious to try amphetamine" and "being offered amphetamine" the first time than in on further occasions (see Figure 7.14). Conversely, the percentages of students using amphetamine because of "increase relaxation", "decrease nerves", "have fun", "be alert", were significantly higher in further use than for first time.

Figure 7.14: Percentage of students by the reasons for using amphetamine the first time and the further times



Comparison of the reasons for using amphetamine between those using it at different frequencies (occasional users to monthly users, infrequent, and those who were weekly users to daily users, frequent,) showed no significant differences for the reasons for using amphetamine further times. Additionally, bivariate analyses revealed that there were no significant differences between males and females for the reasons of using amphetamine further times with the exception of "decreasing nerves" for which purpose male students were more likely to use amphetamine (Figure 7.15). Part of this difference may be the result of addiction and the consequent effects that amphetamine can produce including depression, nervousness, excessive fears and suspicion (163).

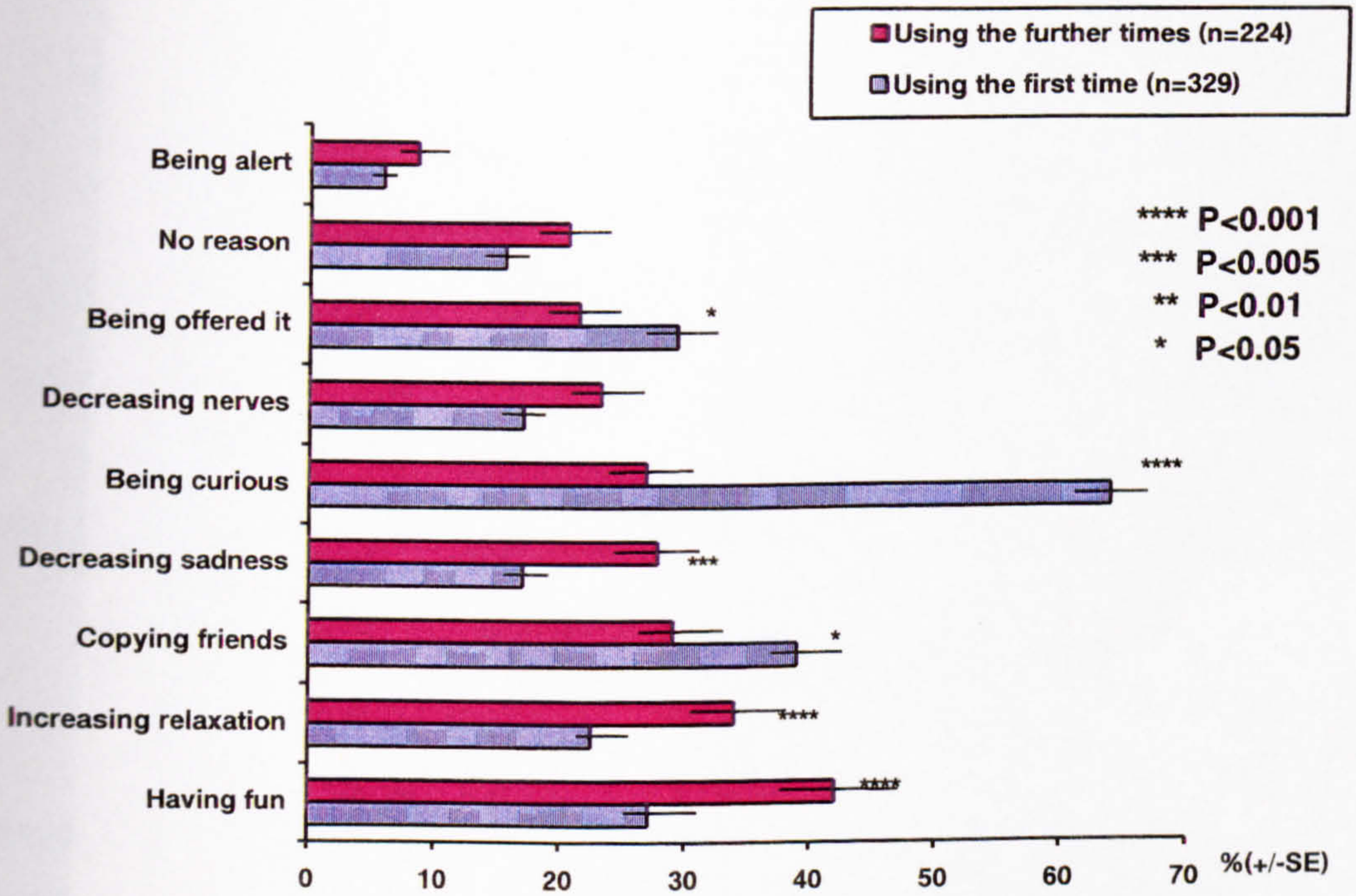
Figure 7.15: Percentage of students by reasons for using amphetamine further times, compared between male and female students.



The most common reason for using cannabis further times was "having fun"(42.0%) compared to the most common reason for first time using cannabis was "being curious"(63.8%). Using bivariate analysis (Chi-square statistic) to compare between reasons for using first and further times, significantly higher percentage of students reported "being curious to try cannabis", "copying friends", and "being offered cannabis" for using the first time than for using further times (Figure 7.16). Conversely, the percentage of students using cannabis for "increasing relaxation", "having fun", and "decreasing sadness" were significantly higher for further times.

By comparison, the reasons for using cannabis between current cannabis users who were occasional users to monthly users and those who were weekly users to daily users, there were no significant differences between infrequent users and frequent users for the reasons of using cannabis further times. For both males and females, the most common reason for using cannabis further times was "having fun" and there were no significant differences between males and females

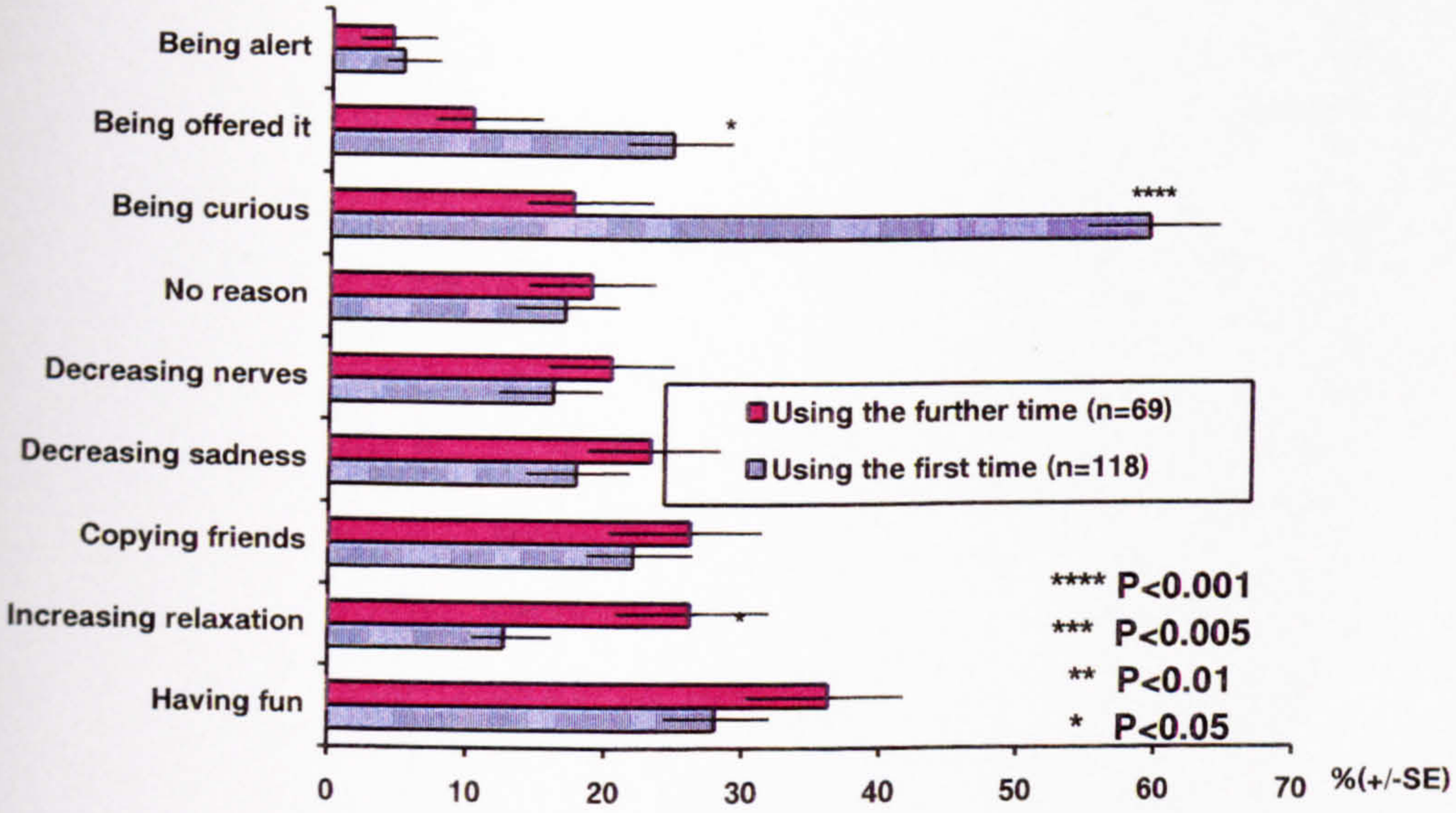
Figure 7.16: Percentage of students by reasons for using cannabis the first time and the further times



Recreational purposes (such as having fun and increasing relaxation) were the main reasons of cannabis users for continuing to use cannabis, while amphetamine was used for reasons of stimulation (such as staying alert) as well as recreational purposes. It seems that people learn about the effects of each drug, generally through curiousity or peer pressure and then incorporate it into their personal life using each for its different effects. This may also be part of the reason why there is no difference in using cannabis further times between frequent users and infrequent users and between males and females.

The most common reason for using solvents further times was "having fun"(36.2%) while the most common reason for first time use was "being curious to try solvents"(59.3%). Again, using bivariate analysis to compare between reasons for using the first time and the further times, significantly higher percentages of students reported "being curious to try solvents" and "being offered solvents" as reasons for first time use (Figure 7.17). Conversely, students using solvents because of "increasing relaxation" was a more common reason for using further times.

Figure 7.17: Percentage of students by the reasons for using solvents the first time and the further times



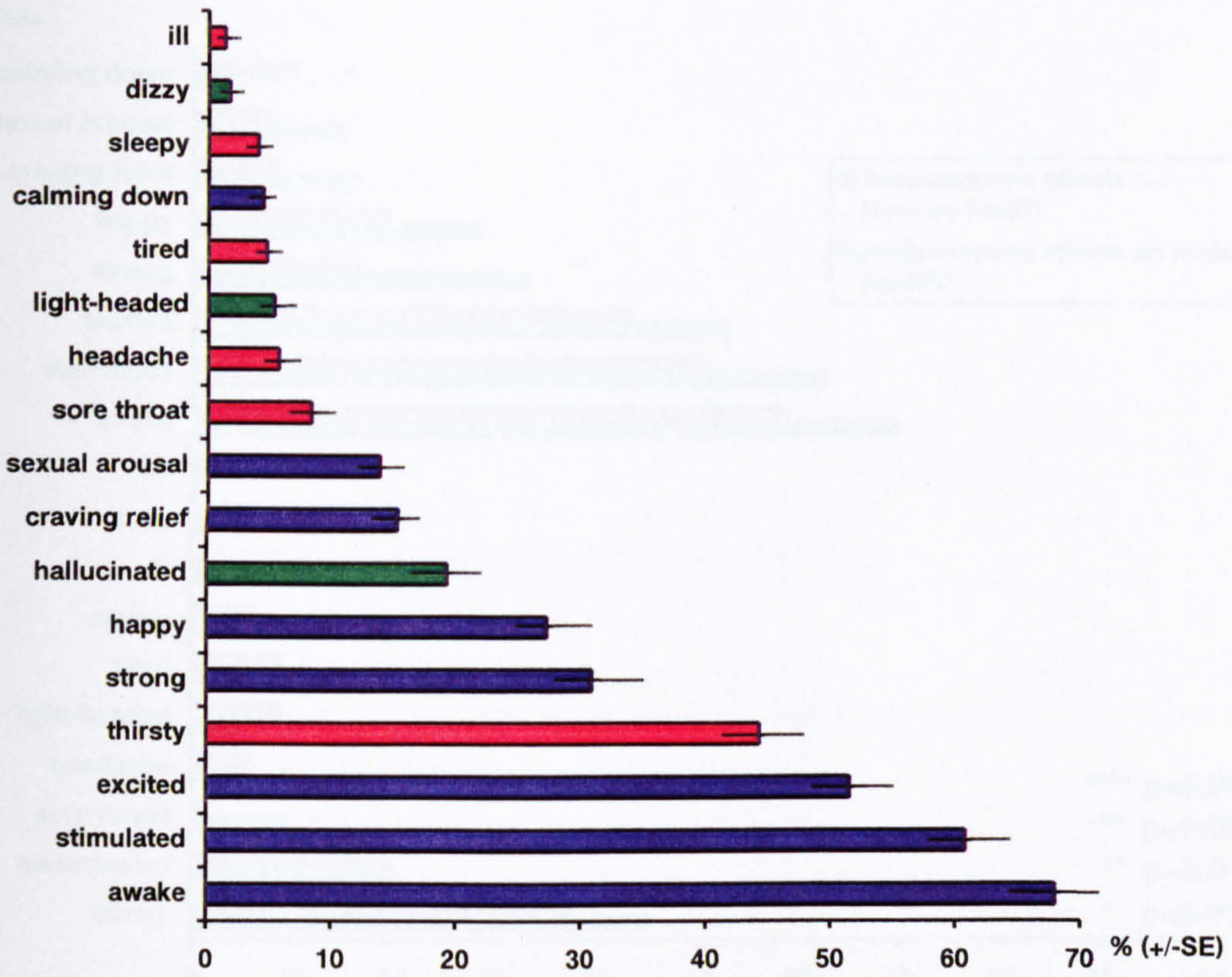
Comparison of the reasons for using solvents between current solvent users who were occasional users to monthly users and those who were weekly users to daily users showed no significant differences for the reasons of using solvents the further times. For both males and females, the most common reason for using the further times was "having fun" and bivariate analyses revealed that there were no significant differences between sexes. The reasons for using opium, heroin, ecstasy, cocaine, and magic mushroom were not analysed here because there were too small numbers of students who were users for statistical tests.

7.9 Effects of illegal drug use

Considerable information is already available in the literature about the effects of drugs such as amphetamine, cocaine, and ecstasy and their effects as stimulant drugs (46-49, 168) (see also Chapter 1). Amphetamine increases energy and alertness. Ecstasy tends to make users feel more energetic; the same as amphetamine and also promotes a feeling of empathy with other people. Cocaine increases respiratory rate, muscular activity, alertness, and euphoria (46, 48, 49, 168). Solvents' inhalation offers users a feeling of euphoria and hallucination and cannabis and magic mushroom are both hallucinatory drugs with which users experience euphoria with feelings of self-confidence, well-being, and relaxation. However, opium and heroin are both depressants, which block feelings of physical and emotional pain, initially promoting

feelings of warmth and relaxation. However, as well as different kinds of illegal drugs, different individuals and different environments may produce different effects of use (46, 47, 49, 168). In order to know the range of effects use among Khon Kaen secondary school students produces, respondents were asked questions such as "How did amphetamine make you feel after using?" (see Appendix 1). The same kind of question was used for all other drugs. The effects of illegal drug use were possibly different by sex. Thus, bivariate analysis was also used to test the difference in illegal drug effects between male and female students.

Figure 7.18: Reported effects of amphetamine on students who have ever used the substance (n=474).



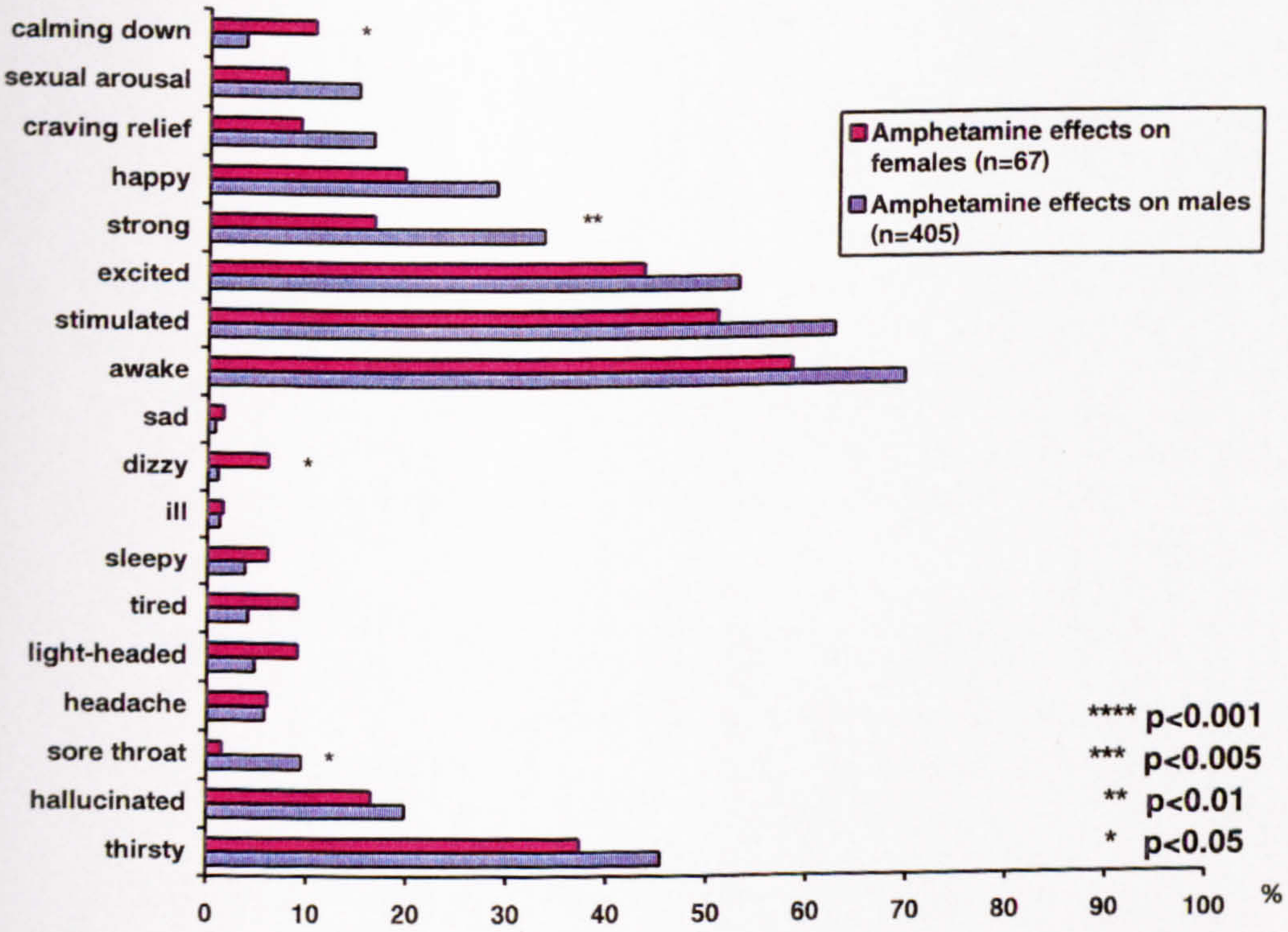
Note: Red bars indicate negative effects, blue bars indicate positive effects, and green bars indicate neutral effects which may be positive effects for some individuals and negative effects for other individuals.

7.9.1 Effects of using amphetamine

Students who had ever used amphetamine reported both positive effects and negative effects after using amphetamine. The effects are listed in Figure 7.18 with the percentage of individuals who reported each effect. In this study, the effects that were reported more than 10% of individuals are considered predominant effects. The

predominant effects of using amphetamine were awake, stimulated, excited, thirsty, strong, happy, hallucinogenic, craving relief and sexual arousal. Among students who ever used amphetamine, males were more likely to report effects of "being strong" and "having a sore throat" than females, whereas females were more likely to report effects of "calming down" and "being dizzy" (Figure 7.19). However, the effects of sore throat, dizzyness and calming down were only occasionally reported (less than 10%). These different effects of amphetamine use between males and females may be the result of physical or psychological variability between sexes (50).

Figure 7.19: Percentage of students who reported different effects of amphetamine compared between sexes

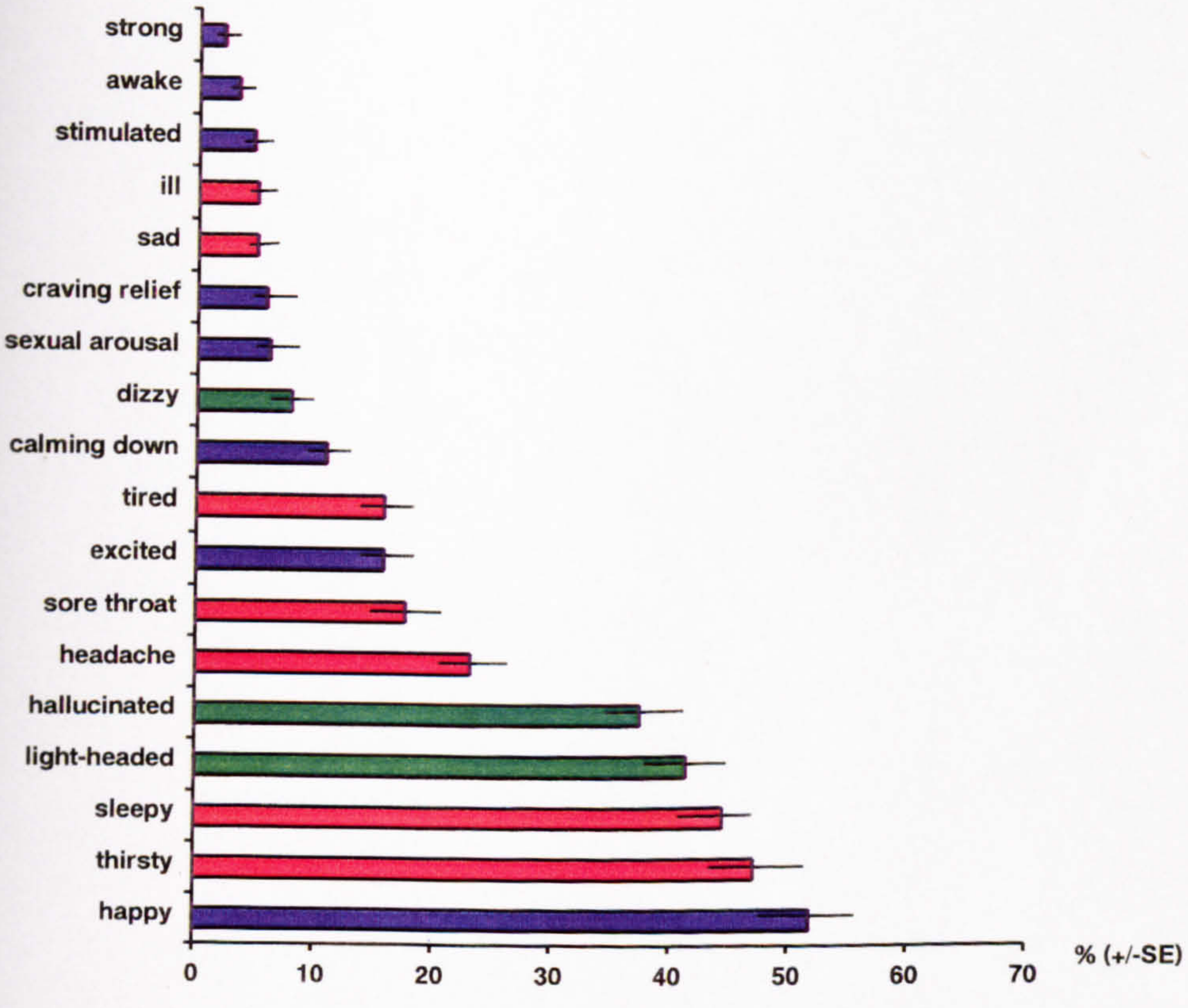


7.9.2 Effects of using cannabis

Students who have ever used cannabis reported both positive effects and negative effects (Figure 7.20). However, the predominant effects of using cannabis were happiness, thirst, sleepiness, light-headedness, hallucinogenic, headaches, sore throat, excited, tired and calming. Bivariate analysis revealed that there were no significant differences in both positive and negative effects of using cannabis between male and

female users. The common positive effects were happiness, excitedness, and calming down and common negative effects thirst, sleepiness and headaches.

Figure 7.20: Reported effects of cannabis on students who have ever used the substance (338).



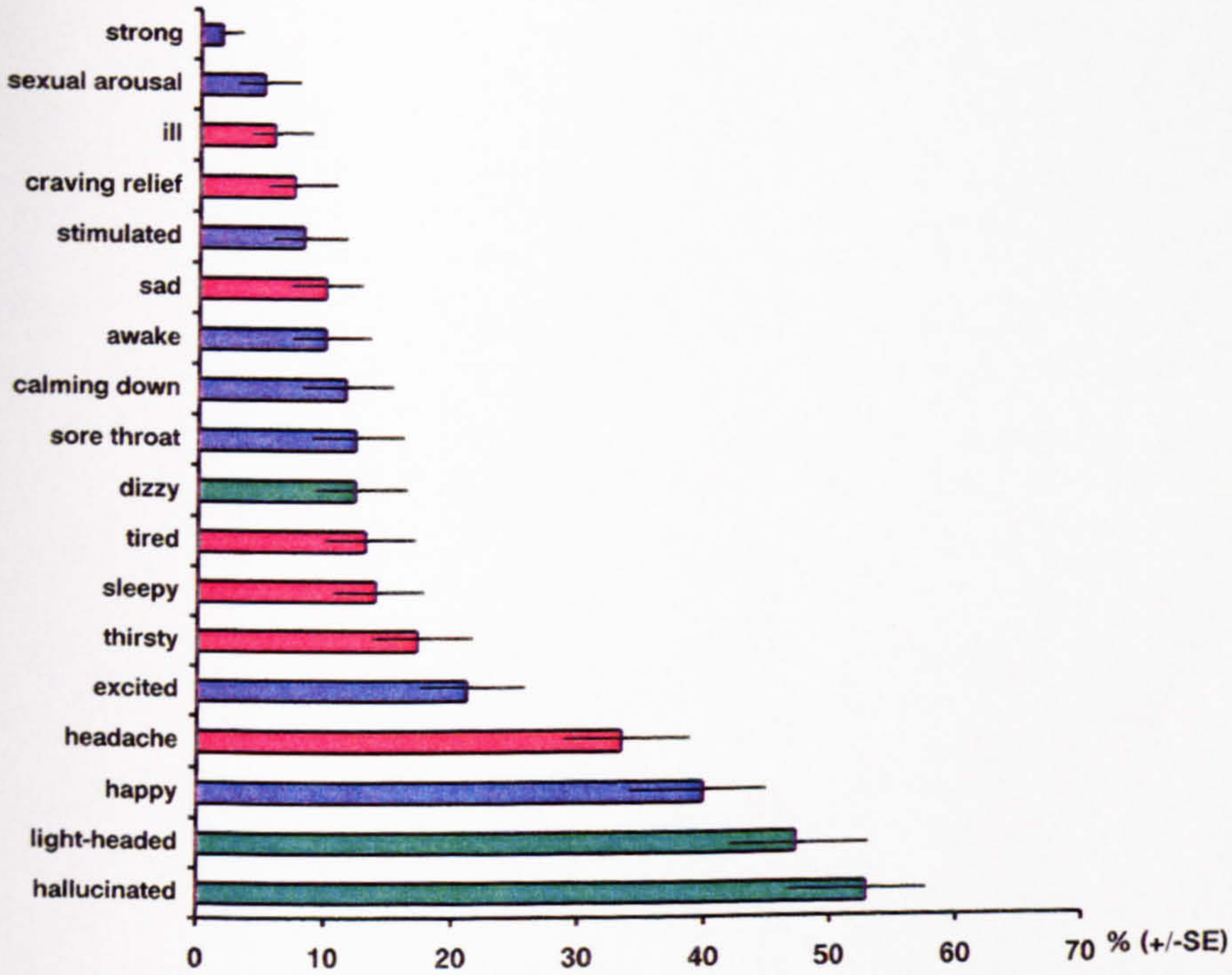
Note: Red bars indicate negative effects, blue bars indicate positive effects, and green bars indicate neutral effects which may be positive effects for some individuals and negative effects for others.

7.9.3 Effects of using solvents

The predominant effects (Figure 7.21) of using solvents were hallucinogenic, feeling light-headed and happy, having a headache, excited, thirsty, sleepy, tired, dizzy, sore throat, and calming down. Among students who ever used solvents, males were more likely than females to report effects of hallucination, whereas females were more likely to report effects of "being dizzy" and "having a headache" (Figure 7.22).

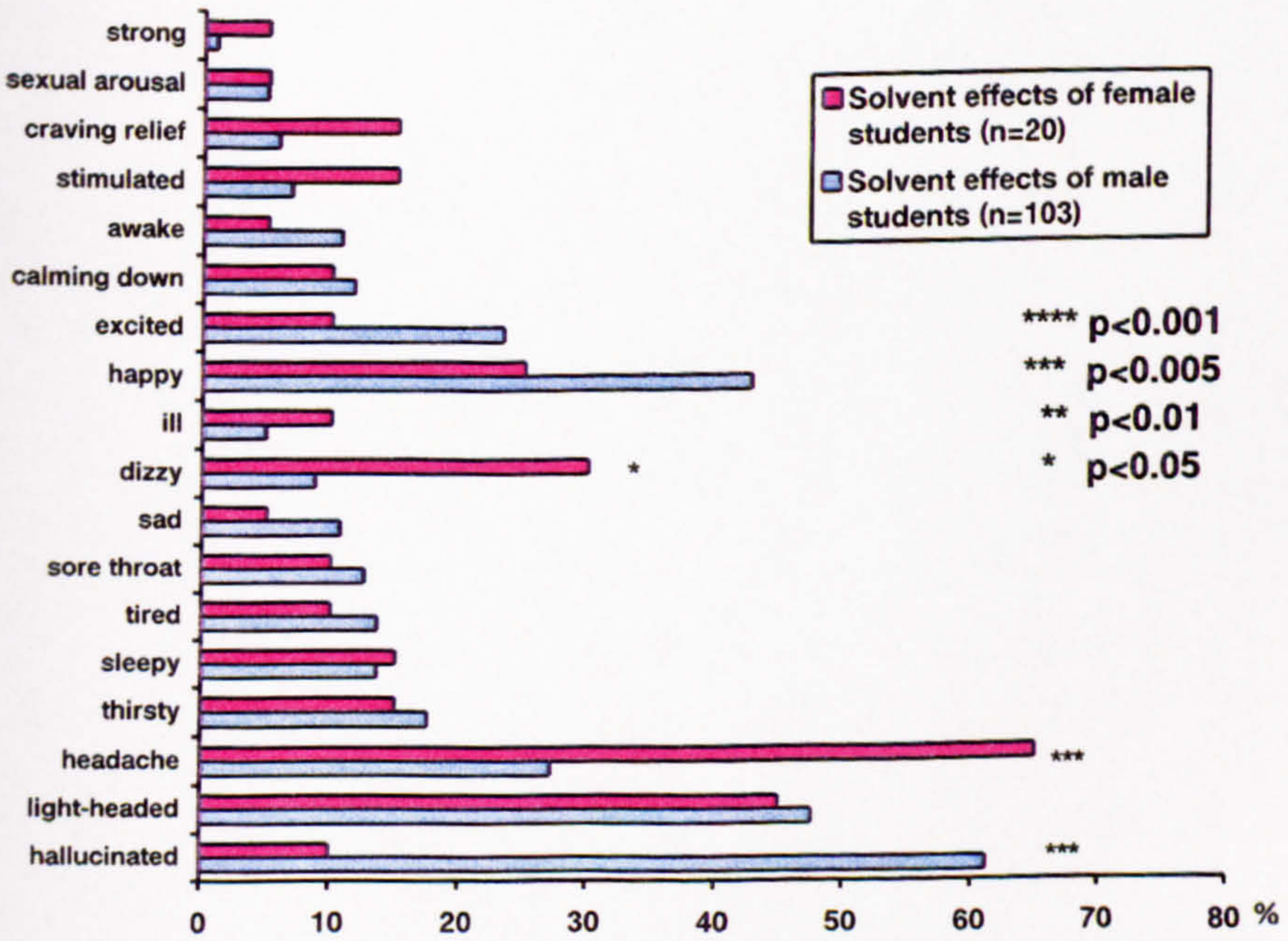
There are however different kind of solvents that are used and available in Thailand such as glue, thinner, benzene, lacker, etc. (90), and such solvent may have different effects. This study did not distinguish between these.

Figure 7.21: Reported effects of solvents on students who have ever used the substance (n=123).



Note: Red bars indicate negative effects, blue bars indicate positive effects, and green bars indicate neutral effects which may be positive effects for some individuals and negative effects for other individuals.

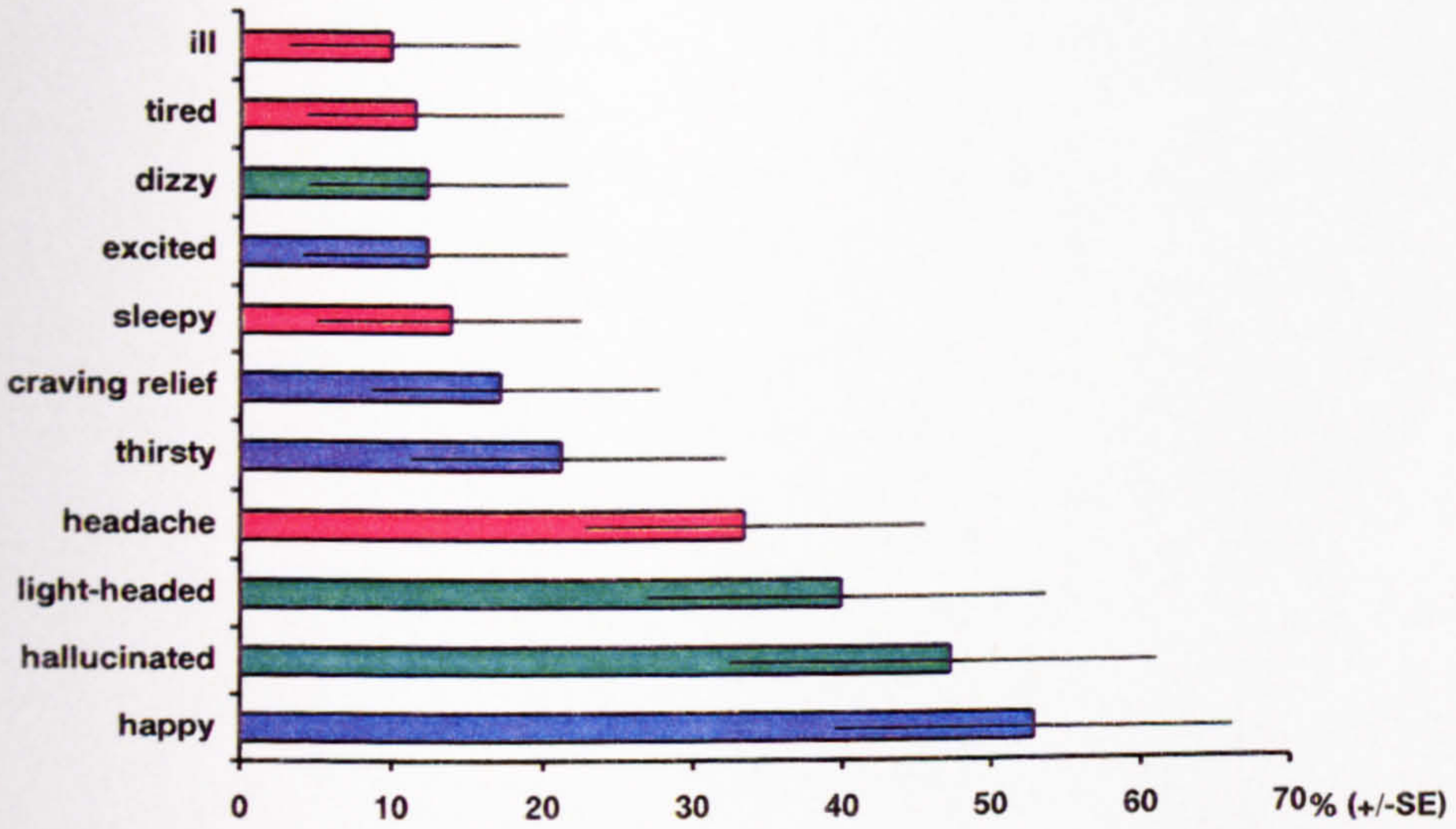
Figure 7.22: Percentage of students who reported effects of using solvents compared between sexes



7.9.4 **Effects of using opium**

Students who had ever used opium reported both positive effects and negative effects after using (Figure 7.23). The predominant effects of using opium were hallucinations, light-headedness, headaches and happiness.

Figure 7.23: Reported effects of opium on students who have ever used the substance (n=13)

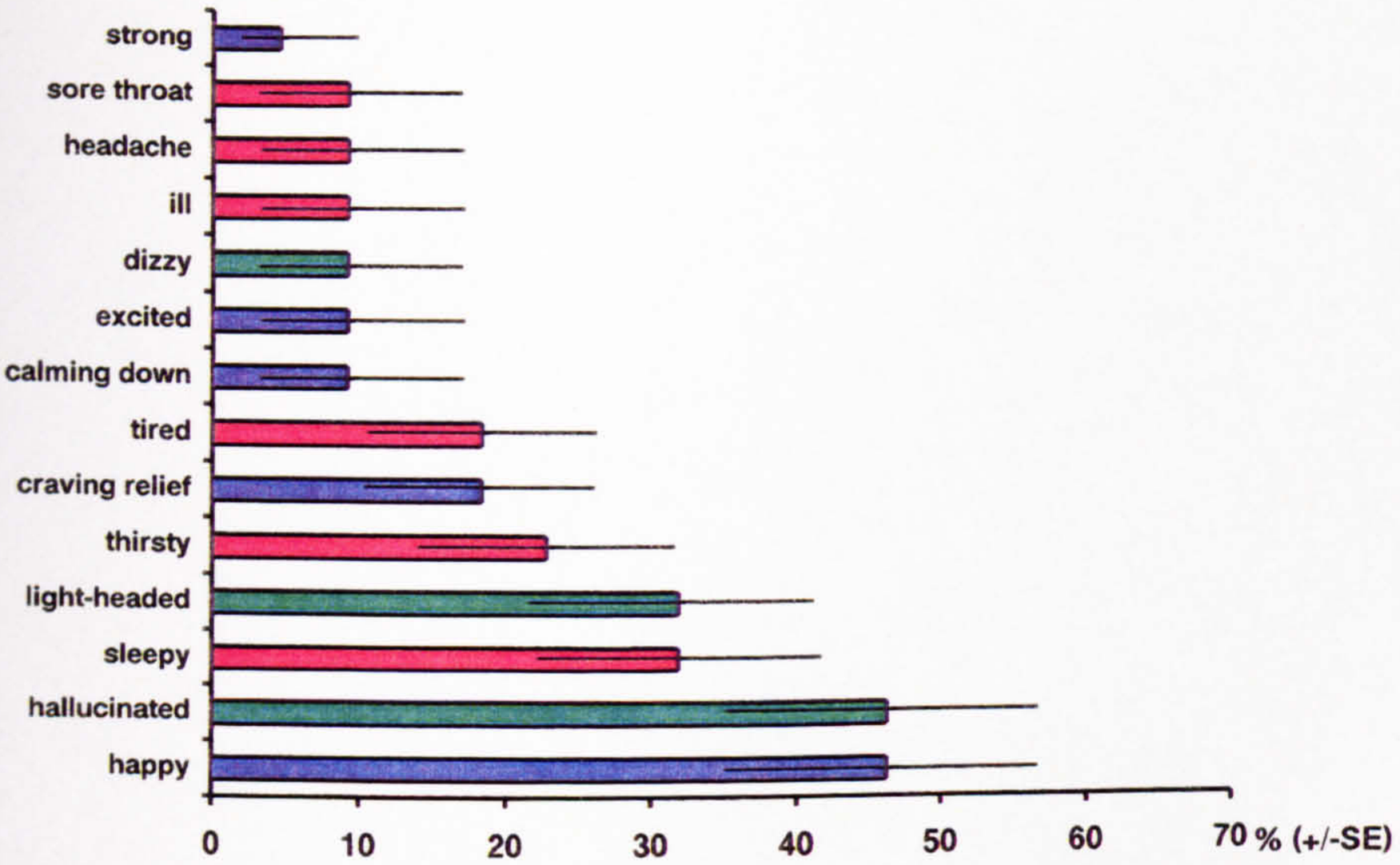


There were no significant differences in both positive and negative effects of using opium between male and female users. However, these results are based on a small sample size (n=13).

7.9.5 Effects of using heroin

Students who have ever used heroin reported both positive effects and negative effects after using heroin (Figure 7.24). The predominant effects of using heroin were feeling happy, hallucinating, feeling sleepy, feeling light-headed, being thirsty, craving relief, and feeling tired.

Figure 7.24: Reported effects of heroin on students who have ever used the substance (n=22)

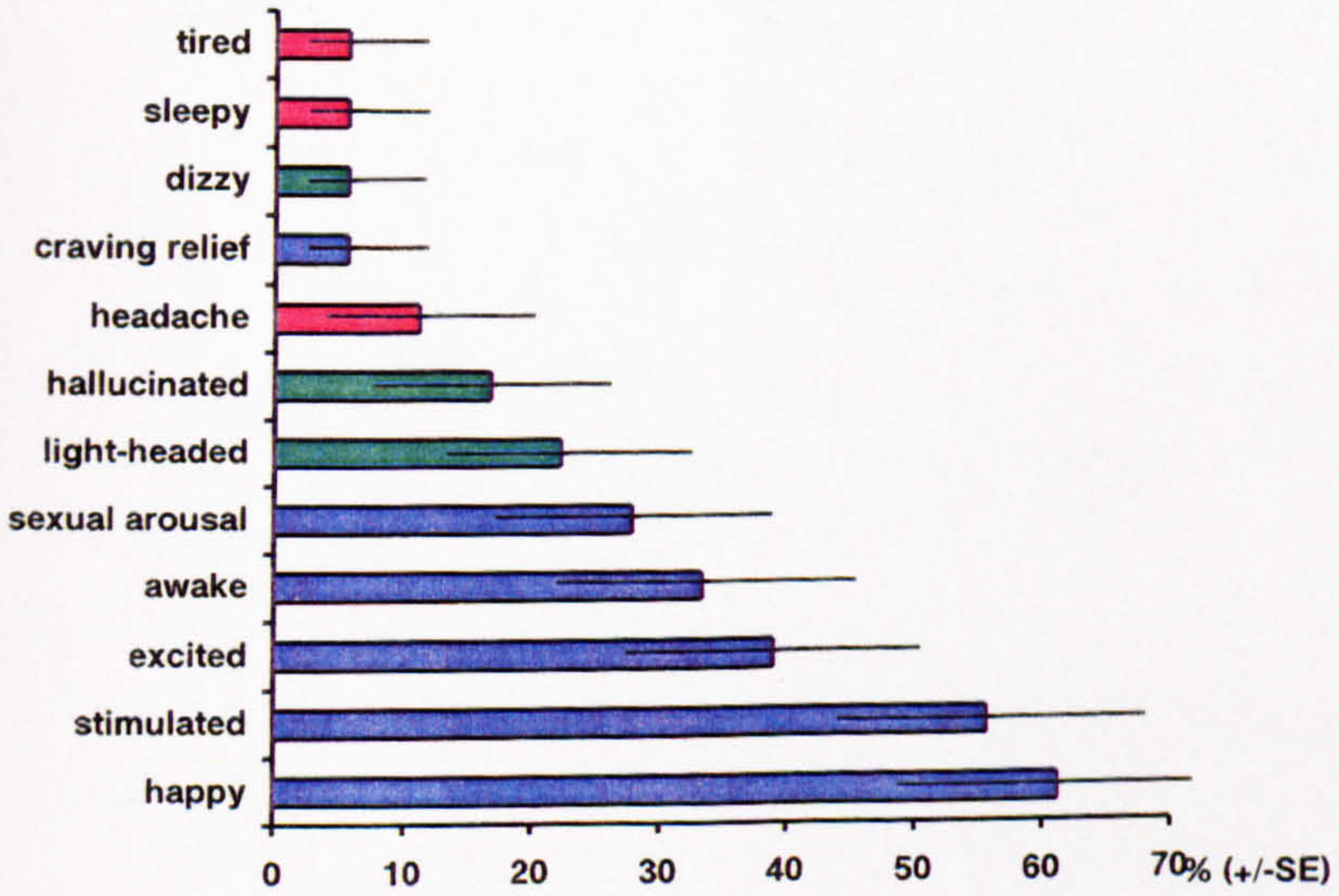


Using bivariate analysis, there were no significant differences in heroin effects between male and female users. Again, these may be effected by very small sample size of students who were heroin users (n=22).

7.9.6 Effect of using ecstasy

The predominant effects (Figure 7.25) of using ecstasy were happiness, stimulation and being awake.

Figure 7.25: Reported effects of ecstasy on students who have ever used the substance (n=18)

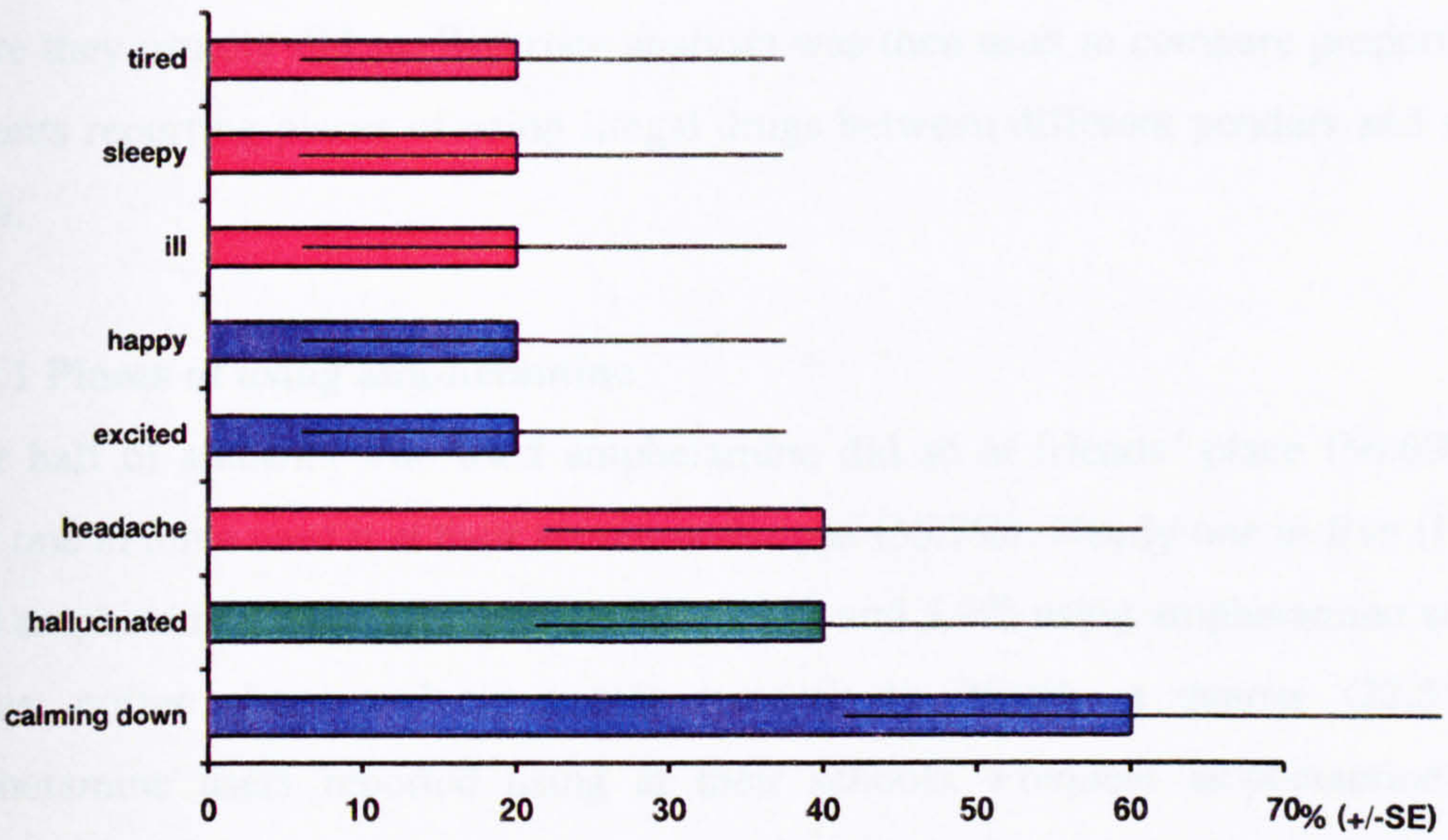


Using bivariate analysis, there were no significant differences in ecstasy effects between male and female users was again a factor (n=18).

7.9.7 Effects of using magic mushroom

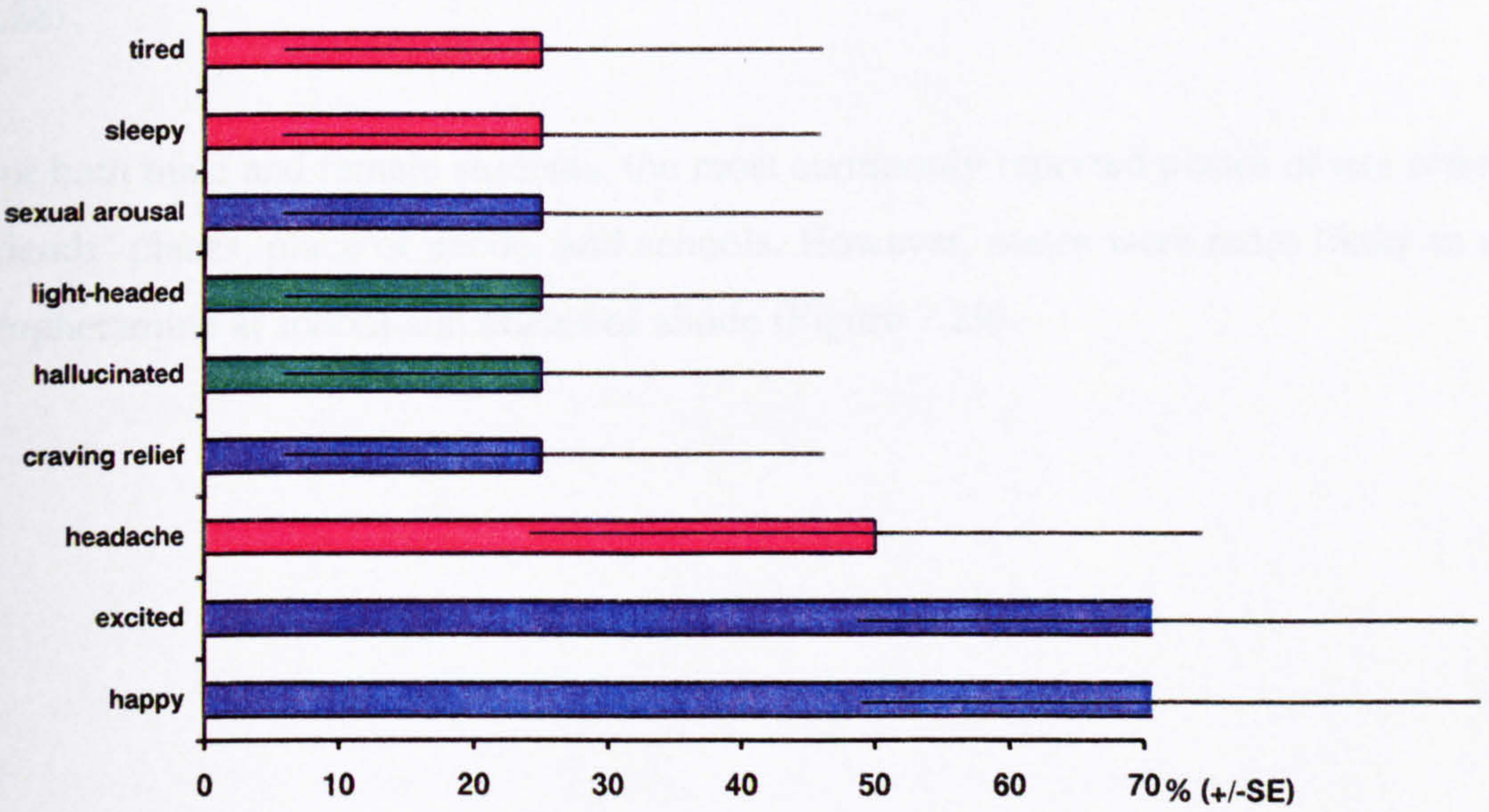
The predominant effects (Figure 7.26) of using magic mushroom were calming, hallucination, headaches and excitement. Again, these may be effected by very small sample size of students who were magic mushroom users (n=5).

Figure 7.26: Reported effects of magic mushroom on students who have ever used the substance (n=5)



7.9.8 Effects of using cocaine

Figure 7.27: Reported effects of cocaine on students who have ever used the substance (n=4)



Students who have ever used cocaine reported both positive effects and negative effects after using cocaine (Figure 7.27). However, the predominant effects of using cocaine were happy, excited, headache, craving relief, hallucinating, light-headedness, sexual arousal, sleepiness, and tiredness. A very small sample of students were cocaine users (n=4).

7.10 Places of using illegal drugs

To examine places of using illegal drugs, students who had used them were asked where they usually did so. Bivariate analysis was then used to compare proportion of students reporting places of using illegal drugs between different genders and school types.

7.10.1 Places of using amphetamine

Over half of students who used amphetamine did so at friends' place (56.6%) and over one in three used it at their accommodations (36.7%). Nearly one in five (19.7%) used amphetamine at parties with 13.8%, 6.9%, and 3.9% using amphetamine at disco places, coffee shops and on streets respectively. Nearly a quarter (22.5%) of amphetamine users reported using at their schools. Frequent amphetamine users (weekly to daily users) when compared with infrequent amphetamine users (occasional to monthly users) were much more likely to use on the street (Figure 7.28).

For both male and female students, the most commonly reported places of use were at friends' places, place of abode, and schools. However, males were more likely to use amphetamine at school and places of abode (Figure 7.29).

Figure 7.28: Percentages of current amphetamine users by places where they usually used amphetamine compared between infrequent users and frequent users

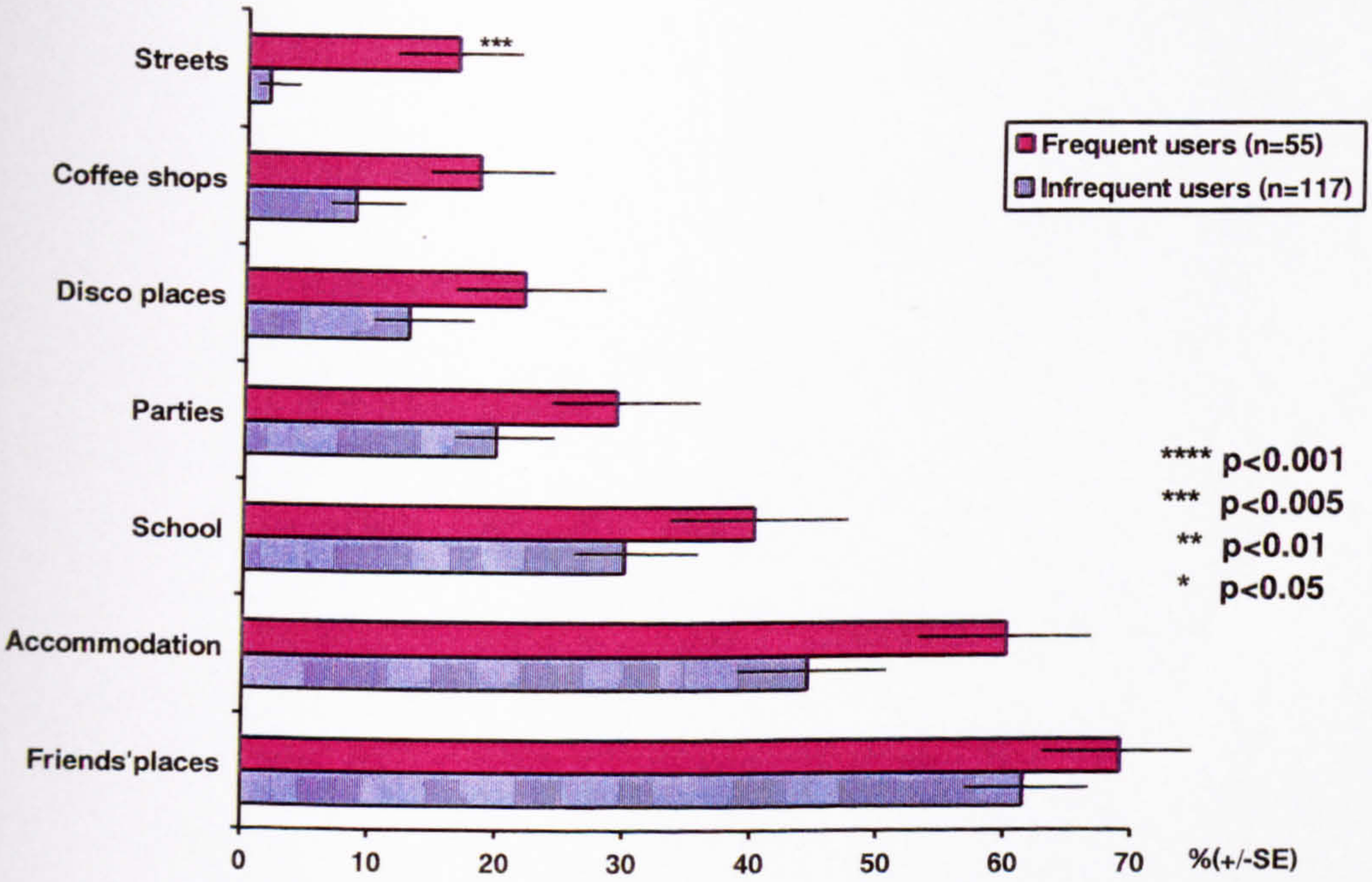
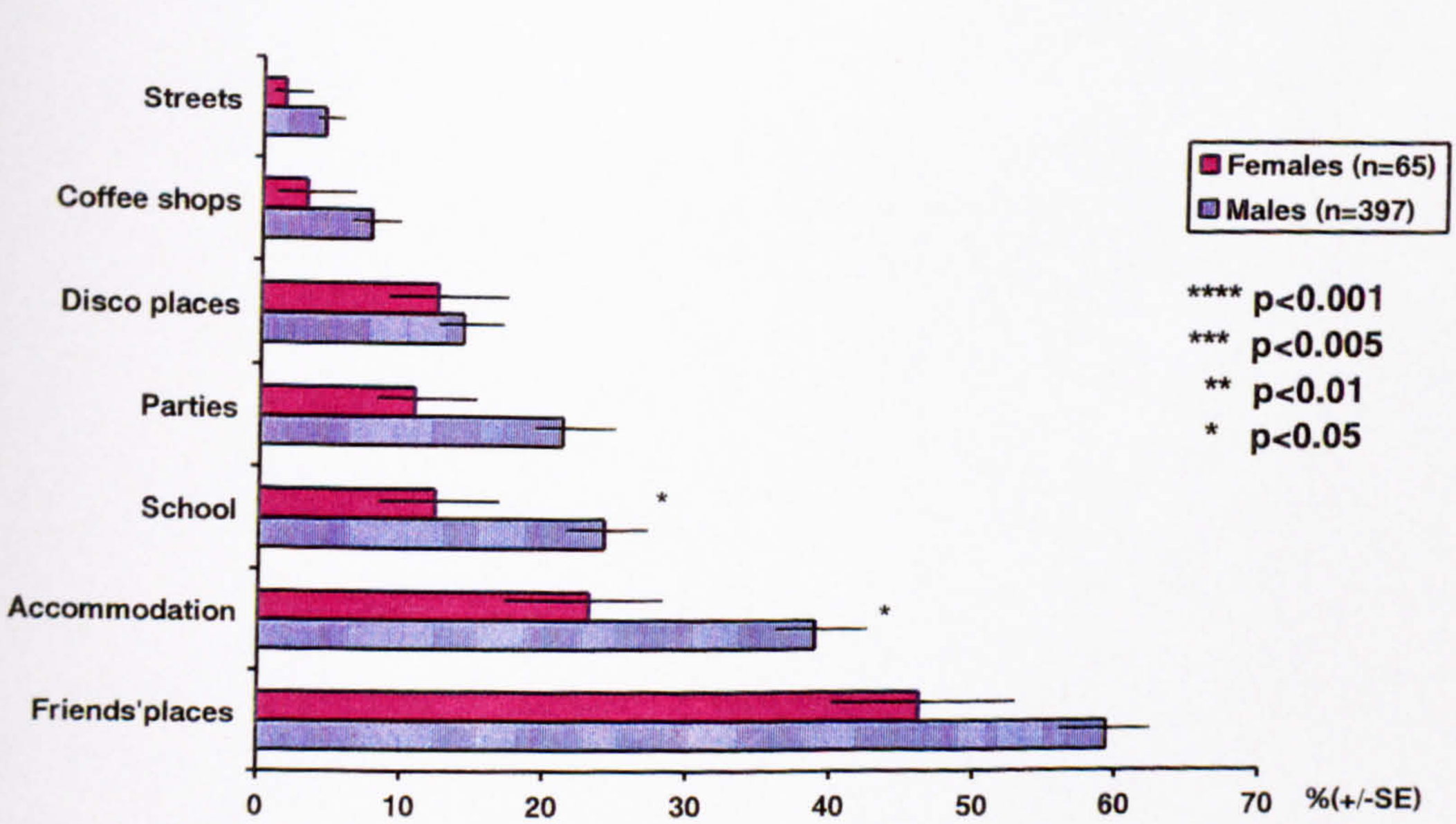
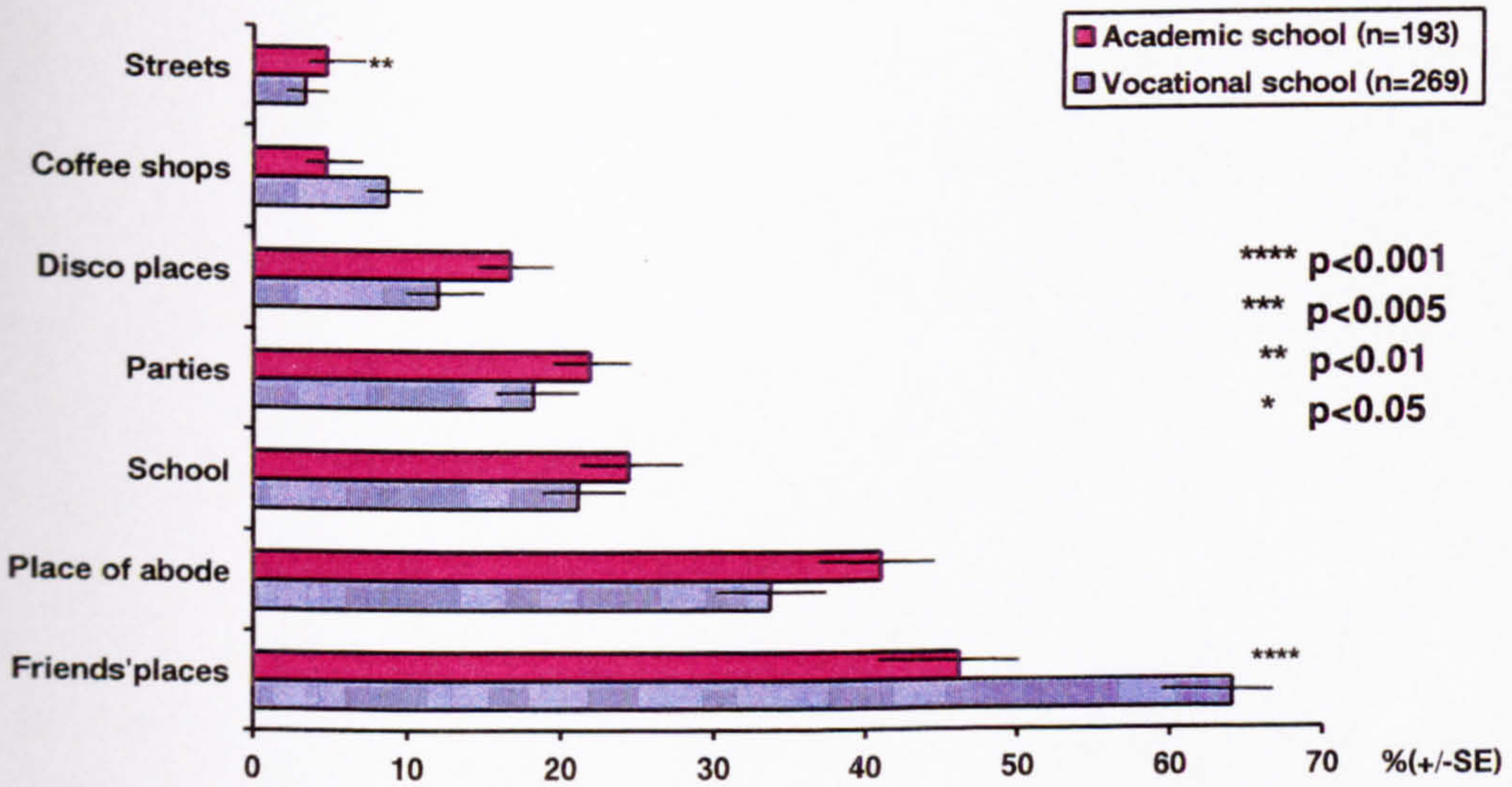


Figure 7.29: Percentages of current amphetamine users by places where they usually used amphetamine compared between males and females



For both academic and vocational school students, the most commonly reported places of use were at a friends' place, place of abode (accommodation) and school (Figure 7.30). However, vocational school students were more likely to use amphetamine at friends' place.

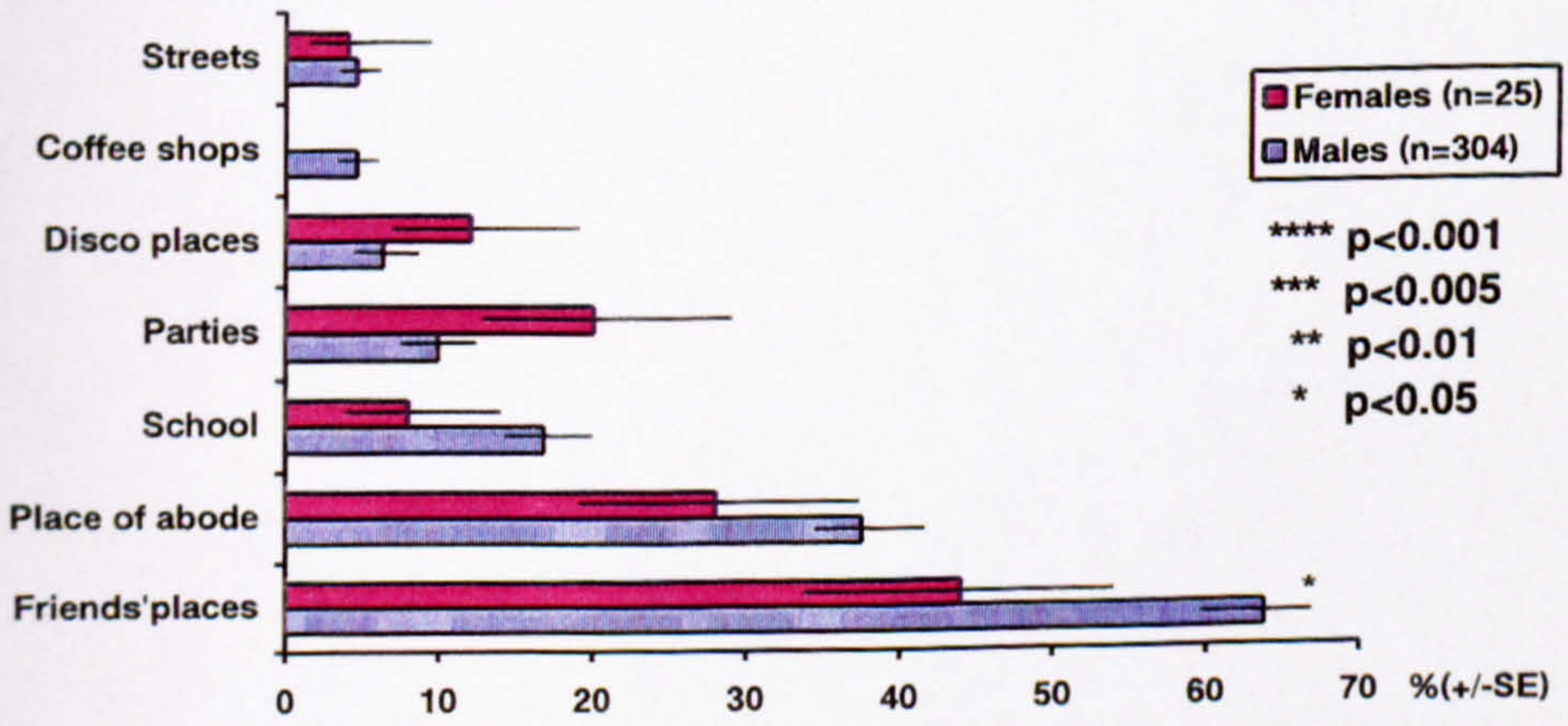
Figure 7.30: Percentages of current amphetamine users by places where they usually used amphetamine compared between academic and vocational school students



7.10.2 Places of cannabis use

Over half of cannabis users used at friends' places (62.3%). More than one in three used it at their accommodation (36.8%). One in ten (10.6%) used cannabis at parties. Only 6.7%, 4.6%, and 4.3% used cannabis at discos, along streets and at coffee shops respectively. There were 16.1% of cannabis users reported who identified using cannabis at their school. There were no significant differences in the proportions of places for using cannabis between frequent cannabis users (weekly to daily users) and infrequent cannabis users (occasional to monthly users). For both male and female students, the most commonly reported places of use were at friends' places, place of abode and school. However, males were more likely to use at friends' places (Figure 7.31).

Figure 7.31: Percentages of current cannabis users by places where they usually used cannabis compared between males and females.



For both academic and vocational school students, the most commonly reported places for using cannabis was at a friends' places, followed by place of abode and then school. There were no significant differences in places of using cannabis between school types.

7.10.3 Places for using solvents

"Friends' places" were the most popular place where solvent users inhaled solvents (42.4%). Over one in five (21.2%) used it at their place of abode. Only 9.3%, 8.5%, 7.6%, 6.8%, and 4.2% used solvents at parties, on streets, at discos, school and coffee shops respectively. There were no significant differences in proportion of places where solvents were used between frequent and infrequent users, between male and female students, and between vocational and academic school students.

7.10.4 Places for using opium, heroin, ecstasy, magic mushroom, and cocaine

Places where opium, heroin, ecstasy, magic mushroom, and cocaine users usually used these illegal drugs are shown in Table 7.34

Table 7.34: Percentage of individuals who reported place of using for each illegal drug.

Places of using	Percentage % (sample size)				
	Opium	Heroin	Ecstasy	Cocaine	Magic mushroom
Place of abode	33.3 (12)	36.4 (22)	33.3 (18)	25.0 (4)	60.0 (5)
Friends' places	66.7 (12)	59.1 (22)	33.3 (18)	75.0 (4)	20.0 (5)
Parties	--	9.1 (22)	33.3 (18)	25.0 (4)	--
Schools	33.3 (12)	18.2 (22)	16.7 (18)	--	20.0 (5)
Disco places	8.3 (12)	4.5 (22)	27.8 (18)	25.0 (4)	--
Coffee shop	--	--	16.7 (18)	25.0 (4)	--

Using bivariate analyses, there were no significant differences in places of using these drugs between male and female students and between vocational and academic schools.

7.11 Patterns of using illegal drugs

7.11.1 Routes of administration

Students who had ever used illegal drugs were asked how they administered them. The vast majority of those who had ever used amphetamine, cannabis, and opium used them by smoking (Table 7.35). Solvents were used by sniffing (inhalation) only.

Ecstasy was used by orally, smoking and sniffing. Injecting was the method used by some amphetamine and heroin users. In the past few years in Thailand, oral use of amphetamine was most common at first, then smoking became the most popular route of administration among amphetamine users as it takes less time to get "a hit" (169). Amphetamine is used not only for maintaining long period of task performance but also for recreational purposes (169). The results in this study also supported that being alert and recreational purposes (having fun, increasing relaxation, and decreasing nerves) were the main reasons for continually using amphetamine (Section 7.8.1).

In the UK, most young people take amphetamine orally (170). Amphetamine use in the UK is largely restricted to amphetamine sulphate (170) which is taken orally (pills and capsules), by sniffing (as a powder) and injecting. In Sweden, oral use of amphetamine has become increasingly popular for young people while amphetamine injection has decreased since 1980s (171). In Netherlands, it was indicated that amphetamine was mainly used by the oral or nasal route (172). In USA, methamphetamine was commonly taken by injecting and smoking (173) while in Australia, in 1993, Dark et al studied transitions between routes of administration of regular amphetamine users and reported that most (66.0%) amphetamine users (n=301) used amphetamine by injecting (174). It is important to know routes of administration for illegal drugs, in particular for drug that are used by injection because it can lead to other serious problems such as Acquired Immuno Deficiency Syndrome (AIDS), hepatitis and other blood borne infections (175).

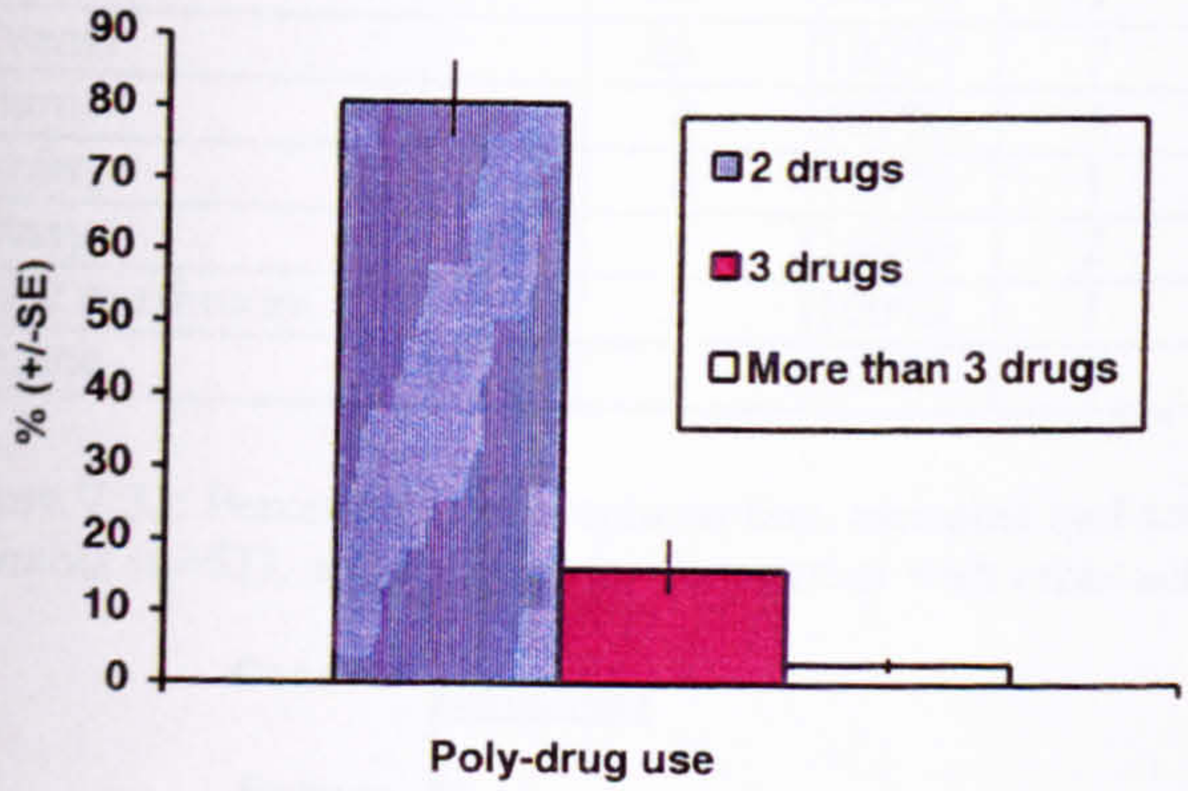
Table 7.35: Number and Percentage of illegal drug users by routes of administration.

Substances	Number Of Users	Routes of administration			
		Oral	Smoking	Sniffing	Injecting
Amphetamine	460	76 (16.5%)	414 (90.0%)	15 (3.3%)	21 (4.6%)
Cannabis	329	24 (7.3%)	311 (94.5%)	---	---
Solvents	123	--		123 (100%)	---
Opium	13	---	13 (100%)	---	---
Ecstasy	18	12 (66.7%)	6 (33.3%)	1 (5.3%)	---
Heroin	22	---	10 (45.5%)	2 (9.1%)	11 (50.0%)
Magic mushroom	5	5 (100%)	---	---	---
Cocaine	4	---	---	4 (100%)	---

7.11.2 Single-drug and multi-drug users

Illegal drug users were using one type (single-drug users) or more than one type (multi-drug users) of these illegal drugs. While most illegal drug users (69.4 %) used only one type of drug, 30.6% used more than one type of illegal drug either at the same time or separately. Among multi-drug users, the vast majorities (80.9 %) were using two types (Figure 7.32).

Figure 7.32: Percentage of multi-drug users who were using 2, 3 and more types of illegal drugs



Among illegal drug users who were using two types of drugs, nine in ten (90.9%) were using amphetamine and cannabis; the others were using either amphetamine and opium, amphetamine and solvents, cannabis and solvents, or cannabis and ecstasy. Among illegal drug users who were using three types of drugs, 72.7% were using amphetamine, cannabis, and solvents.

It is important to know the proportion of illegal drug users who use more than one illegal drug because multi-drug users are more likely to have, or at least risk, more serious health problems. For examples, multi-drug users are exposed to variety of toxic effects from each illegal drug and risk more serious drug interactions and drug overdose in combined use (see Section 7.11.3). In this study, nearly a third of illegal drug users were multi-drug users and most of them were using amphetamine and cannabis. It was possible that there are more risks from psychosis problems among this multi-drug using group because both of amphetamine and cannabis carry drug-specific risks of psychosis (176).

7.11.3 Combined (or poly) drug users

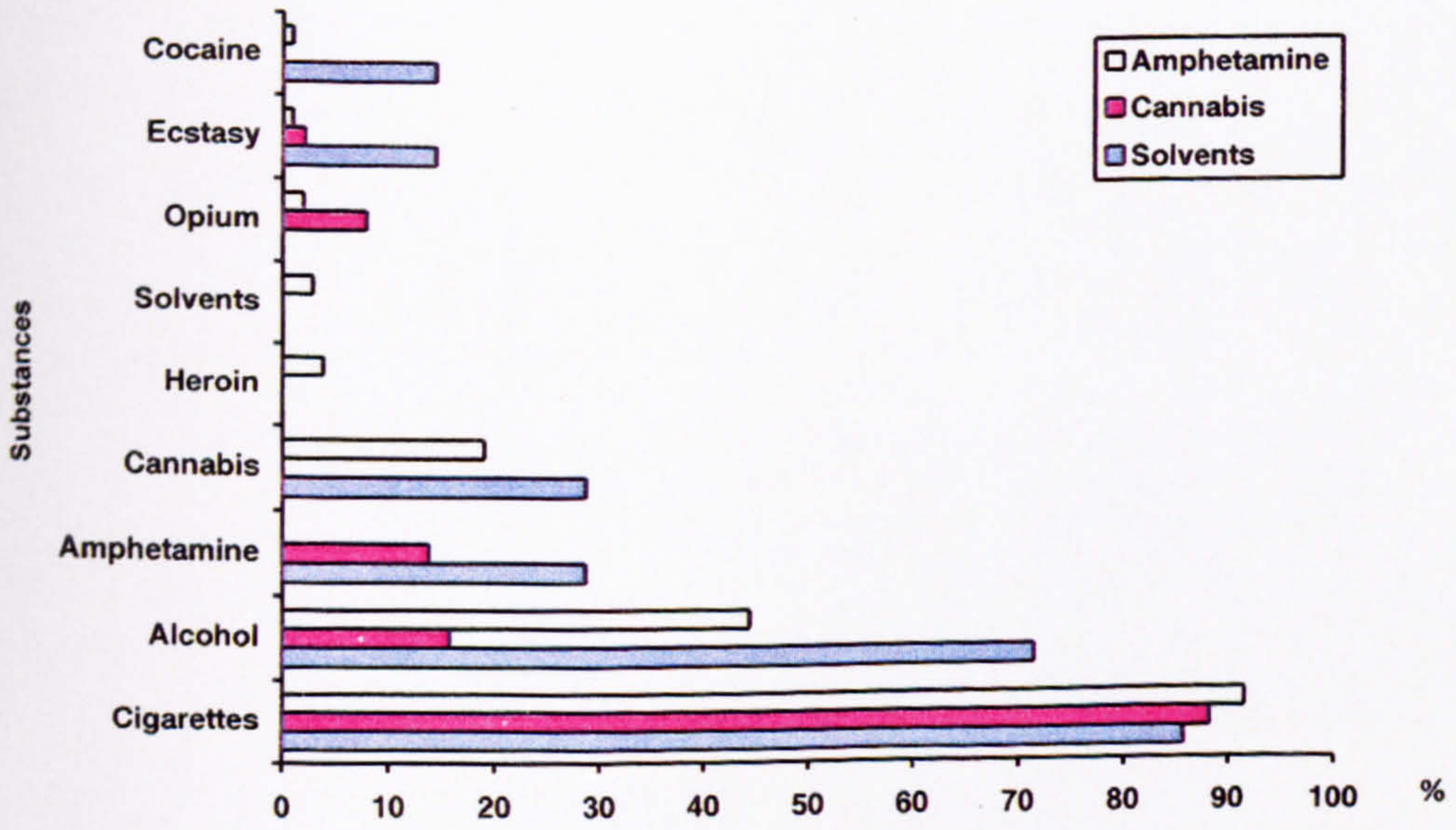
Illegal drug users were asked whether or not they usually used drugs together with other substances (simultaneous use with substances other than other illegal drug or alcohol and cigarette) and which substance did they usually use. More than half of amphetamine and cannabis users had used amphetamine and cannabis together with each other or with other substances from "sometimes" through to "on a regular basis".

Most solvent users used solvents solely (Table 7.36). Among amphetamine, cannabis and solvent users who were combined drug users, cigarette and alcohol were the two most popular substances to use together with the illegal drug(s) (Figure 7.33).

Table 7.36: Numbers and percentages of combined drug users and non-combined drug users

Drugs	Total number of multiple drug users		Pattern of use			
			Combined drug use (number of users)		Non-combined drug use (number of users)	
Amphetamine	176	(100%)	106	(60.2%)	70	(39.8%)
Cannabis	93	(100%)	51	(54.8%)	42	(45.2%)
Solvents	25	(100%)	7	(18%)	18	(72%)
Opium	4	(100%)	4	(100%)	0	(0%)
Heroin	2	(100%)	1	(50%)	1	(50%)
Ecstasy	4	(100%)	2	(50%)	2	(50%)
Magic mushroom	2	(100%)	1	(50%)	1	(50%)
Cocaine	1	(100%)	0	(0%)	1	(100%)

Figure 7.33: Percentages of amphetamine, cannabis and solvent users who used amphetamine (n=106), cannabis (n=51), and solvents (n=7) together with other substances



Although cigarettes and alcohol were popular substances that illegal drug users used together with illegal drugs, depressant agents, such as alcohol, commonly cause problems by promoting the effects of other depressant drugs and causing unexpected overdose effects (114).

7.12 Summary – Illegal Drug Use

For each illegal drug a summary of reasons for the first time using illegal drugs, reasons for using illegal drugs the further times, effect of illegal drug use, places of using illegal drug, and pattern of using illegal drugs are in table 7.37.

Table 7.37: Summary in social aspects for each illegal drug.

Illegal drugs	The most three common reasons for use the first time	The most three common reasons for use the further times	Main effects identified	Places of frequently use	Routes of administration (% of users)	Combined drug users (%)	Commonly combined with
Amphe-tamine	Curiosity, Copying friends, Being offered drug	Alertness, Having fun, Increasing relaxation	Awake, Stimulated, Excited, Thirsty, Strong, Happy, Hallucinated, Craving relief, Sexual arousal	Friends' places, Places of abode, School, Parties, Disco places	Smoking (90.0%) Oral (16.5%) Injecting (4.6%) Sniffing (3.3%)	60.2%	Cigarettes, Alcohol, Cannabis
Cannabis	Curiosity, Copying friends, Being offered drug	Having fun, Increasing relaxation, Copying friends	Happy, Thirsty, Sleepy, Light-headed, Hallucinogenic, Headache, Sore throat, Excited, Calming down	Friends' places, Places of abode, School, Parties	Smoking (94.5%) Oral (7.3%)	54.8%	Cigarettes, Alcohol, Amphetamine
Solvents	Curiosity, Having fun, Copying friends	Having fun, Increasing relaxation, Copy friends	Hallucinogenic, Light-headed, Happy, Headache, Excited, Thirsty, Sleepy, Tired, Dizzy, Sore throat, Calming down	Friends' places, Places of abode	Inhalation (100.0%)	18.0%	Cigarettes, Alcohol, Amphetamine, Cannabis
Opium	Curiosity, Copying friends, Being offered drug	Having fun, Increasing relaxation, Copy friends	Happy, Hallucinogenic, Light-headed, Thirsty, Craving relief, Sleepy, Excited, Dizzy, Tired, Ill	Friends' places, Places of abode, School	Smoking (100.0%)	100.0%	---
Heroin	Curiosity, Copying friends, Being offered drug	Having fun, Copy friends, Increasing relaxation	Happy, Hallucinogenic, Sleepy, Light-headed, Thirsty, Craving relief, Tired	Friends' places, Places of abode, School	Injecting (50.0%) Smoking (45.5%) Sniffing (9.1%)	50.0%	---
Ecstasy	Curiosity, Copying friends, Being offered drug	Having fun, Copy friends, Decreasing nerves	Happy, Stimulated, Excited, Awake, Sexual arousal, Light-headed, Hallucinogenic, Headache	Parties, Friends' places, Places of abode, Disco places, Coffee shops, School	Oral (66.7%) Smoking (33.3%) Sniffing (5.3%)	50.0%	---
Cocaine	Curiosity, Copying friends, Being offered drug	Having fun, Increasing relaxation, decreasing sadness	Happy, Exited, Headache, Craving relief, Hallucinogenic, Light-headed, Sexual arousal, Sleepy, Tired	Friends' places, Parties, Disco places, Coffee shops, Places of abode	Sniffing (100.0%)	0.0%	---
Magic mushroom	Curiosity, Having fun, Copying friends, Being offered drug	Having fun	Calming down, Hallucinogenic, Headache, Excited, Happy, Ill, Sleepy, Tired	Places of abode, Friends' places, School	Oral (100.0%)	50.0%	---

7.13 Attitude towards illegal drugs

The attitude towards illegal drug use of Khon Kaen secondary school students were explored by means of attitudinal section in the questionnaire probing general opinions rather than personal experiences.

7.13.1 Opinion on illegal drug use

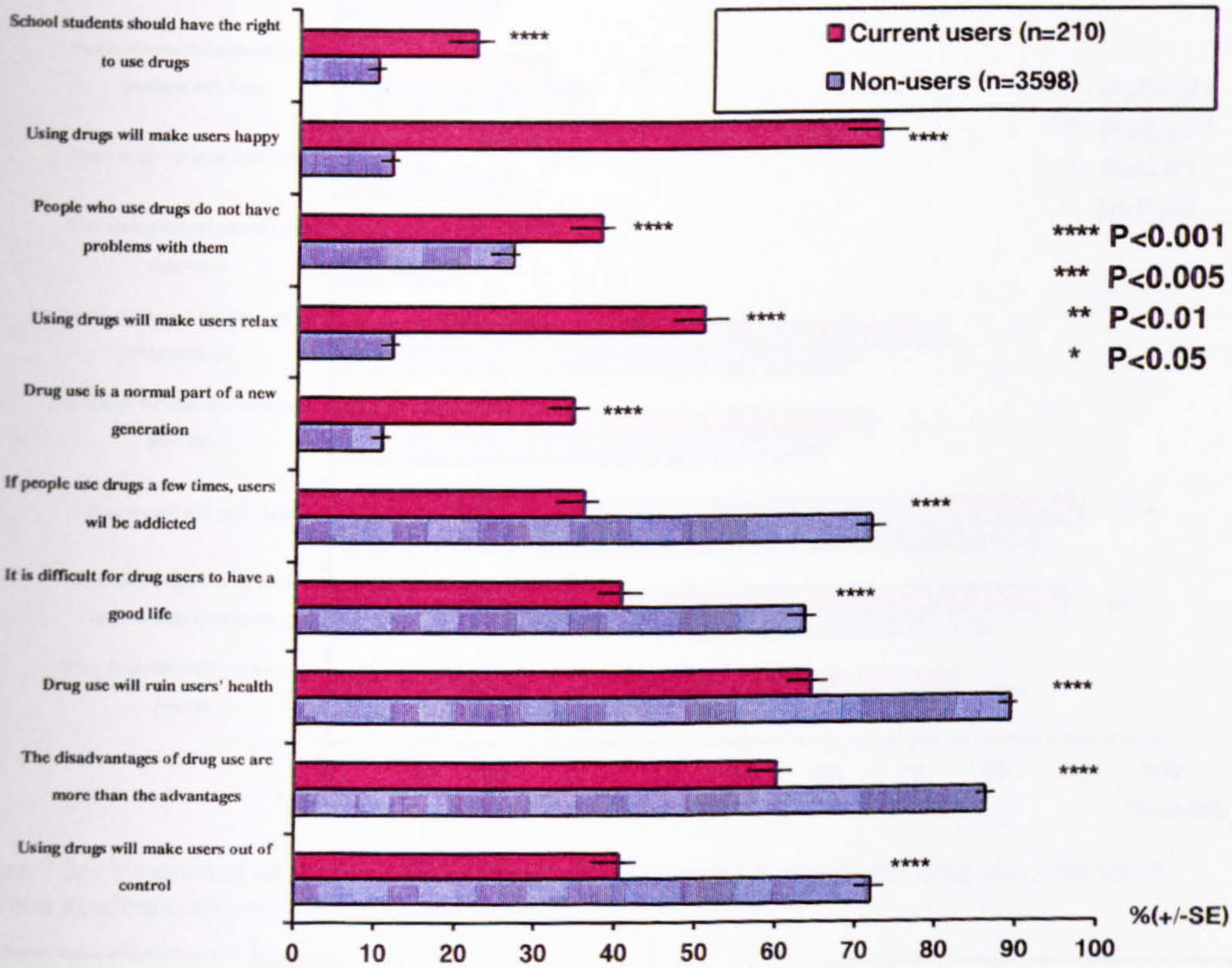
Students were asked if they agreed or disagreed with a series of statements about attitude towards illegal drug use. Bivariate analysis was used to compare the proportions of students who agreed with statements about attitude towards illegal drug use between current illegal users and non-users, between male and female students, and between academic and vocational school students. Approximately 70% of current drug users agreed that using drugs make users relaxed and happy (72.4% users, 11.6% non users). Over half of current illegal drug users (60.0% users, 86.3% non-users) agreed that the disadvantages of drug use are more than the advantages and drugs use will ruin users' health (64.3% users, 89.1% non-users). Perhaps surprisingly, over a quarter (26.6%) of non-users agreed that people using drugs do not have problems with them (Figure 7.34).

Male students were more likely to agree with the views that "school students should have right to use drugs", "drug use is a normal part of a new generation of people", "using drugs will make users happy as well as relax", "and people who used drugs do not have problem with them" (Figure 7.35). Female students were more likely to agree with views that "the disadvantages of drug use are more than the advantages", "drug use will ruin users' health", "it is difficult for drug users to have a good life", "using drugs will make out of control", and "users will be addicted to drugs even using drugs a few times".

Further differences were also noted between vocational and academic school students. Vocational school students were more likely to agree with the views "school students should have right to use drugs", "drug use is a normal part of a new generation of people", "using drugs will make users happy as well as relax", "and people who used drugs do not have problem with them" (see Figure 7.36). While, academic school students were more likely than vocational school students to agree with the views "the

disadvantages of drug use are more than the advantages", "drug use will ruin users' health" and "using drugs will make users out of control".

Figure 7.34: Proportion of students who agreed with statements about illegal drug use, comparing between current illegal drug users and non-users.



This comparison in opinion on illegal drug use between academic and vocational school students suggests that illegal drug use has become more normalised among vocational school students and is supported by earlier findings about levels of use.

7.13.2 Association between illegal drug use and attitude towards illegal drug use

The scale of attitude towards illegal drugs was created to measure student's attitude towards illegal drugs. The attitude scale was as described in the methods, with higher scores indicating more positive attitude towards illegal drugs. Chi-square statistics were used to explore the relationship between illegal drug use and attitude towards illegal drug. T-Test statistic was used to compare mean scores between current illegal users and non-users, between sexes, and academic and vocational schools.

Figure 7.35: Proportion of students who agreed with statements about illegal drug use, comparing between male and female students

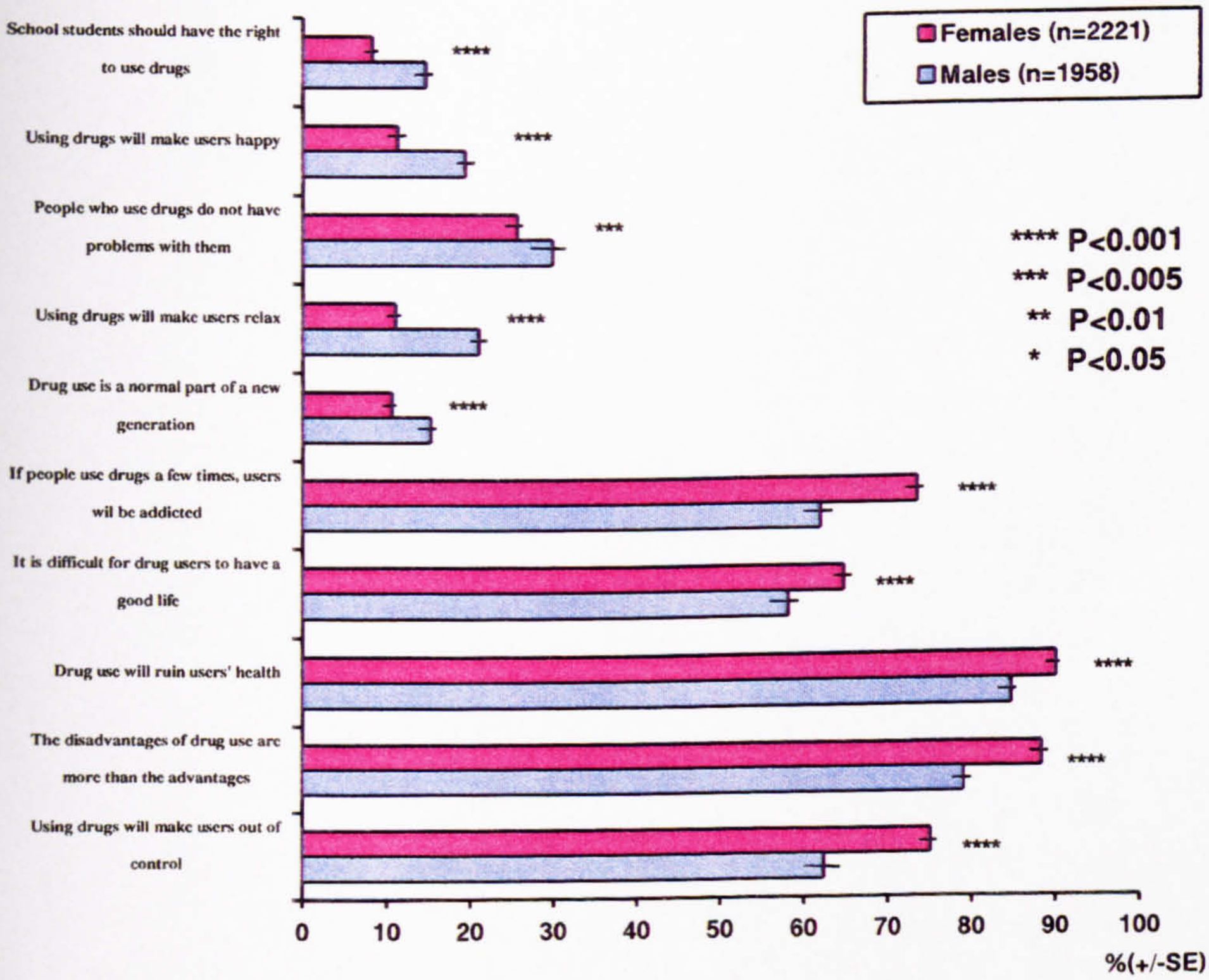
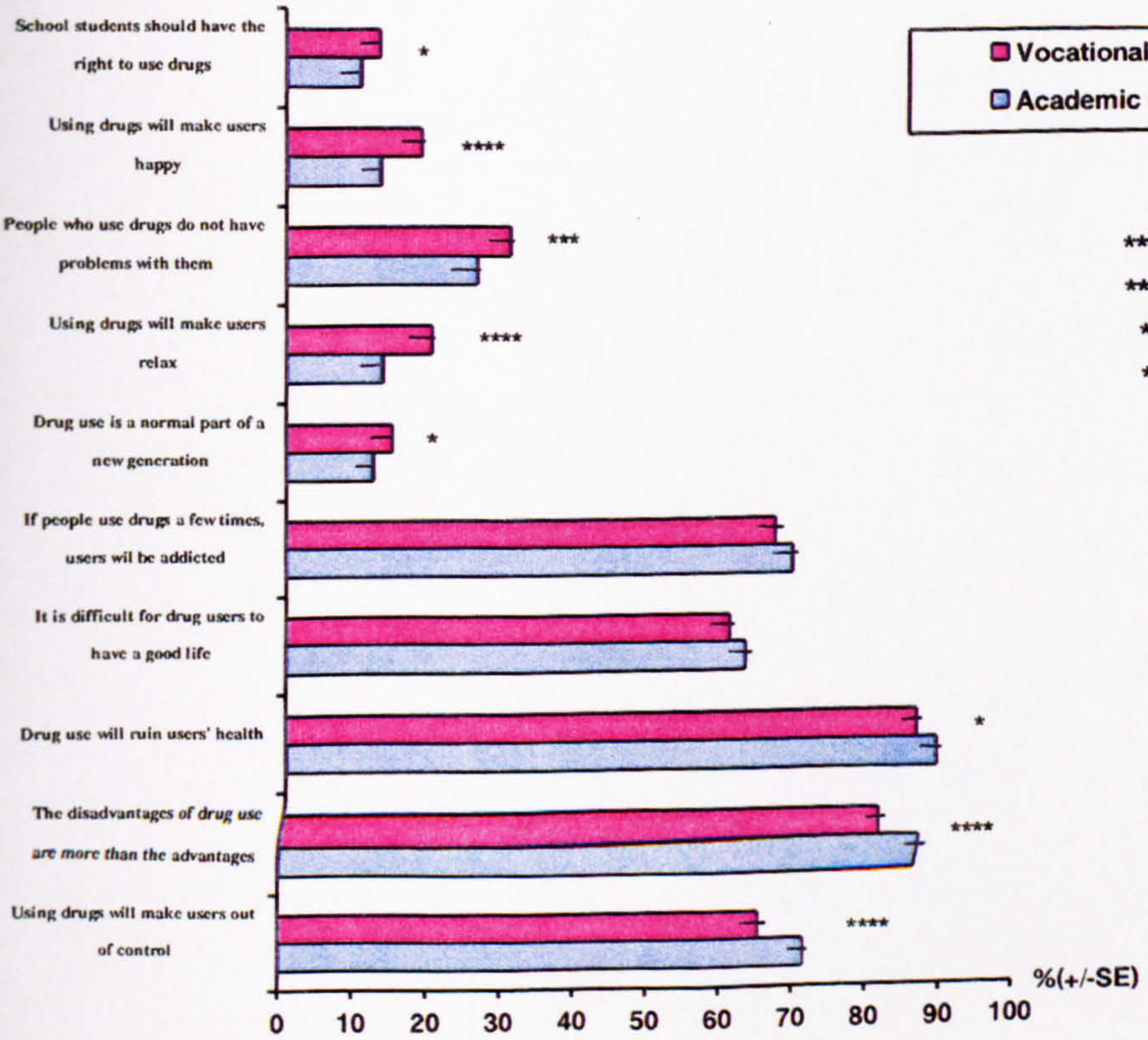
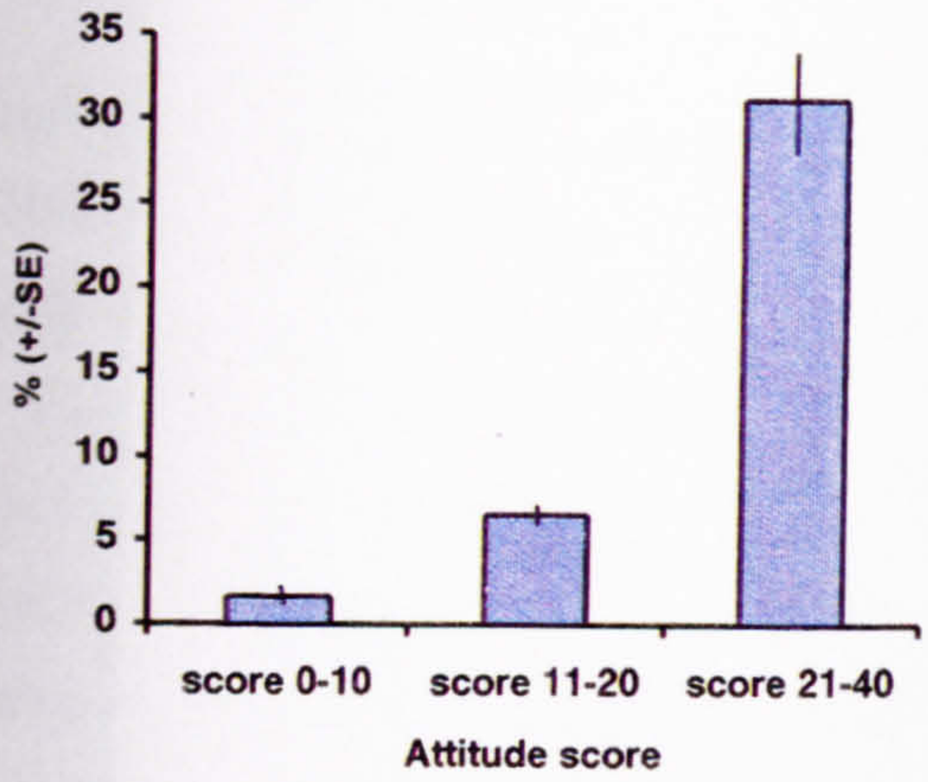


Figure 7.36: Proportion of students who agreed with statements about illegal drug use, compared between academic and vocational school students.



A positive association was found between the prevalence of illegal use and attitude towards illegal drugs (x^2 (for a trend) = 297.69, p<0.001) (Figure 7.37). The mean score of attitude towards illegal drug use for current illegal drug users was significantly higher [score 18.5 (SD=5.8) for current users, score 9.9 (SD=5.6) for non-users, t= -21.37, p<0.001]. Similarly, the mean score for male students was significantly higher [score 12.4 (SD=6.2) for males, score 9.3 (SD=5.5) for females, t= 16.91, p<0.001] and the score of vocational school students [score 11.8 (SD=6.0) for vocational school students, score 10.1 *(SD=6.0) for academic school students, t= -9.29 , p*<0.001]. This attitude scale can be used as a simple test in Khon Kaen school to quickly identify group of *students* on most probable drug use without asking questions about actual behaviour.

Figure 7.37: Prevalence of illegal drug use of students who had different level of attitudinal scores towards illegal drug use



7.14 Discussion for social aspects of illegal drug use

7.14.1 Age of first use and reasons for using

Khon Kaen secondary school students (10th-12th school year) age 15-19 years who had ever used illegal drugs started to use illegal drugs at an early age from 8 to 19 years (Table 7.33). Initiating illegal drug use at such an early age can lead to further progression towards heavier drug use (177) and greater chances of long-term consequences like impaired mental or physical functions (105, 114, 141). Prevention efforts or early protection from illegal drug use should begin early and continuously, especially in years 10-12 where the vast majorities (60.0-90.0%) of students begin. Students at these ages may need short-term intensive prevention efforts while longer-term actions should concentrate on prevention in the younger years before use begins.

Among amphetamine users (the most common type of drug user), the particular reasons that contributed to the initiation of amphetamine using were "being curious to try amphetamine", "copying friends", and "being offered amphetamine". While continuing use of amphetamine was for: "being alert", "having fun", "increasing

relaxation", and "decreasing nerves" (Figure 7.14). Similarly among cannabis users, initiation of cannabis use was often because of "being curious", "copying friends", and "being offered cannabis" while continuing use of cannabis was for: "having fun", "increasing relaxation", and "decreasing sadness"(Figure 7.16). A similar pattern was apparent in solvents (Figure 7.17).

Farrell et al (1998) (146), Menares (1997) (68), Jenkins (1996) (147), and Hawkins et al (1986) (178) reported that peer influence was one factor that significantly contributed to the initiation of drug use. In addition, Barthwell et al (1995) stated that the degree to which drugs are available in community and linked risk-taking behaviour can lead to using drugs (179). The results in this study showed that "Being curious to try drugs", "Copying friends", and "Being offered drugs" were the main common reasons for using most illegal drugs the first time. Fundamentally strategies aimed at reducing the availability of drugs and reducing students' inquisitiveness through education should have a significant effect on young peoples drug use in Khon Kaen. However, these strategies (particularly the latter) may not have the same effects on those that have started using regularly.

The most common reason for using illegal drugs on further times was "having fun", except for amphetamine where "being alert" was the most common reason and "having fun" was the second most common reason. Consequently, the problems around amphetamine use may be different form other drugs, with use linked to performance either at leisure or in class. In the second of these, prevention strategies may wish to consider factors such as education around the link between drug use and poor rather than good performance in school grades (Section 7.3). For amphetamine and other drugs programs should contain the views of peers on the negative and positive effects of drugs to make the information believable. However, peer provided information (as gathered in this questionnaire) on negative effects may be useful in influencing students attitudes since use seems so strongly effected by peer pressure (Section 7.3.5).

7.14.2 Effects of using illegal drugs

The most common positive effect of amphetamine, ecstasy, and cocaine were stimulating and recreational effects (Section 7.9) while the most common effect of

other illegal drugs were recreational alone. It seems that amphetamine was not only used for stimulating working (studying) but also used for recreational purposes. In addition, amphetamine is cheaper and easier to buy than other illegal drugs, except perhaps for solvents (180). Because of the effects of amphetamine use, its cost, and availability for buying, amphetamine seems to be the most popular illegal drug among school students in Thailand. In contrast other drugs with some similar properties such as ecstasy and cocaine use were also reported as stimulating and recreational but both are very expensive and difficult to buy from dealers. As a result they were mostly used by smaller specific groups (high socio-economic status) and on certain occasions (parties, disco, etc.) (90). A change in availability and reduction in cost of these drugs in Thailand could radically increase use. At the moment prevention programs on illegal use among school students should have amphetamine use as their first priority of problems but be aware of these other drugs that might exploit the same niche.

7.14.3 Places of using illegal drugs

Using illegal drugs occurred frequently at friends' places, students' place of abode and school. In addition, popular places for using ecstasy and cocaine were parties, disco places, friends' places, and accommodation. The results support that a peers effect is still highly aligned with illegal drug use at least through the use of illegal drugs at friends' places. Similarly, Sussman et al (1998) surveyed locations of adolescent drug use by using self-report questionnaires among 413 high school students and reported that the most frequent location of drug use was in participants' accommodation, in particular in the bed room with a small group of friends (181). However, the Khon Kaen survey also identified different or preferred locations within Thailand for the use of each substance (Section 7.10). Again such information should inform prevention and harm minimisation projects both at school and in the community.

Knowing the places where students usually used illegal drugs also suggests that parents are important in preventing their children from using illegal drugs by monitoring their children at home and not allowing the use of illegal drugs. At schools, monitoring and forbidding of all substance use among school students should be more enforced to stop use and dealing in educational settings. Overall, these results support that interventions targeting this age group should be wide based including not

only schools but also the community with an orientation toward the family, the students' peers and schools. Such activities are essential if at least some individuals are to be prevented from moving onto harder drugs (112).

7.14.4 Patterns of illegal drug use

This study identified a small but significant level of harder drug use. Half of heroin users and 4.6% of amphetamine users administered these drugs by injecting (Table 7.35). These injecting users risk infection with human immunodeficiency virus, hepatitis, and other infections if they shared needles and use contaminated needles (182). Such users may require intensive rehabilitation and prevention programs with special attention paid to the additional risks associated with injecting drugs.

Another risk identified was that of multi-substance use. Measham et al (1994) studied drug use amongst 800 school students ages 14-15 years in the metropolitan North West England by using self-completion questionnaires and reported that two third (63.0%) of drug users were multi-drug users with most of multi-drug users using three or more drugs (31). In Khon Kaèn, Nearly a third of illegal drug users were multi-drug users (i.e. used more than one illegal drug) and the vast majority of multi-drug users were amphetamine and cannabis users (see Section 7.11.2). Consequently, the dangers of multi-substance use should be stressed in prevention and other educational initiatives.

7.14.5 Attitudes towards illegal drug use

In the short term one way of measuring the success or otherwise of intervention may be to examine the attitudes of students towards drug use. Attitudes can lead to particular forms of behaviours (113) and the association shown here between attitudes and behaviour was strong (Sections 7.13). Thus, the results in this study support that there was a positive association between illegal drug use and attitude towards illegal drug use (Figure 7.37). As well as helping measuring changes post interventions, the baseline information collected in this study identified males and vocational school students as having significantly higher scores of attitude towards illegal drugs (see Section 7.13.2). Illegal drug use among male and vocational school students was also higher although cause and effect involving use and attitude could not be established

here. More importantly, however it provides another measure by which to target prevention not just at those who currently use drugs but also at those with the greatest potential to begin. Thus, there were a minority of non-users who agreed that "people who use drugs do not have problems with them" (26.6%), "using drugs will make users relax" (11.8%), "using drugs will make users happy" (11.6%), "drug use is a normal part of growing up among a new generation" (10.6%), and "school students should have the right to use drugs" (3.8%) (Figure 7.34). Low et al (1996) stated that knowledge of pleasurable effects of drugs and where to obtain drugs can lead to drug use (183). Therefore, some non-users in particular those who agreed with the benefits of illegal drug use may be considered as in high-risk group who may become illegal drug users in the future.

Despite the information provided above to enable better targeted prevention, health promotion and other intervention, these results also suggest that some individuals will continue to use drugs despite being aware of their effects. While, more than half of the illegal drug users agreed that using drugs will make the user happy (72.4%) and relaxed (50.5%) (Figure 7.34) most illegal drug users (64.3%) also agreed that drug use will ruin users' health and that the disadvantages of drug use are more than the advantages. The results suggest that using only educational programs for preventing illegal drug use are not enough to stop illegal drug use. Other supplemental interventions should be used, such as restriction of use through school regulations, screening for substance use, monitoring substance use by parents and teachers, counselling and harm reduction strategies.

CHAPTER 8: CONCLUSION

Broadly, the aims of this research were to assess the epidemic of substance use in Khon Kaen, to detect indicative factors for substance use and to understand some of the social aspects of substance use among Khon Kaen secondary school students in Thailand. Throughout, substances have been considered to includes legal substance (alcohol and cigarettes) and illegal drugs (amphetamine, cannabis, solvents, opium, heroin, magic mushroom, ecstasy, cocaine, and LSD). Alcohol was the most popular substance of use amongst Khon Kaen secondary school students. Over a quarter (25.5%) was estimated to be current alcohol users. However, most (63.3%) current alcohol users were only occasional users (Table 5.1). Cigarettes were the next most popular substances. A tenth (10.3%) of Khon Kaen secondary school students were current cigarette users. Most (62.2%) current cigarette users were daily users (Table 6.1). In contrast, only one in twenty (5.3%) Khon Kaen secondary school students were currently using illegal drugs; in particular most (76.6%) current illegal drug users were amphetamine users, followed by cannabis (41.9%) and solvent users (11.7%). Very few were opium, heroin, ecstasy, cocaine, and magic mushroom users. There were no students using LSD (Section 7.1.1). Extrapolating from these estimates, approximately 16,169, 6,531, and 3,361 Khon Kaen secondary school students would be current alcohol, cigarette, and illegal drug users, respectively. The data collected also allows the number of current substance users to be calculated in different subgroups along with 95% confidence interval for the population estimations (Table 8.1).

Table 8.1: Alcohol, cigarette, and illegal drug use among Khon Kaen secondary school students according to school types, gender, and age groups with 95% confidence intervals

Subgroup	95% confidence interval for population estimates		
	Alcohol drinkers	Cigarette smokers	Illegal drug users
School types			
Academic school students	5961-7093	1735-2377	981-3697
Vocational school students	9219-10452	4134-5085	1823-2517
Gender			
Male students	11345-12687	5703-6801	2653-3477
Female students	3850-4805	263-592	230-527
Age groups			
<=15 years	815-1296	101-334	70-272
16 years	3208-4043	987-1518	550-968
17 years	4564-5520	1658-2321	780-1268
18 years	4210-5072	1654-2293	709-1167
>=19 years	1397-1959	751-1270	389-725

This substantial numbers of alcohol, cigarette, and illegal drug users among Khon Kaen secondary school students is a major concern in the long term with potential physical and mental problems requiring more treatment and reducing potential human resources (184). In the short term, additional social problems may be associated with use. Thus, alcohol and illegal drug use are both strongly associated with an increased risk of violent behaviours among adolescents such as carrying weapons, fighting, etc and criminality (185).

The results revealed that students start to use alcohol, cigarettes, and illegal drugs at earlier ages (6 years for cigarette and 7 years for alcohol, and 8 years for illegal drugs) (Table 5.24, 6.24, and 7.33). Therefore, practical intervention programs should start from primary school to avoid delay and stand the greatest chance of educating students in the dangers of using substances before they begin or even develop an inquisitive nature towards these substances. The programs should continue at higher school levels for reinforcement to help resist substance use (186). In addition, parents and teachers should be aware of substance use of early adolescents and monitor students from an earlier age to avoid and, if necessary, stop use.

With similarities in effects, it may be difficult for students to assess cigarette and illegal drugs against alcohol use in an environment where one set (drugs) is illegal, one illegal only when purchased under 18 year olds (cigarettes) and one (alcohol) where there are no restrictions on selling alcohol to young people less than 18 year olds. Moreover, beer, spirits, and alcohol are heavily advertised through all mass media in Thailand such as on television, radio and newspapers; whereas all cigarette advertisement is banned. Consequently, the messages about substance use are confused. Different legislation may however have had an effect on prevalence. Thus in this study, the prevalence of cigarette use and illegal drug use among Khon Kaen secondary school students were much less than the prevalence of alcohol use.

8.1 Academic and vocational school

The prevalence of alcohol, cigarette and illegal drug use among vocational school students were 38.3%, 17.9% and 8.3% respectively (Table 5.2, 6.2, and 7.3). These

prevalences were much higher than the prevalence of alcohol, cigarette, and illegal drug use among academic school students (17.3% for alcohol use, 5.4% for cigarette use, and 3.3% for illegal drug use). As a consequence, vocational school administers should in particular regard substance use among their students as a serious problem. The fact that vocational school students were more likely to have positive attitude towards alcohol, cigarette, and illegal drug use than academic school students (see Section 5.11, 6.11, and 7.13) supports this difference. There are a number of reasons why this difference may arise. In the academic school system students are more likely to be studying in their classroom while vocational students are likely to be often in work place practices making it is easier for the academic school systems to monitor students. In addition, academic school regulations are more restrictive. At the extreme, academic male students have to wear short trousers with short haircuts while vocational school students use long trousers (187). There will also be differences in recruitment. Students who choose to study in academic school are not ready to work after finishing secondary school because they have to study at higher level afterwards in university or college. Students who choose to study at vocational schools aim to work directly after finishing vocational study. Consequently, some vocational school students may regard themselves as more adult and reflect this in behaviours they regard as adult such as smoking cigarettes and drinking alcohol (188).

8.2 Inner-city and district students

Literature from elsewhere would suggest that inner-cities seems to have environments that relate to higher prevalences of substance use (130, 186) such as being socially deprived (overcrowding and unemployment) (189), having more venues for entertainment industries (gambling, discos, coffee shops, areas of prostitution, etc) and a variety of related social problems (190). In addition, family cohesion and social network of support for inner-city people are often weaker than in districts and because of cultural and social diversity in cities, substance users and substance sellers can often merge into the background. Similarly, in this study students who studied in inner-city area seem to have been more exposure to substance than in district areas. Results from this study also found that students in Khon Kaen inner city were more likely to use alcohol and cigarettes than student who studied in district areas (Table

5.2 and 6.2). However, the prevalence of illegal drug use among inner-city students was not significantly higher than district students; although the difference approached significance (p=0.072). This contrasts however with studies such as Kokkevi and Stefanis (1991) who reported that Greece adolescent students 14-18 years in inner city were more likely to use cigarettes and illegal drugs than in rural areas but residence was not an important determinant of the prevalence of alcohol use (95). Specifically however for academic schools, the prevalence of alcohol and cigarette use in district areas (sited by 18.4% for alcohol use and 6.8% for cigarette use) was significantly higher than academic school students in inner-city (sited by 14.8% for alcohol use and 2.3% for cigarette use; see Table 5.4 and Table 6.4. Possible reasons include academic schools in the city have more teachers, budget and equipment to monitor students (51). In fact, a greater proportion of academic school students in inner city pass the entrance examination to university (191). Better school facilities and higher academic performance of students is certainly correlated with a lower prevalence of substance use among academic school students but whether academic ability prevents substance use or results from lower usage is not answerable within this study.

8.3 Males and females – sex differences in substance use

Male students were more likely to use alcohol, cigarettes, and illegal drugs than female students. The prevalence of alcohol use was three times as high in males as in females, while, the prevalence of cigarette use and illegal drug use among males were seventeen and ten times higher than females (Table 5.2, 6.2, and 7.3). Male students had a more positive attitude towards alcohol, cigarette, and illegal drug use (see Section 5.11, 6.11, and 7.13). In Thai culture, young females are more likely to be closely controlled by family and society (192). This may support higher levels of alcohol, cigarette, and illegal drug use among male students. However, in other countries, all studies revealed that male students were more likely to use substances (alcohol, cigarette, and illegal drugs; 31, 44, 63, 84, 96, 98-99, 101-103, 120, 137-139, 154, 164) except cigarette smoking among secondary school students 15-16 years in United Kingdom in 1995 where cigarette smoking was more common among females (82). Because the prevalence of substance use among males was much higher than

females, it may be effective to have separate targeted strategies for each sex for substance prevention and cessation in schools.

8.4 Age and school year

Age was associated with the prevalence of alcohol, cigarette, and illegal drug use; the older student, the higher prevalence of use (see Table 5.2, 6.2, and 7.3). Similarly, school year level was associated with alcohol and cigarette use among Khon Kaen secondary school students; the higher the school year, the higher prevalence of alcohol and cigarette use. Surprisingly there was no association between illegal drug use and school year level (Table 7.3).

The result showed that students who were older than other students in their school year (Age for school year) were more likely to use alcohol, cigarettes, and illegal drugs (Table 5.3, 6.3, and 7.4). There are many reasons for this age for school year relationship. These older students are likely to be a selected sub group including those repeating classes and starting school late. While they are a minority however they may lead other younger students in class into use through offering substances or even generating curiosity. In their own right, and as a potential catalyst for others to use, this group need considering in prevention and cessation programs as a main target group.

8.5 The Privileged and the Poor

Fathers' occupation and fathers' education were used indirectly to represent socio-economic status. There was an association between alcohol use and fathers' occupation; students whose father had no job and whose father ran their own business were more likely to use alcohol than those whose fathers had other occupations (Figure 5.2). However, cigarette use and illegal drug use were not associated with fathers' occupation but more closely associated with fathers' education. Thus, students whose father had no degree and whose father had higher than first degree were more likely to use cigarette and illegal drug than fathers' within this educational range (Figure 6.2 and 7.2). In general however for substances the U shaped curve of most use at the extremes of society was apparent with data on socio-economic status

and substance use showing that alcohol, cigarette, and illegal drug use occur most among the privileged students (high income or higher educated family) and the poor students (father with no job or no educational degree).

Generally in Thailand, privileged group whose parents have a higher income such as through running own business or have higher than a first-degree education may have less time for their children because they spend much of their time in work or business. In addition, such students have the opportunity to more easily use substances because they receive enough money from their parents to buy them. Poor groups whose parents have no job or no education degree seem to have a lot of problems in their family such as conflicts among family member, alcohol drinking parents and low quality of life (180). Students often experience depression and may feel life is unstable. In fact, many students used substance to increase relaxation, decrease sadness, and decrease nerves. Although not the subject of this study, it is likely that the route for drug use in this group is very different from the wealthy users. Poor students will not receive enough money from their parents to buy substances but may have the opportunity to use substances from friends or through helping drug supplier to sell drugs in school. Stealing money from other people to buy substances is also an option. Similarly, White (1991) identified that those who have high and low income status seem to be more likely to use substances than other groups and this seem to be the same pattern in many countries such as USA, European countries, and North African countries. (50).

8.6 Identifying high risk group of using substances

This study points to predictive models of alcohol, cigarette and illegal drug use to identify students who had high risk (high probability) of using alcohol, cigarettes, and illegal drugs. Multivariate logistic regression was used to detect key predictors among various variables associated with substance use. Seven models of predictors were identified as socio-demographic, family, peer, school, health, behavioural/ psychological and an overall model. All of these models have high values for predicting the right classification (accuracy higher than 74%). Key predictors from any of these seven models can be used to predict the probability of substance use. If

some predictors in a model are difficult to measure such as "having sex early" and "being illegal drug users" in the behavioural / psychological model other models could be used instead. The models are summarised in Table 8.2 (a-g) which identifies high-risk students with a high probability of substance use due to having socio-demographic, family problems, substance associations in a peer context, poorer school activities, behavioural/psychological characteristics associated with use and specific health problems.

Table 8.2: Predictors of substance use among Khon Kaen secondary school students in logistic regression analysis (grey squares indicate significant relationships)

a; socio-demographic model

Predictors of substance use	Alcohol	Cigarette	Amphe -tamine	Cannabis	Solvents	Other hard drugs
Gender (Being male)						
Age (Older students)						
School type (Vocational school)						
School year (Lower school year)						
Fathers' education (No degree or Higher than first degree)						
Fathers' occupation (No job or Own business)						

Note: * All other hard drugs were male students

b: family model

Predictors of substance use	Alcohol	Cigarette	Amphe -tamine	Cannabis	Solvents	Other hard drugs
Cigarette using parent						
Alcohol using parent						
Conflict among family members						
Running away from home						
Less restrictions from parents						
Not staying with parents						

c; school model

Predictors of substance use	Alcohol	Cigarette	Amphe-tamine	Cannabis	Solvents	Other hard drugs
Average grade (Lower than average grade)						
Attention difficulty						
Truancy						

d; peer model

Predictors of substance use	Alcohol	Cigarette	Amphe-tamine	Cannabis	Solvents	Other hard drugs
Close friends use alcohol						
Close friends use cigarette						
Close friends use illegal drugs						
Students stay with friends						

e; health model

Predictors of substance use	Alcohol	Cigarette	Amphe-tamine	Cannabis	Solvents	Other hard drugs
Having a small appetite						
Coughing						
Having chest pains						

f; behavioural/psychological model

Predictors of substance use	Alcohol	Cigarette	Amphe-tamine	Cannabis	Solvents	Other hard drugs
Alcohol users						
Cigarette users						
Illegal drug users						
Going out for fun at night						
Stealing						
Having sex early						
Depression						
Risk taking						

g; overall model

Predictors of substance use among Khon Kaen secondary school students	Alcohol	Cigarette	Amphe-tamine	Cannabis	Solvents	Other hard drugs
Sex (Being male)						
Age (Older students)						
School type (Vocational school)						
Alcohol using parent						
Cigarette using parent						
Conflict among family						
Average grade (Lower than average grade)						
Truancy						
Close friends use alcohol						
Close friends use cigarette						
Close friends use illegal drugs						
Staying with friends						
Coughing						
Cigarette users						
Alcohol users						
Illegal drug users						
Going out for fun at night						
Stealing						
Having sex early						
Hurting oneself						
Depression						
Risk taking						

Note: * All other hard drugs were male students

8.7 Collecting other Student profiles

To allow such models to identify students, at an individual or group level, at high risk of using alcohol, cigarettes, and illegal drugs, information resources or students' profiles will now need to be prepared in different schools. Students' profiles should consist of as many of the predictors as possible with the most complete profiles being able to best inform appropriate counselling programmes and develop measures to control associated behaviours such as truancy, stealing and aggressive behaviour. The questionnaire and methods developed here should allow the data collection and analysis for such profiling to be undertaken in a consistent fashion. The broad basis of the data collection tool should then inform measures across the range of areas in which prevention and cessation activities can take place including in the family and community, at governmental and policy level and in work with schools.

8.8 Epidemic of amphetamine use as the major problem of substance use among Khon Kaen secondary school students

Amphetamine was firstly used for medical purposes in Thailand as a nasal decongestant, appetite suppressants (obesity treatment), and treatment for depression (169). However, many people in particular labourers and lorry drivers also use amphetamine as stimulant for maintaining long period of task performance. Amphetamine was then banned and controlled in Thailand under the drug misuse act in 1969. In the past few years, there have been substantial changes in the pattern of amphetamine use in Thailand. Oral use was most common at first, then smoking became more popular among amphetamine users because it takes less time to experience some effects. Amphetamine appears to have now changed its role and is usually used not only for maintaining long period of task performances but also for recreational purposes (193). In addition, many illegal amphetamine factories have sprung up around Thailand in particular the minority group of Red Wah in Myanmar, Bo Kaew in Laos, Korkong in Cambodia close to Thai border. All have high a high capacity to synthesise amphetamine (194). Because there are a lot of suppliers, buying amphetamine is easier and cheaper than other drugs such as heroin, opium, ecstasy, cocaine (180).

Based on the vast number of current substance users among Khon Kaen secondary school students in particular amphetamine users, but also cannabis, solvent, alcohol, and cigarette users, government and school administers would be best advised to place all substance use among school students amongst the most serious problems facing Khon Kaen school students. However, there should be supportive information stating that amphetamine use among secondary school students is the most serious single problem substance. Important facts include;

- Firstly, over three-quarters of current illegal drug users among Khon Kaen secondary school students were current amphetamine users (Section 7.1.1).
- Secondly, nearly 300,000 illegal amphetamine tablets were captured in Khon Kaen and other close provinces (Upper north-eastern police area) in 1996 increasing to over 500,000 tablets in 1997 (Table 1.3). Similarly, 23.5% of illegal drug arrests were amphetamine arrests in 1996 increasing to 43.4% in 1997 (10). The figure indicates that there is an increasing availability of amphetamine in Khon Kaen and the close provinces. It is believed that much more amphetamine is not captured by police and that this substance seeps through to school environments through markets, gas stations and entertainment places.
- Thirdly, 65.4% of drug dependence patients of North-eastern drug dependence treatment centre were amphetamine dependence patients in 1997 and this increased to 81.9% in 1998 (Table 1.5).

These figures indicate that the epidemic of amphetamine use is increasing in the school environment in this region.

8.9 Prevention and Cessation efforts for substance use

Prevention and cessation efforts for substance use among Khon Kaen secondary school students need to be based upon effective policies and strategies. Using the results of this study, the policies may be considered in five parts; preventing supply, preventing demand, surveillance activities, cessation and rehabilitation, and harm reduction.

8.9.1 Preventing supply

One of the main reasons for using alcohol, cigarettes, and illegal drugs was "being offered alcohol, cigarette, or illegal drugs". For illegal drugs, individuals who are offered illegal drugs may be students' friends in school, students' friends outside school, drug suppliers in school, or drug suppliers outside school. It is difficult for drug suppliers who are not students to sell drugs in schools, so students are often used as retail drug sellers for other students (180). Students who may have the potential to be retail drug sellers are normally senior students and include therefore students who were older for their school year or students simply in higher school year. These selling systems have in some circumstances become quite sophisticated with promotions on drug selling such as with every ten units of drug sold you will be given one unit free (90). A lot of drug using students who have not enough money to buy drugs turn to selling in their schools. In order to limit the available of drugs, there are a range of prohibitive measures already available including police action and law enforcement and school regulations the combined actions of which should help stop drug selling both inside and outside school. For cigarettes, they are a legal substance but it is illegal to sell cigarettes to young people less than 18 years. In order to limit the availability of cigarettes around school students, law enforcement should be used to restrict cigarette selling in shops to those under age.

Alcohol by comparison is even more difficult to limit in terms of availability because of its legal status. Students can buy alcohol freely and legally from outside school. In order to limit the availability of alcohol use to young people, Thai authorities may wish to follow the pathway laid down by other nations and ban by law the sale of alcohol to those under the age of 18. The rationale for implementing such a ban would be to protect the young at a time they may be vulnerable to external influences. Others however have argued that young people will still use alcohol even when the law regulation has been changed. Although, restriction of selling alcohol to young people under 18 years will not absolutely stop young people using alcohol, it may help delay young people starting alcohol use and reduce the harm from alcohol use to users and society. Perhaps the process should at least be piloted to examine the potential benefits and costs of limited prohibition.

8.9.2 Preventing demand

Results revealed that demand for substance use among school students occurred for various reasons. Reasons differed between use for the first time and continued use. (Figure 5.18, 6.18 7.14, 7.16, and 7.17). Some students used alcohol, cigarettes, and illegal drugs to decrease sadness and nerves as well as increase relaxation. The reasons for this are often social and students may be facing problems including those with family and school. One quick way to alter the perception of reality and temporarily alleviate their problems is substances. Surprisingly, some students who had never used substances had opinions in favour of alcohol, cigarette, and illegal drug use such as "using alcohol, cigarettes, and illegal drugs will make users relax and happy", "school students should have the right to use alcohol, cigarette, and illegal drugs", etc. (Figure 5.26, 6.24 and 7.34). These indicate that substance demand at all levels may not only be limited to substance users but also occur in students who have never used substances; representing as yet untouched market of users. However, attitudes imperfectly predict behaviour because behaviours and expressed attitudes are both subject to other influences such as social influences (culture, religion, law and regulation. 113). Even so, some non-users who agreed with the benefits of alcohol, cigarette, and illegal drug use may be likely to become alcohol, cigarette, and illegal drug users in the future if other influences such as school regulation, law enforcement etc are weak or interpreted as representing acceptable risk. The balance between risk and benefit is critical. It will always be difficult to eliminate demand for substance use from school students because there are many factors acting as stimuli for use. Prohibition and punishment by school regulation should be used to increase the risks from using substances above benefits for all but the most risk taking. However, such approaches alone are unlikely to work and can lead to expensive and disproportionate punishments for sometimes relatively minor offences.

A second approach is to try to change attitudes. The results show not surprisingly a clear association between attitude towards using substances and the use of substances. Consequently, programs concerned with changing attitude towards using substances may be able to reduce the perceived benefits and highlight other costs rather than increase the punishments. Substance education should be used to create social

awareness of short and long term effects of substance use, increase knowledge, change attitudes (reducing the acceptability of substance use), avoid drug experimentation, and hopefully stop substance use behaviours. Unlike ill-chosen materials and media campaigns intended to scare people away from drugs, such education must establish credibility by acknowledging the benefits and effects. The balance however is difficult in order to avoid arousing interest in the topic and encouraging individuals to try drug for themselves (158). In fact, education alone may not change behaviours (195, 196). Without alternative, past times substances will always be attractive as the only option open to some young people. Alternative activities which were not drugs directed but on schooling, leisure, and past times such as sports (197), arts, and music should be available as substitutes. Such developments require investment in leisure and recreation facilities. In all such programmes, students who are suspected to be at high-risk of substance use should be targeted for intensive prevention programs.

This study revealed many risk factors that were key predictors of alcohol, cigarette, and illegal drug use including family problems, peer associations, school performance, psychological characteristics, and risk behaviours of students (Figure 5.14, 6.14, and 7.7-7.10). Clearly, from these results and previous studies, it can be seen that substance use impinges on all aspects of society. Intensive prevention programs should involve education programmes along with counselling, family and peer programmes combined with strategies for alternative activities. More specifically the following must be undertaken: -

Educational programs:- Both high risk students and non high risk students should be educated to raise knowledge and understanding of problems around and effects of, substance use. This technique can reach a wide population of students.

Counselling program:- Students who had lower than average grade and played truant were more likely to use alcohol, cigarettes, and illegal drugs (Table 5.21, 6.21, and 7.23). Aggressive, depressive, and risk taking students were more likely to use alcohol, cigarettes, and illegal drugs (Table 5.6, 6.6, and 7.6). Students who were using any kind of substance such as alcohol, cigarettes, and illegal drugs were more

likely to use another kind of substance too (Table 5.9, 6.9, and 7.9). In addition, students who have ever had early sexual intercourse, hurt themselves, having stolen, and gone out for fun at night frequently, were more likely to use all substances (Table 5.9, 6.9, and 7.9). These students for many reasons need to receive counselling to provide psychological support, review, and monitor their progress. Such measures should include a drug related component and would also benefit students by including teaching non-drug use skills for dealing with anxiety, stress and depression.

Parent training program (avoiding pressure to use drugs):- The parent-training program should aim to make parents, at the least, aware of the profound influence their behaviour may have on their children. School staff have to work with students' parents as part of a two way exchange on information allowing parents to inform teachers about student problems and vice versa. In particular, parents should be informed about the factors that are associated with substance use among adolescents including:

- Family problems. Students who ever run away from home appear at high risk (Table 5.16, 6.16, and 7.18). Students whose parents were not staying together were also a risk factor.
- Parental role models. The proportion of current alcohol, cigarette, and illegal drug use in students whose parents were cigarette users were significantly higher (Table 5.16, 6.16, and 7.18). Also, students whose parents were alcohol users were more likely to use alcohol.
- Parental monitoring. Students whose parents were staying with them were less likely to use alcohol, cigarettes, and illegal drugs. In addition, there was a negative association between restrictions by parents and prevalence of substance use (Table 5.16, 6.16, and 7.18) in some groups.

Peer program (avoiding pressure to use drugs):- One of the most common reasons for starting substance use was to copy friends (see Section 5.7, 6.7, and 7.7). In addition, one of the most common places for using was friends' place (Section 5.10, 6.10, and 7.10). Students whose close friends were alcohol, cigarette, and illegal drug users were more likely to use alcohol, cigarettes, and illegal drugs respectively (Table 5.20,

6.19, and 7.21). Significantly higher prevalence of alcohol, cigarette, and illegal drug use were found in students who were staying with their friends (Table 5.20, 6.19, and 7.21). Many secondary school students have to stay away from their family to study in the city, in particular vocational school students, because most of vocational schools are in the inner city where they share with friends to reduce rents (188). Such students are at high risk of being influenced by peers. Negotiation skills to say no, risk assessment skills, and interpersonal and communication skill should be part of early curricula to help students turn down drugs.

8.9.3 Surveillance activities

Common places for using substances were, friends' places, students' accommodation, public places (discos, coffee shops, etc.) (see Section 5.10, 6.10, and 7.10). In addition, school places were also popular for using cigarettes and amphetamine. Some illegal drugs in particular ecstasy and cocaine were usually used in combination with activities at parties and discos. Surveillance activities in areas where students usually used substances may help to prevent substance use among school students again altering the cost – benefit equation. Parents play another important role here as the only practical surveillance within the family setting.

8.9.4 Cessation and rehabilitation programs

The results revealed that a number of Khon Kaen secondary school students were current and regular substance users. Sensible measures need developing to help catch those using in or around the school environment and to deal with those caught. The ability to search students and frequency with which this occurs presents a delicate issue in stifling supply in schools. However post exposure, if substance use is regarded as problematic or dependence has developed, referring to cessation programs and rehabilitation programs in drug treatment centres should be a recommended course of action.

8.9.5 Harm reduction

As a pragmatic measure, harm reduction (198, 199) is necessary for all substance users who are not ready to stop completely in order to reduce to a minimum the

harmful effects use. Injecting is one particular behaviour that in the absence of cessation, harm minimisation measures are essential. The results revealed that half (50.0%) of heroin users and nearly one in twenty (4.6%) of amphetamine users administered these drugs by injecting (Table 4.92). These drug-injecting users were at high risk of human immune deficiency virus exposure, hepatitis B and C, and other infections if they shared needles or used contaminated works (182). Mastro et al (1994) studied HIV-infected injection drug users in Thailand and reported that one third of injecting drug users were infected with HIV (200). Students who used illegal drugs but have never injected may still be in a high risk group because of the potential to be influenced into that route. The fact that their peer group may contain potential sexual partners with such infections represents a way only a few injectors may jeopardise the health of many children. Information on reducing harm should therefore be available to all users and cover harm related to injecting and other forms of substance use.

The case for harm minimisation is made stronger by another finding from this research. More than 60% of alcohol, cigarette, and illegal drug users agreed that substance use ruined their health (see Figure 5.26, 6.24, and 7.34) but they still used substances. This suggests that not only counselling, cessation and rehabilitation program are needed to stop using substances but also education of harm reduction is needed to reduce risk from continued substance use. Across all substances sensible measures include drugs information on toxic doses or combinations, what to do in an overdose or in the event of adverse reaction and for injecting users advice on not sharing the needles or works as well as sterilisation techniques. Smoking measures include alternatives such as nicotine chewing gum. For alcohol users, as well as sensible level advice, information on performance under the influence in situations such as driving and machine operation will also reduce potential harm.

8.10 Moving forward in Thailand

Recent school policy would suggest that policy makers through nationally policy have restricted possible prevention measures. Programs which otherwise could have informed the wider population of school students through prevention programmes

have been hampered by school regulation and other measures. Instead some schools have used a lot of their budget for student's urine testing to identify substance users and then referred them to drug dependence treatment centre with no separation of high risk groups from other who may be very occasional users. Appropriate measures should identify any group where there are high and sustained levels of use from those who may be only occasional or in some instances one off users. Identifying the high risk groups of students who have high probability to use substance together with some understanding of the social aspects and associations of substance use are necessary for policy makers to form the right policies and direct effective strategies to the right targets. This survey has provided the first comprehensive base line data on levels of substance use and their associations with various demographic and sociological student characteristics. It should help with the appropriate identification of groups at high potential risk of using and provide information with which to design the most effective educational responses to their use. For instance information on why people use various substances for the first time and why they continue using will be important in addressing the motivation to use. Information on the positive and negative effects people experience will allow educated discussion between teachers and students regarding how students may feel by equipping teachers with credible information on the effects.

What is now required is continuous epidemiological studies of substance use among school students to monitor prevalence of substance use and provide an even better understanding of its social aspects. This approach will allow assessment of any new measures to reduce substance use in Thailand. The self-reported questionnaires developed as part of these studies (in whole or in part) will be a useful tool in this process. This survey technique can be repeatedly used in longitudinal studies in order to compare and analyse trends in substance use. Already based on the results of this study projects to continue students' profiling (i.e. identify those at most risk of use) and develop effective prevention and cessation programmes for substance use have been planned and implemented in schools with the co-operation of school administers, North-eastern drug treatment centre, and researchers. Within these schools staff and researchers are responsible for building students' profiles and identifying high-risk

students. In parallel the development of prevention and cessation programmes and their operation is being carried out in partnership between schools and the North eastern drug dependence treatment centre.

CHAPTER 9: REFERENCES

1. Central Office for Civil Registration. Number of registered population. Ministry of interior. Bangkok, Thailand: Government printing, 1994: 1-5.

2. Lindblad JT. Current Trends in the Economic History of Southeast Asia. *Journal of Southeast Asia Studies* 1995 March; **26** (1): 159-168.

3. Seward V. South-East Asia in Transition. London: HMSO, 1990: 19-21.

4. Pakkasem P. Development Planning and Implementation in Thailand. In: Baldwin WL, Maxwell WD, eds. The Role of Foreigh Financial Assistance to Thailand in the 1980s. The United State of America: D.C.Heath and Company, 1975: 6-19.

5. Leelakulthanit O, Day RL. Quality of life in Thailand. *Social Indicators Research* 1992 Aug; **27** (1): 41-57.

6. Spielmann S. The family in Thailand and drug demand reducton: problems of urban Thai society in transition. *Bull Narc* 1994; **46** (1): 45-66.

7. Thanachaiwiwat V. Controlled substance acts in Thailand from 1976-1996. Bangkok: Visut-orathai, 1995: 276-285.

8. Thai Development Research Institute. Estimating the number of drug abusers in Thailand. In: Northeastern office of narcotic control. The five-year plan of drug misuse control (1997-2001). Khon Kaen: Government printing, 1996: 7-9.

9. Ministry of Public Health. Drug addict treatment and rehabilitation. Bangkok, Thailand: Government printing, 1997: 1-3.

10. Northeastern Police Office. Report of northeastern police region on drug arrests. In: Northeastern office of narcotic control. Policy of drug misuse control. Khon Kaen, Thailand: Government printing, 1997: 15-18.

11. Northeastern Office of Narcotic Control. The situation of drug misuse problems in the Northeastern region: Proceeding of master Plan of Drug Misuse Control in the Northeastern Region. Khon Kaen, Thailand: Government printing, 1996: 1-13.

12. Northeastern Office of Narcotic Control. Report on drug abuse in each province in Northeastern region 1994. Khon Kaen, Thailand: Government printing, 1994: 10-11.

13. Division of Planning and Evaluation. Khon Kaen Provincial Public Health Office. Annual Report of Public Health in Khon Kaen. Khon Kaen, Thailand: Government printing, 1996: 23-25.

14. Northeastern Drug Dependence Treatment Centre. Report on drug dependent patients 1997. Khon Kaen, Thailand: Government printing. 1997.

15. Fuller PG, Cavanaugh RM. Basic assessment and screening for substance abuse in the pediatrician's office. *Pediatric Clinics of North America* 1995 April; 42 (2): 295-315.

16. Hays RD, Revetto JP. Peer cluster theory and adolescent drug use: A reanalysis. *J. Drug Education* 1990; 20 (3): 191-198.

17. Yeaworth RC, McNamee MJ, Pozehl B. The adolescent life change event scale: Its development and use. *Adolescent* 1992 Winter; 27 (108): 782-802.

18. McDonald RM, Towberman DB. Psychosocial correlates of adolescent drug involvment. *Adolescent* 1993 Winter; 28 (112): 924-936.

19. Research and Development Department, Thai Board Office of Narcotic Control. Dealing with substance abuse. Bangkok: Government printing. 1998: 19-21.

20. Drug Dependence Treatment Department, Thai Board Office of Narcotic Control. Report on drug dependent patients in Thailand. In: Educational Department, Ministry of education. Guideline for prevention and problem solving in substance use for non school academic. Bangkok: Karn Sasana printing, 1995: 3-5.

21. Wada K, Fukui S. Prevalence of volatile solvent inhalation among junior high school students in Japan and background life style of users. *Addiction* 1993 Jan; 88 (1): 89-100.

22. Wada K, Fukui S. Prevalence of tobacco smoking among junior high school student in Japan and background life style of smokers. *Addiction* 1994 Mar; 89 (3): 331-343.

23. Juon HS, Shin Y, Nam JJ. Cigarette Smoking among Korean Adolescents: Prevalence and Correlates. *Adolescence* 1995 Fall; 30 (119): 631-642.

24. Flisher AJ, Ziervogel CF, Chalton DO, et al. Risk-taking behaviour of Cape Peninsula high-school students: Part V. Drug use. *S Afr Med J* 1993 Jul; 83 (7): 483-485.

25. Eide AH, Acuda SW. Drug Use among Secondary School Students in Zimbabwe. *Addiction* 1995 Nov; 90 (11): 1517-1527.

26. Kuria MW. Drug abuse among urban as compared to rural secondary schools students in Kenya. *East Afr Med J* 1996 May; 73 (5): 339.

27. Kandel DB, Davies M. High School Students Who Use Crack and Other Drugs. *Arch Gen Psychiatry* 1996 Jan; 53: 71-80.

28. Vega WA, Zimmerman RS, Warheit GJ, et al. Risk factors for adolescent drug use in four ethnic and racial groups. *Am J Public Health* 1993 Feb; 83 (2): 185-189.

29. Alexander B. Alcohol abuse in adolescents. *Am Fam Physician* 1991; 43: 527-532.

30. Gilvarry E, McCarthy S, McArdle P. Substance use among schoolchildren in the north of England. *Drug Alcohol Depend* 1995 Mar; 37 (3): 255-259.

31. Measham F, Newcombe R, Parker H. The normalization of recreational drug use amongst young people in nort-west England. *Br J Social* 1994 Jun; 45 (2): 287-312.

32. Esmail A, Meyer L, Pottier A, et al. Deaths from volatile substance abuse in those under 18 years: Results from a national epidemiological study. *Arch Dis Child* 1993; 69 (3): 356-360.

33. Villalbi JR, Nebot M, Ballestin M. Adolescents faced with addictive substance: tobacco, alcohol and noninstitutionalized drugs. *Med Clin Barc* 1995 May; 104 (20): 784-788.

34. Konings E, Dubois AF, Narring F, et al. Identifying adolescent drug users: results of a national survey on adolescent health in Switzerland. *J Adolesc Health* 1995 Mar; 16 (3): 240-247.

35. Nemeth J, Swaim RC, Katona E, et al. Substance use among Hungarian students. *Int J Addict* 1994 Sep; 29 (11): 1443-1467.

36. Department of Medical Sciences, Ministry of Public Health. The survey of amphetamine use among school students. Bangkok, Thailand: Government Printing, 1996: 1-3.

37. Patton LH. Adolescent substance abuse, Risk factors and protective factors. *Pedriatic Clinics of North America* 1995 April; 42 (2): 283-293.

38. Bailey GW. Current perpectives on substance abuse in youth. *J Am Acad Child Adolesc Psychiatry* 1989; 28 (2): 151-162.

39. Samuels DJ, Samuels M. Low self-concept as cause of drug abuse. *Journal of Drug Educat* 1974 Win; 4 (4): 421-438.

40. Huba GJ, Wingard JA, and Bentler PM, Applications of theory of drug use to prevention programs. *J Drug Educ* 1980; 10: 414-430.

41. Khantzian EJ. The self-medication hypothesis of addictive disorders: focus on heroin and cocaine dependence. *Am J Psychiatry* 1985; 142: 1259-1264.

42. Oetting ER, Beauvais F. Peer cluster theory, socialization characteristics, and adolescent drug use: A path analysis. *Journal of Counseling Psychology* 1987; 34: 205-213.

43. Jessor R, Jessor S. Problem behavior and psychosocial development: A longitudinal study of youth. New York: Academic Press, 1977: 17-41, 71-93.

44. Walter HJ, Vaughan RD, Cohall AT. Comparison of three theoretical models of substance use among urban minority high school students. *J Am Acad Child Adolesc Psychiatry*. 1993 Sep; 32 (5): 975-981.

45. Rassool GH. Substance use and miuse: nature, context and clinical interventions. London: Blackwell Science Ltd., 1998: 20-23, 27-37, 38-52.

46. Grinspoon L, Headblom P. The speed culture amphetamine use and abuse in America. Cambridge, Messachusetts: Harvard University Press, 1976: 112-148.

47. Lowinson JH, Ruiz P, Millman RB. Substance abuse: A comprehensive textbook, third edition. Baltimore : Williams and Wilkins, 1997: 119-223.

48. Hofmann FG, Hofmann AD. A handbook on drug and alcohol abuse: the biomedical aspects. New York, London: Oxford University Press, 1975: 68-90.

49. Galanter M, Kleber HD. Textbook of substance abuse treatment, second edition. Washington DC: American Psychiatric Press Inc., 1999: 3-39, 165-195.

50. White JM. Drug dependence. New Jersey: Prentice-Hall, Inc., 1991: 8-52, 70-75, 225-227.

51. Khon Kaen Provincial Educational Office, Ministry of Education. The annual report of schools in Khon Kaen 1997. Khon Kaen, Thailand: Government Printing, 1997.

52. Yamane T. Elementary Sampling Theory. Englewood Cliffs, United State of America: Prentice-Hall Inc., 1967: 310-322.

53. Mendenhall W, Ott L, Scheaffer RL. Elementary Survey Sampling. California: Wadsworth Publishing Company, 1971: 76-87, 139-141.

54. Office of the Under-Secretary of Education Ministry, Ministry of Education, Thailand. The annual report of education. Bangkok: Government printing, 1996.

55. Education Department, Ministry of Education. Prevention and problem solving for drug use in secondary schools. Bangkok: Karn Sasana printing, 1997: 15-47.

56. Summers GF. Attitude Measurement. London: Kershaw Publishing Company Ltd, 1997: 80-99, 149-158, 227-235.

57. Lemon N. Attitudes and their measurements. London: B.T. Batsford Ltd, 1973. 150-185.

58. Carmines EG, Zeller RA. Reliability and Validity Assessment. Beverly Hills / London: SAGE publications, 1995: 43-51.

59. Central Office for Civil Registration. Ministry of interior. Registered population. Bangkok, Thailand: Government printing. 1997: 1-10.

60. Division of Planning and Evaluation. Khon Kaen Provincial Public Health Office. Annual report of public health in Khon Kaen. Khon Kaen, Thailand: Government printing, 1997: 9-17.

61. Medical Service Department, Ministry of Public Health and Institute of Health Research, Chulalongkorn University. Statistical report: drug dependence information system treatment population. Bangkok: Chulalongkorn University Printing. 1997.

62. Morrison SF, Rogers PD, Thomas MH. Alcohol and Adolescents. *Pediatric Clinics of North America*. 1995 April; **42** (2): 371-385.

63. Madianos MG, Gefou-Madianou D, Richardson, et al. Factors affecting illicit and licit drug use among adolescents and young adults in Greece. *Acta Psychiatr Scand* 1995: **91** : 258-264.

64. Black MM, Richardo IB. Drug use, Drug Trafficking, and Weapon Carrying among Low-income, African-American, Early Adolescent Boys. *Pediatrics* 1994 June; **93** (6): 1065-1072.

65. Durant RH, Escobedo LG, and Heath GW. Anabolic-Steroid Use, Strenth Training, and Multiple Drug Use Among Adolescents in the United States. *Pediatrics* 1995 July; **96** (1): 23-28.

66. Hawthrone G. Preteenage drug use in Australia: the key predictors and school-based drug education. *J Adolesc Health* 1997 May; **20** (5): 384-395.

67. Gascon Jimenez FJ, Jurado Porcel A, Lora Cerezo N, et al. Alcohol consumption and environmental influence among school children. *An Esp Pediatr*. 1997 Jul; **47** (1): 42-45.

68. Menares J, Thiriot E, Aguilera-Torres N. Factors related to the potential risk of trying an illicit drug among high school students in Paris. *Eur-J-Epidemiol* 1997 Oct; **13** (7) : 787-793.

69. Perez-Bouchard L, Johnson JL, Ahren A. Attributional style in children of substance abusers. *Am J Drug Alcohol Abuse* 1993; **19**: 475-489.

70. Czechowicz D. Adolescent alcohol and drug abuse and its consequences. *Am J Drug alcohol abuse* 1988; **14**: 189-197.

71. Li X, Fang X, Stanton B, et al. The rate and pattern of alcohol consumption among Chinese adolescents. *J Adolesc Health* 1996 Nov; **19** (5): 353-361.

72. Roger PD, Adger H. Alcohol and adolescents. *Adolescent Medicine: State of the Art Review* 1993; 4: 295-303.

73. O'Malley PM, Johnston LD, Bachman JG. Adolescent substance use; Epidemiology and Implications for Public Policy. *Pediatric Clinics of North America* 1995 April; 42 (2): 242-259.

74. Denny RC. Alcohol and Accidents. Cheshire: Sigma Press, 1986: 43-58.

75. Yamada T, Kendix M. The impact of alcohol consumption and marijuana use on high school graduation. *Health Econ* 1996 Jan-Feb; 5 (1): 77-92.

76. Yarnold BM. The use of alcohol by Miami's adolescents 1992. *J Drug Educ* 1998; 28 (3): 211-233.

77. Epsein JA, Botvin GJ, Diaz T, et al. The role of social factors and individual characteristics in promoting alcohol use among inner-city minority youths. *J Stud Alcohol* 1995 Jan; 56 (1): 39-46.

78. Urberg KA, Degirmencioglu SM, Pilgrim C. Close friend and group influence on adolescent cigarette smoking and alcohol use. *Dev Psychol* 1997 Sep; 33 (5): 834-844.

79. Yang MS, Yang MJ, Liu YH, et al. Prevalence and related risk factors of licit and illicit substances use by adolescent students in southern Taiwan. *Public Health* 1998 Sep; 112 (5): 347-52.

80. Miller P. Family structure, personality, drinking, smoking and illicit drug use: a study of UK teenagers. *Drug Alcohol Depend* 1997 Apr; 45 (1-2): 121-129.

81. Martinez AJ, Garcia GJ, Domingo GM. The consumption of alcohol, tobacco and drugs in adolescents. *Aten Primaria* 1996 Oct; 18 (7): 383-385.

82. Miller PM, Plant M. Drinking, Smoking, and Illicit drug use among 15 and 16 year olds in the United Kingdom. *BMJ* 1996 Aug 17; 313 (7054): 394-397.

83. Michaud PA, Delbos PI, Narring F. Silent dropouts in health serveys: are nonrespondent absent teenagers different from those who participate in school-based health surveys ? *J Adolesc Health* 1998 Apr; 22 (4): 326-333.

84. Sussman S, Dent CW, Galaif ER. The correlates of substance abuse and dependence among adolescents at high risk for drug abuse. *J Subst Abuse* 1997; 9: 241-255.

85. Ariza CC, Nebot AM. Alcohol consumption in schoolchildren. *Med Clin Barc* 1995 Oct; 105 (13): 481-486.

86. Matsushita S, Suzuki K, Higuchi S, et al. Alcohol and substance use among Japanese high school students. *Alcohol Clin Exp Res* 1996 Apr; 20 (2): 379-383.

87. Weinbender ML, Rossignol AM. Lifestyle and risk of premature sexual activity in a high school population of Seventh-Day Adventists. *Adolescence* 1996 Summer; 31 (122): 265-281.

88. Tubman JG, Windle M, Windle RC. Cumulative sexual intercourse patterns among middle adolescents: problem behavior precusors and concurrent health risk behaviors. *J Adolesc Health* 1996 Mar; 18 (3): 182-191.

89. Casper RC, Belanoff J, Offer D. Gender differences, but no racial group difference, in self-reported psychiatric symptoms in adolescents. *J Am Acad Child Adolesc Psychiatry* 1996 Apr; 35 (4): 500-508.

90. Department of Prevention and Solving Narcotic Problems. Thai Board Office of Narcotic Control. Guideline for dealing with narcotic problems. Bangkok: Government printing, 1998.

91. Newcombe R. The reduction of drug-related harm: A conceptual framework for theory practice and research. In: O'hare PA, Newcombe R, Matthews A, et al. eds. The reduction of drug-related harm. London, New York: Routledge. 1992: 1-14.

92. Munro BH, Batten E. Statistical methods for health care research. United State of America: J.B. Lippincott Company, 1986: 229-244.

93. Scherer K, Mengistu D, Meyer G, et al. Alcohol in Munich secondary school students: A study for dissemination of experiences, knowledge, attitude and behavior. *Gesuundheitswesen* 1996 Oct; 58 (10): 533-537.

94. Soyibo K, Lee MG. Use of alcohol, tobacco, and non-precription drugs among Jamaican high school students. *West Indian Med J* 1997 Dec; 46 (4): 111-114.

95. Kokkevi A, Stefanis C. The Epidemiology of Licit and Illicit Substance Use among High School Students in Greece. *Am Journal Public Health* 1991 Jan; 81 (1): 48-51.

96. Warner LA, Kessler RC, Hughes M, et al. Prevalence and correlates of drug use and dependence in the United States. *Arch Gen Psychiatry* 1995; 52: 219-229.

97. Ungemack JA, Hartwell SW, Babor TF. Alcohol and drug abuse among Connecticut youth: implications for adolescent medicine and public health. *Conn Med* 1997 Sep; 61 (9): 577-585.

98. Potthoff SJ, Beringer LH, Skay CL, et al. Dimensions of risk behaviors among American Indian Youth. *Arch Pediatr Adolesc Med* 1998 Feb; 152 (2): 157-163.

99. Shope JT, Copeland LA, Maharg R, et al. Effectiveness of a high school alcohol misuse prevention program. *Alcohol Clin Exp Te* 1996 Aug; **20** (5): 791-798.

100. Treiman KA, Beck KH. Adolescent gender differences in alcohol problem behaviors and the social contexts of drinking. *J Sch Health* 1996 Oct; **66** (8): 299-304.

101. Eide AH, Acuda SW. Adolescents'drug use in Zimbabwe:comparing two recent studies. *Cent Afr J Med* 1996 May: **42** (5): 128-135.

102. Parrilla IC, Moscoso MR, Velez M, et al. Internal and external environment of the Puerto Rican adolescent in the use of alcohol, drug and violence. *Bol Asoc Med P R* 1997 Jul-Sep; **89** (7-9): 146-149.

103. Rogers A, Adamson JE, McCarthy M. Variations in health behaviours among inner city 12 year olds from four ethnic groups. *Ethn Health* 1997 Nov; **2** (4): 309-316.

104. Valleman R. Counselling for alcohol problems. London: SAGE Publication Ltd, 1992: 1-17.

105. Winger G, Hofmann FG, Woods JH. A Handbook on Drug and Alcohol Abuse (the biomedical aspects). New York: Oxford University Press, 1992: 60-72.

106. Poley W, Lee G, Vibe G. Alcohol Treatment Manual. New York: Gardner Press, 1979: 17-31.

107. Paton A. ABC of Alcohol, second edition. London: BMJ, Tavistock Square, 1988: 18-19.

108. Winnington J, Rassool GH. Alcohol and alcohol related problem. In: Rassool GH, ed. Substance use and misuse: Nature, Context and Clinical interventions. Oxford: Blackwell Sciences, 1998: 54-67.

109. Hawkins JD, Graham JW, Maguin E, et al. Exploring the effects of age of alcohol use initiation and psychosocial risk factors on subsequent alcohol misuse. *J Stud Alcohol* 1997 May; 58 (3): 280-290.

110. Warren CW, Kam L, Small ML, et al. Age of initiating selected health risk behaviors among high school students in the United States. *J Adolesc Health* 1997 Oct; **21** (4): 225-231.

111. Wada K, Price RK, Fukui S. Reflecting adult drinking culture: prevalence of alcohol use and drinking situations among Japanese junior high school students in Japan. *J Stud Alcohol* 1998 Jul; **59** (4): 381-386.

112. Botvin GJ. Drug abuse preventive in school setting. In: Botvin GJ, Schinke S, Orlandi MA. (eds). Drug abuse prevention with multiethnic youth. London: SAGE Publications. 1995: 169-192.

113. Myers DG. Social psychology, fourth edition. New York: McGraw-Hill, Inc, 1993: 111-148.

114. Gilman AG, Rall TW, Nies AS, et al. Goodman and Gilman's Pharmacological Basis of Therapeutics, 8th ed. New York: Pergamon Press, 1990: 522-573.

115. Burke V, Milligan RA, Berlin LJ, et al. Clustering of health-related behaviors among 18-year-old Australians. *Prev Med* 1997 Sep-Oct; 26 (5): 724-733.

116. Swadi H. Relative risk factors in detecting adolescent drug abuse. *Drug Alcohol Depend* 1992 Feb; 29 (3): 253-254.

117. Abiodun OA, Adelekan ML, Ogunremi OO, et al. Psychosocial correlates of alcohol, tobacco and cannabis use amongst secondary school students in Ilorin, Nigeria. *West Afr J Med* 1994 Oct-Dec; 13 (4): 213-217.

118. Epps RP, Manley MW, Glynn TJ. Tobacco use among adolescents. *Pediatric Clinics of North America* 1995 April; 42 (2): 389-401.

119. Padgett DI, Selwyn BJ, Kelder SH. Ecuadorian adolescents and cigarette smoking: a cross-sectional survey. *RePanam Salud Publica* 1998 Aug; 4 (2): 87-93.

120. Meijer B, Branski D, Knol K, et al. Cigarette smoking habits among schoolchildren. *Chest* 1996 Oct; 110 (4): 921-926.

121. Patton GC, Carlin JB, Coffey C, et al Depression, anxiety, and smoking initiation: a prospective study over 3 years. *Am J Public Health* 1998 Oct; 88 (10): 1518-1522.

122. Ahsan H, Underwood P, Atkinson D. Smoking among male teenagers in Dhaka, Bangladeah. *Prev Med* 1998 Jan-Feb; 27 (1): 70-76.

123. Lam TH, Chung SF, Betson CL, et al. Tobacco advertisement: one of the strongest risk factors for smoking in Hong Kong students. *Am J Prev Med* 1998 Apr; 14 (3): 217-223.

124. Hann N, Asghar A, Owen W, et al. Smoking: high hazards in high school. *J Okla Stat Med Assoc* 1995 Jun; 88 (6): 247-251.

125. Oh H, Yamazaki Y, Kawata C. Prevalence and a drug use development model for the study of adolescent drug use in Japan. *Nippon Koshu Eisei Zasshi* 1998 Sep; 45 (9): 870-882.

126. Flisher AJ, Ziervogel CF, Chalton DO, et al. Risk-taking behaviour of Cape Peninsula high school students. Part x. Multivariate relatioships among behaviours. *S Afr Med J* 1996 Sep; **86** (9): 1094-1098.

127. Coogan PF, Adam M, Geller AC, et al. Factors associated with smoking among children and adolescents in Connecticut. *Am J Prev Med* 1998 Jul; **15** (1): 17-24.

128. Woods ER, Lin YG, Middleman A, et al. The associations of suicide attempts in adolescents. *Pediatrics* 1997 June; **99** (6): 791-796.

129. Lam TH, Chung SF, Betson CL, et al. Respiratory symptoms due to active and passive smoking in junior secondary school students in Hong Kong. *Int J Epidemiol* 1998 Feb; **27** (1): 41-48.

130. The Advisory Council on the Misuse of Drugs. Home office. Drug misuse and the environment. London: The Stationery Office, 1998: 29-42.

131. Office of the Priminister, Royal Thal Government. Thailand in the 90s. Bangkok: Victory Power Point Corp., Ltd., 1991: 55-69.

132. Setter C, Peter R, Siegrist J, et al. Impact of school and vocational education on smoking behaviour: results from a large-scale study on adolescents and young adults in Germany. *Soz Praventivmed* 1998; **43** (3): 133-140.

133. Muza GM, Bettiol H, Muccillo G, et al. The consumption of psychoactive substances by adolescents in schools in Ribeirao Preto. *Rev Sauda Publica* 1997 Feb; **31** (1): 21-29.

134. Stanton WR, Lowe JB, Gillespie AM. Adolescents' experiences of smoking cessation. *Drug Alcohol Depend* 1996 Dec 2; **43** (1-2): 63-70.

135. Ariza CC, Nebot AM. The factors ssociated with tobacco use in a sample of schoolchildren at the primary and secondary levels. *Gac Sanit* 1995 Mar-Apr; **9** (47): 101-109.

136. Byrd RS, Weitzman M, Doniger AS. Increased drug use among old-for-grade adolescents. *Arch Pediatr Adolesc Med* 1996 May; **150** (5): 470-476.

137. Wiecha JM. Differences in patterns of tobacco use in Vietnamese, African-American, Hispanic, and Caucasian adolescents in Worcester, Massachusettes. *Am J Prev Med*. 1996 Jan-Feb; **12** (1): 29-37.

138. Ye G. Health promotion of adolescents. *Coll Antropol* 1997 Jun; **21** (1): 93-100.

139. Adelekan ML, Ndom RJ. Trends in prevalence and pattern of substance use among secondary school pupils in Ilorin, Nigeria. *West Afr J Med* 1997 Jul-Sep; **16** (3) : 157-164.

140. Osol A. Reminton's Pharmaceutical Sciences, 16th ed. Easton, Pa: Mack Publishing Company, 1990: 1287-1301.

141. Comerri GD, MacDonald DI. Prevention of substance abuse in children and adolescents. *Adolescent Medicine* 1990; 1 (1): 127-143.

142. Najem GR, Batuman F, Smith AM, et al. Patterns of smoking among inner-city teenagers: smoking has a pediatric age of onset. *J Adolesc Health* 1997 Mar; 20 (3): 226-231.

143. Zhu BP, Liu M, Shelton D, et al. Cigarette smoking and its risk factors among elementary school students in Beijing. *Am J Public Health* 1996 Mar; 86 (3): 368-375.

144. Barton J. Young teenagers and smoking in 1997: a report of the key findings from the teenage smoking attitudes survey carries out in England. London: The Health Education Authority, 1997: 12-15.

145. Adelekan ML, Gowers SG, Singh D. Substance use among secondary school pupil in Blackburn Borough. *Drug Education Prevention and Policy* 1994; 1 (2): 111-120.

146. Farrell AD, White KS. Peer influences and drug use anong urban adolescent: family structure and parent-adolescent relationship as protective factors. *J Consult Clin Psychol* 1998 Apr; 66 (2): 248-258.

147. Jenkins JE. The influence of peer affiliation and student activities on adolescent drug involvement. *Adolescence* 1996 Summer; 31 (122): 297-306.

148. Steinberg L, Fletcher A, Darling N. Parental monitoring and peer influences on adolescent subatance use. *Pediatrics* 1994 Jun; 93 (6): 1060-1064.

149. Eide AH, Acuda SW. Cultural orientation and use of cannabis and inhalants among secondary school children in Zimbabwe. *Soc Sci Med* 1997 Oct; 45 (8): 1241-1249.

150. Yarnold BM. Use of inhalants among Miami's public school students, 1992. *Psychol Rep* 1996 Dec; 79 (3): 1155-1161.

151. Florenzano UR, Madrid V, Martini Y, et al. Prevalence and characteristics in the use of some toxics amongst secondary school students in Santiago, Chile. *Rev Med Chile* 1981; 109 (11): 1051-1059.

152. Carlini CB, Carlini EA. The use of solvents and other drugs among children and adolescents from a low socioeconomic background: A study in Sao Paulo, Brazil. *International Journal of the Addictions* 1988: 23 (1-1): 1145-1156.

153. Rob M, Reynolds I, Finlayson PF. Adolescent marijuana use: risk factors and implications. *Aust N Z J Psychiatry 1990* Mar; 24 (1): 45-56.

154. Sutherland I, Willner P. Patterns of alcohol, cigarette and illicit drug use in English adolescents. *Addiction* 1998 Aug; 93 (8): 1199-1208.

155. Resnick MD, Bearman PS, Blum RW, et al. Protecting adolescents from harm. Finding from the national longitudinal study on adolescent health. *JAMA* 1997; 278 (10): 823-832.

156. Felts WM, Chernier T, Barnes R. Drug use and suicide ideation and behavior among North Carolina public school students. *Am J Public Health* 1992 Jun; 82 (6): 870-872.

157. Wills S. Drugs of abuse. London: The Pharmaceutical Press, 1997: 61-74, 81-95.

158. Ghodse H. Drugs and Addictive Behaviour: A guide to treatment. Oxford: Blackwell Science Ltd., 1995: 1-21.

159. Kann L, Kinchen SA, WilliamS BI, et al. Youth risk behavior surveillance, United States, 1997. *Mor Mortal Wkly Rep CDC Surveill Summ* 1998 Aug; 47 (3): 1-89.

160. Coggan CA, Disley B, Patterson P, et al. Risk-taking behaviours in a sample of New Zealand adolescents. *Aust N Z J Public Health* 1997 Aug; 21 (5): 455-461.

161. Khan N, Arnott R. Substance use among rural secondary schools in Zimbabwe: Patterns and Prevalence. *Cent Afr J Med* 1996 Aug; 42 (8):223-229.

162. Abul BS, Lisk RD. Tobacco and cannabis smoking in secondary school pupils in Bo, Sierra Leone. *West Afr J Med* 1995 Jul-Sep; 14 (3): 157-160.

163. World Health Organization. Drug dependence and alcohol-related problems: A manual for community health workers with guidelines for trainers. Geneva, 1986: 1-7.

164. Odgers P, Houghton S, Douglas G. The prevalence and frequency of drug use among Western Australian metropolitan high school students. *Addict Behav* 1997 May-Jun; 22 (3): 315-325.

165. Smart RG, Stoduto G. Interventions by students in friends'alcohol, tobacco, and drug use. *J Drug Educ* 1997; 27 (3): 213-222.

166. Donnermeyer JF, Huang TC. Age and alcohol, marijuana and hard drug use. *Journal of Drug Education* 1991; 21 (3): 255-268.

167. Kandal D, Kessler RC, Margulies RS. Antecedents of adolescent initiation into stages of drug use: a developmental analysis. In: Kendal D, ed. Longitudinal Research in Drug use: Empirical finding and methodological issues. Washington DC: Hemisphere-Wiley, 1978: 73-99.

168. Madden JS. A guide to alcohol and drug dependence, second edition. Bristol, England: John Wright and Sons Ltd, 1984: 194-199.

169. Arunakul M. History of substance use in Thailand. In: Laoboriputr S, ed. Epidemic of amphetamine in aspect of medicine and public health. Bangkok: Medical service department, Ministry of Public Health, 1998: 7-30.

170. Myles J. Treatment for amphetamine misuse in the United Kingdom. In: Klee H, ed. Amphetamine misuse: International perspectives on current trends. Amsterdam: Harwood Academic Publishers, 1997: 69-99.

171. Kall K. Amphetamine abuse in Sweden. In: Klee H, ed. Amphetamine misuse: International perspectives on current trends. Amsterdam: Harwood Academic Publishers, 1997: 215-233.

172. Van Laar MW, Spruit IP. Chasing Ecstasy: Use and Abuse of amphetamines in in the Netherlands. In: Klee H, ed. Amphetamine misuse: International perspectives on current trends. Amsterdam: Harwood Academic Publishers, 1997: 247-271.

173. Morgan P, Beck JE. The legacy and the paradox: Hidden contexts of methamphetamine use in the United States. In: Klee H, ed. Amphetamine misuse: International perspectives on current trends. Amsterdam: Harwood Academic Publishers, 1997: 135-162.

174. Darke S, Cohen J, Ross J, et al. Transitions between routes of adminstration of regular amphetamine users. *Addiction* 1994; 89: 1077-1083.

175. Leukefeld CG, Bottjes RJ, Amsel Z. Aids and intravenous drug use. New York, Washington, Philadelphia, London: Hemisphere Publishing Corporation, 1990: 7-14.

176. Department of Health, Scottish Office Home Department, Welsh Office. Drug Misuse and Dependence: Guidelines on Clinical Management. London: HMSO, 1991: 1-8.

177. Kandel D, Yamaguchi K. From beer to crack: developmental patterns of drug involvement. *Am J Public Health* 1993 Jun; 83 (6): 851-855.

178. Hawkins JD, Lishner DM, Catalano RF, et al. Childhood predictors of adolescent substance abuse: toward an empirically grounded theory. *J Child Contemp Soc* 1986; 18 (11): 11-48.

179. Barthwell AG, Hewitt W, Jilson I An introduction to ethnic and cultural diversity. *Pediatric clinics of North America* 1995 April; 42 (2): 431-451.

180. Department of Prevention of Substance Misuse, Thai Board office of narcotic control. Hand book of dealing with substance use in educational institution. Bangkok: Government printing, 1998: 2-4.

181. Sussman S, Stacy AW, Ames SL, et al. Self-reported high-risk locations of adolescents drug use. *Addict Behav* 1998 May-Jun; 23 (3): 405-411.

182. Banks A, Waller TAN. Drug misuse: A practical handbook for GPs. Oxford: Blackwell Scientific Publications, 1988.

183. Low WY, Zulkifli SN, Yusof K, et al. The drug abuse problem in Peninsular Malaysia: parent and child differences in knowledge, attitudes, and perceptions. *Drug Alcohol Depend* 1996 Oct; 42 (2): 105-115.

184. Ellickson PL, Bell RM, McGuigan K. Preventing adolescent drug use: long-term results of a junior high school program. *Am J Public Health* 1993 June; 83 (6): 856-861.

185. Dukarm CP, Byrd RS, Auinger P, et al. Illicit substance use, gender, and the risk of violent behavior among adolescents. *Arch Pediatr Adolesc Med* 1996 Aug; 150 (8): 797-801.

186. Bless R, Korf DJ, Freeman M. Open drug scences: a cross-national comparison of concepts and urban strategies. *European Addiction Research* 1995; 1 (3): 128-138.

187. Education Department, Ministry of Education. School regulation. Bangkok, Thailand: Government printing, 1997.

188. Education Department, Ministry of Education. Prevention and problem solving for drug use in vocational school. Bangkok: Karn Sasana printing, 1997: 13-16.

189. Parker H, Newcombe R, Bax X. The new heroin users: prevalence and chalacteristics in Wirral, Merseyside. *British Journal of Addiction* 1987; 82: 147-157.

190. Dunlap E, Johnson BD. The setting for the crack era: macro forces and micro consequences. *Journal of Psychoactive Drugs* 1992; 24 (4): 307-321.

191. Planning and Development Department, Khon Kaen provincial education office. Annual report of Khon Kaen provincial education. Khon Kaen: Government printing, 1998.

192. Education Department, Ministry of Education. Hand book for administration in prevention of drug use in educational institutes. Bangkok: Karn Sasana printing, 1997: 8-11.

193. Laoboriputr S. Crisis and solution of amphetamine use. Bangkok: Medical service department, Ministry of Public Health, 1999: 10-22.

194. Thai Board Office of Narcotic Control, Priminister office. Report on substance abuse in Thailand. Bangkok: Government printing, 1997: 5-9.

195. Botvin GJ, Dusenbury L, Tortu S, et al. Preventing adolescent drug abuse through a multimodal cognitive-behavioral approach: results of a 3-year study. *J Consult Clin Psychol* 1990; 58: 437-446.

196. Perri 6, Jupp B, Perry H, et al. The substance of youth: the place of drugs in young people's lives today. London: Joseph Rowntree Foundation, 1997: 28-30.

197. Lewandowski LM, Westman AS. Drug use and its relation to high school students' activities. *Psychol Rep* 1991; 68 (2): 363-367.

198. Kennedy J. Drug and Alcohol dependency nursing. Guildford: Biddles Ltd, 1989.

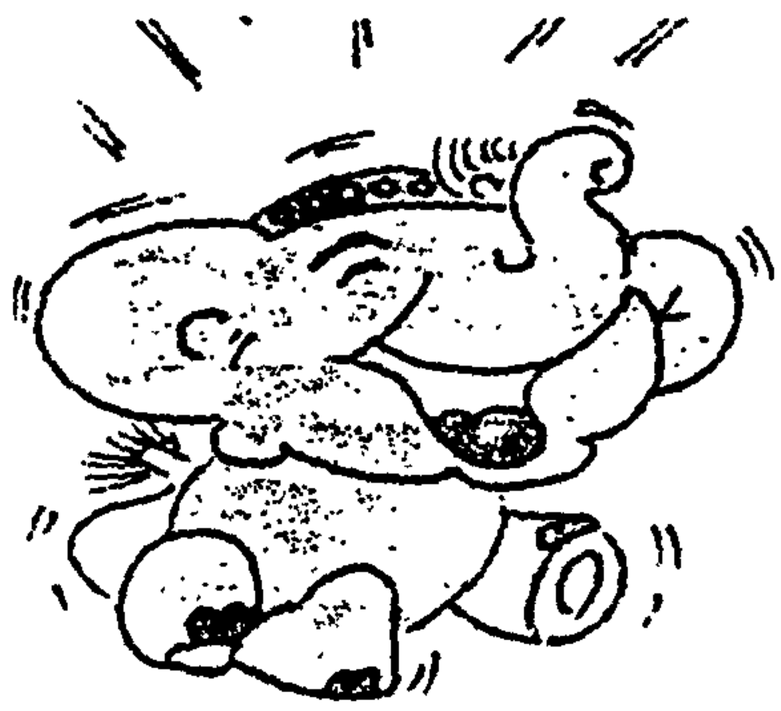
199. Maisto SA, Galizio M, Connors GJ. Drug use and abuse, second edition. New York: The Harcourt Press, 1995: 433-434.

200. Mastro TD, Kitayaporn D, et al. Estimating the number of HIV-infected injection drug users in Bangkok. *Am J Public Health* 1994 Jul; 84 (7): 1094-1099.

APPENDICES

แบบสอบถาม

THE ASTS QUESTIONNAIRE



กรุณาตอบคำถาม ซึ่งเกี่ยวกับประสบการณ์ชีวิตของตัวท่าน โดยที่ไม่ต้องระบุ ชื่อ นามสกุล ของท่านแต่ประการใด ดังนั้น โปรดได้สบายใจในการตอบคำถามตามความเป็นจริง เมื่อตอบคำถามเสร็จแล้ว กรุณาปิดผนึก แล้วนำไปใส่ในกล่องด้วยตัวของท่านเอง คำตอบที่ได้จะถกเก็บเป็นความลับและใช้เพื่องานวิจัยเท่านั้น ❖ ขอขอบคุณในความร่วมมือ มา ณ.โอกาสนี้ ❖

1.เพศ (ขีดเครื่องหมาย✓ ในกรอบที่เลือก)

❑ ชาย ❑ หญิง

2.อายุ _____ปี

3.ชั้นปีของการศึกษา

มัธยมศึกษาปีที่ ❑4 ❑5 ❑6

ปวช ❑1 ❑2 ❑3

4.คุณมีพี่น้องกี่คน ดังต่อไปนี้

จำนวนพี่ชายหรือน้องชาย _____คน

จำนวนพี่สาวหรือน้องสาว _____คน

5.ในที่พัก (บ้าน หอพัก หรือที่อาศัยอื่นๆ) ที่คุณอาศัยอยู่ในปัจจุบัน คุณพักอยู่ตัวคนเดียวหรือไม่

❑ ใช่ ❑ ไม่ใช่

↓

ถ้าไม่ใช่ คุณพักอยู่กับใคร (ตอบได้มากกว่าหนึ่งคำตอบ)

❑ บิดา ❑ มารดา ❑ พี่น้อง ❑ ญาติ

❑ เพื่อน ❑ อื่นๆ (ระบุ) .....

6.ปัจจุบัน บิดา และ มารดา ของคุณอาศัยอยู่ด้วยกันหรือไม่

❑ ใช่ ❑ ไม่ใช่

↓

ถ้าไม่ใช่, เพราะเหตุใด จึงไม่อยู่ด้วยกัน

❑ บิดาหรือมารดาทำงานห่างไกลจากครอบครัว

❑ หย่าร้าง ❑ แยกกันอยู่

❑ ตายจากกัน ❑ อื่น ๆ

7. การศึกษาสงสุดของบิดา มารดา

ⵌⵌⵌⵌⵌⵌⵌⵌⵌⵌ

บิดา		มารดา
❑	ไม่ทราบ	❑
❑	ไม่ได้เรียนหนังสือ	❑
❑	ประถมศึกษา	❑
❑	มัธยมศึกษา	❑
❑	ปริญญาตรี	❑
❑	สงกว่าปริญญาตรี	❑

8. อาชีพหลักของบิดา มารดา

●●●●●

บิดา	มารดา
❑ ไม่ทราบ	❑ ไม่ทราบ
❑ ข้าราชการ	❑ ข้าราชการ
❑ พนักงานในบริษัท/หน่วยงานเอกชน	❑ พนักงานในบริษัท/หน่วยงานเอกชน
❑ ทำธุรกิจส่วนตัว	❑ ทำธุรกิจส่วนตัว
❑ เกษตรกรรม	❑ เกษตรกรรม
❑ รับจ้างใช้แรงงาน	❑ รับจ้างใช้แรงงาน
❑ ไม่ได้ทำงาน	❑ แม่บ้าน
❑ อื่นๆ(ระบุ)	❑ อื่นๆ(ระบุ) .....
.....	.....

9.คุณคิดว่าสถานะทางด้านการเงินของ บิดา มารดา เป็นอย่างไร

❑ ไม่มีปัญหา ❑ มีปัญหาแต่ไม่มาก

❑ มีปัญหามาก ❑ ไม่ทราบข้อมูล

10.ผลการเรียน (ที่ทราบผลแล้ว) ในครั้งล่าสุด ของคุณ อยู่ในระดับ เกรดเฉลี่ยเท่าไร

❑ 1 ถึง 2 ❑ มากกว่า 2 ถึง 3 ❑ มากกว่า 3

11.เมื่อเปรียบเทียบผลการเรียนในข้อ 10 กับผลการเรียน ก่อนหน้าข้อ 10 คุณคิดว่า ผลการเรียนของคุณ ในข้อ 10 ดีขึ้น ลดลง หรือ เท่าเดิม

❑ ดีขึ้น ❑ เท่าเดิม

❑ ลดลง ❑ ไม่ทราบ

12.ในรอบ 12 เดือน ที่ผ่านมานี้ คุณได้ทะเลาะ หรือขัดแย้งกับคนในครอบครัวของคุณ (บิดา มารดา พี่น้อง) บ่อยแค่ไหน

❑ ไม่เคย ❑ บางครั้งบางคราว ❑ บ่อยๆ

13.บิดามารดาของคุณ เข้มงวด ต่อตัวคุณ แค่ไหน

❑ ไม่เข้มงวดต่อคุณเลย ❑ เข้มงวดเล็กน้อย

❑ เข้มงวดมาก ❑ เข้มงวดตลอดเวลา

14.คุณเคยหนีออกจากบ้านหรือไม่

❑ เคย ❑ ไม่เคย

↓

ถ้าเคย, คุณเคยหนีออกจากบ้านกี่ครั้งแล้ว

❑ 1 ❑ 2 ❑ 3 ❑ มากกว่า 3 ครั้ง

15.ในช่วง 12 เดือนที่ผ่านมา คุณเคยออกเที่ยวตอนกลางคืน หรือไม่

❑ เคย ❑ ไม่เคย

↓

ถ้าเคย, คุณออกเที่ยวบ่อยแค่ไหน

❑ น้อยกว่า 1 ครั้ง/สัปดาห์ ❑ 1-2 ครั้ง/สัปดาห์

❑ 3-4 ครั้ง/สัปดาห์ ❑ มากกว่า 4 ครั้ง/สัปดาห์

16.ปัจจุบัน บิดา มารดา ของคุณ สูบบุหรี่ หรือไม่

16.1 บิดา ❑ สูบ ❑ ไม่สูบ ❑ ไม่ทราบ

↓

ถ้าสูบ, ได้สูบบ่อยครั้งแค่ไหน

❑ นานๆ ครั้ง ❑ ทุกสัปดาห์ แต่ไม่ทุกวัน ❑ ทุกวัน

16.2 มารดา ❑ สูบ ❑ ไม่สูบ ❑ ไม่ทราบ

↓

ถ้าสูบ, ได้สูบบ่อยครั้งแค่ไหน

❑ นานๆ ครั้ง ❑ ทุกสัปดาห์ แต่ไม่ทุกวัน ❑ ทุกวัน

17. ปัจจุบัน บิดา มารดา ของคุณ ดื่มเหล้าหรือไม่

17.1 บิดา ❑ ดื่ม ❑ ไม่ดื่ม ❑ ไม่ทราบ

↓

ถ้าดื่ม, ได้ดื่มบ่อยครั้งแค่ไหน

❑ นานๆ ครั้ง ❑ ทุกสัปดาห์ แต่ไม่ทุกวัน ❑ ทุกวัน

17.2 มารดา ❑ ดื่ม ❑ ไม่ดื่ม ❑ ไม่ทราบ

↓

ถ้าดื่ม, ได้ดื่มบ่อยครั้งแค่ไหน

❑ นานๆ ครั้ง ❑ ทุกสัปดาห์ แต่ไม่ทุกวัน ❑ ทุกวัน

18.ในช่วง 12 เดือนที่ผ่านมานี้ คุณเคยหนีโรงเรียน หรือไม่

❑ ไม่เคย ❑ 1-5 ครั้ง ❑ 6-12 ครั้ง ❑ มากกว่า 12 ครั้ง

19.ในช่วง 12 เดือนที่ผ่านมา คุณเคยขโมยเงินจาก บิดา มารดา หรือ พี่ น้อง หรือไม่

❑ ไม่เคย ❑ เคย

ถ้าเคย, โปรดระบุจำนวนครั้งที่ทำ ❑ 1 ❑ 2 ❑ 3 ❑ มากกว่า 3 ครั้ง

20. ในช่วง 12 เดือนที่ผ่านมา คุณเคยขโมยเงินจาก คนอื่นๆ (ที่ไม่ใช่ พ่อ แม่ พี่ น้อง) หรือไม่

❑ ไม่เคย ❑ เคย

ถ้าเคย, โปรดระบุจำนวนครั้งที่ทำ ❑ 1 ❑ 2 ❑ 3 ❑ มากกว่า 3 ครั้ง

21.คุณเคยทำร้ายตัวเอง (ทำให้ตัวเองบาดเจ็บโดยตั้งใจ หรือพยายามฆ่าตัวตาย) หรือไม่

❑ ไม่เคย ❑ เคย

22.คุณเคยมี เพศสัมพันธ์กับผู้อื่น หรือไม่

❑ ไม่เคย ❑ เคย

ถ้าเคย, คุณมีเพศสัมพันธ์ครั้งแรก เมื่ออายุเท่าไร _____ปี

23.ปัจจุบันนี้ คุณรู้สึกว่า คุณมีสุขภาพดี ใช่หรือไม่ ❑ ใช่ ❑ ไม่ใช่ ❑ ไม่ทราบ

24.เมื่อเปรียบเทียบกับหนึ่งเดือนที่แล้วมา น้ำหนักตัวของคุณลดลง เกิน 1 กิโลกรัม หรือไม่

❑ ใช่ ❑ ไม่ใช่ ❑ ไม่ทราบ

ถ้าใช่, ที่น้ำหนักคุณลดลง เพราะคุณพยายามลดน้ำหนักตัวคุณเองอยู่ ❑ ใช่ ❑ ไม่ใช่

25.ในรอบ 3 เดือนมานี้ คุณเคยมีอาการผิดปกติดังต่อไปนี้ หรือไม่

แสบจมก	❑ ไม่เคย	❑ เป็นน้อยครั้ง	❑ เป็นบ่อยครั้ง
มีอาการเป็นหวัด	❑ ไม่เคย	❑ เป็นน้อยครั้ง	❑ เป็นบ่อยครั้ง
มีอาการเจ็บคอ	❑ ไม่เคย	❑ เป็นน้อยครั้ง	❑ เป็นบ่อยครั้ง
มีอาการไอ	❑ ไม่เคย	❑ เป็นน้อยครั้ง	❑ เป็นบ่อยครั้ง
มีอาการเจ็บหน้าอก	❑ ไม่เคย	❑ เป็นน้อยครั้ง	❑ เป็นบ่อยครั้ง
มีอาการหอบ	❑ ไม่เคย	❑ เป็นน้อยครั้ง	❑ เป็นบ่อยครั้ง
เบื่ออาหาร ทานอาหารได้น้อย	❑ ไม่เคย	❑ เป็นน้อยครั้ง	❑ เป็นบ่อยครั้ง

26.ในช่วง 3 เดือนที่ผ่านมานี้ คุณเคยรั สึกหรือไม่ว่า คุณพยายามที่จะมีสมาธิต่อการกระทำสิ่งใดสิ่งหนึ่ง เช่น การเรียนรู้ การรับฟัง การอ่านหนังสือ การทำงาน แต่คุณไม่สามารถมีสมาธิได้นานเหมือนปกติที่คุณเคยเป็น

❑ ไม่เคย ❑ เคย น้อยครั้ง ❑ เคย บ่อยครั้ง ❑ เคย เป็นประจำ

27. ถ้าให้คุณพิจารณาตัวเอง คุณคิดว่า คุณเป็นคนอย่างไร ในประเด็นต่อไปนี้

27.1 **เป็นคนที่แสดงอาการ ก้าวร้าว รุนแรง บ่อยๆ**	❑ ใช่	❑ ไม่ใช่	❑ ไม่ทราบ
27.2 **เป็นคนที่รั สึกซึมเศร้า บ่อยๆ**	❑ ใช่	❑ ไม่ใช่	❑ ไม่ทราบ
27.3 **เป็นคนที่ชอบทำอะไรเสี่ยงๆ**	❑ ใช่	❑ ไม่ใช่	❑ ไม่ทราบ

28. เคยมีใครให้บุหรี่ เหล้า สารระเหย ยาเสพติด อย่างใดอย่างหนึ่งหรือหลายอย่าง แก่คุณ หรือไม่

❑ เคยมี ❑ ไม่เคยมี

↓

ถ้าเคย, โปรดระบุประเภท (ตอบได้มากกว่าหนึ่งคำตอบ)

❑ บุหรี่	❑ เหล้า	❑ สารระเหย(ทินเนอร์ แลคเกอร์ กาว เป็นต้น)
❑ กัญชา	❑ ฝิ่น	❑ ยาม้า(หรือ ยาบ้า ยาขยัน ยาโด๊ป)
❑ โคเคน	❑ ยาอี(เอกซ์ตาซี่)	❑ เฮโรอีน(หรือ ผงขาว)
❑ แอลเอสดี	❑ เห็ดขี้ควาย	❑ อื่นๆ (โปรดระบุ).....

29.คุณเคยสบบุหรี่ หรือไม่

❑ เคย ❑ ไม่เคย → พลิกเลยไปหน้าต่อไป

- ❑ เคยลอง 1-2 ครั้ง แต่ปัจจุบันไม่ได้สบ
- ❑ เคยสบ ไม่บ่อย แต่ปัจจุบันเลิกสบแล้ว
- ❑ เคยสบบ่อยครั้ง แต่ปัจจุบันเลิกสบแล้ว
- ❑ ปัจจุบันสบเป็นครั้งคราว ประมาณว่า.....ครั้ง ต่อปี
- ❑ ปัจจุบันสบทุกเดือน ประมาณว่า.....ครั้ง ต่อเดือน
- ❑ ปัจจุบันสบทุกสัปดาห์ ประมาณว่า.....ครั้ง ต่อสัปดาห์
- ❑ ปัจจุบันสบทุกวัน ประมาณว่า.....ครั้ง ต่อวัน

29.1 คุณสบบุหรี่ ในครั้งล่าสุด เมื่อใด

❑ เมื่อ 24 ช.ม. มานี้เอง ❑ 2-15 วัน ที่ผ่านมา ❑ 16-30 วัน ที่ผ่านมา ❑ 31-45 วัน ที่ผ่านมา

❑ 46-60 วัน ที่ผ่านมา ❑ 61-75 วัน ที่ผ่านมา ❑ 76-90 วัน ที่ผ่านมา ❑ มากกว่า 90 วัน ที่ผ่านมา

29.2 เมื่อสบบุหรี่แล้ว คุณมีความรู้สึก หรือ อาการ อย่างไรบ้าง (ตอบได้มากกว่า หนึ่งข้อคำตอบ)

❑ มีความสุข ❑ ตื่นเต้น ❑ ปวดหัว ❑ ตื่นตัว ไม่ง่วง ❑ ประสาทหลอน ❑ มีอารมณ์เพศ

❑ ง่วงนอน ❑ สงบ ❑ เข้มแข็ง ❑ ถูกกระตุ้นให้มีกำลัง ❑ เจ็บหรือระคายคอ ❑ กระหายน้ำ

❑ เวียนหัว ❑ เหนื่อย ❑ รู้สึกป่วย ❑ คล้ายจะเป็นลม ❑ เศร้า

❑ ลดอาการของความอยาก ❑ อื่นๆ (โปรดระบุ) .....

29.3 คุณสบบุหรี่ครั้งแรก เมื่อคุณอายุเท่าไร _____ปี

29.4 โปรดบอกเหตุผลหลักๆ ว่าทำไมคุณจึงสบบุหรี่ <u>ในตอนที่คุณสบบุหรี่ครั้งแรก</u>

❑ ไม่มีเหตุผล ❑ สงสัย อยากลอง ❑ ลดความเศร้า ❑ ลดความกังวลใจ

❑ เพื่อความสนุก ❑ เพื่อให้สบายใจ ❑ เพื่อกระตุ้นพลังงาน ตื่นตัว ❑ เพราะมีคนชักชวนให้สูบ

❑ สูบตามเพื่อน ❑ เหตุผลอื่นๆ (โปรดระบุ) .....

29.5 โปรดบอกเหตุผลหลักๆ ว่าทำไมคุณจึงสบบุหรี่ <u>ในตอนที่คุณสบบุหรี่ในครั้งต่อๆมา</u>

❑ ไม่มีเหตุผล ❑ สงสัย อยากลอง ❑ ลดความเศร้า ❑ ลดความกังวลใจ

❑ เพื่อความสนุก ❑ เพื่อให้สบายใจ ❑ เพื่อกระตุ้นพลังงาน ตื่นตัว ❑ เพราะมีคนชักชวนให้สูบ

❑ สูบตามเพื่อน ❑ เหตุผลอื่นๆ (โปรดระบุ) .....

29.6 คุณมักจะชอบสบบุหรี่ ที่ใด (ตอบได้มากกว่า หนึ่งข้อคำตอบ)

❑ โรงเรียน ❑ บ้าน ❑ ดิสโก้เทค ❑ บาร์ คอฟฟี่ชอพ ❑ ตามถนน ❑ งานปาร์ตี้ต่างๆ ❑ สถานที่ของเพื่อน ❑ อื่นๆ(ระบุ).....

30. คุณเคยดื่มเหล้าหรือเบียร์หรือเครื่องดื่มแอลกอฮอล์ หรือไม่

❑ เคย ❑ ไม่เคย → พลิกเลยไปหน้าต่อไป

❑ เคยลอง 1-2 ครั้ง แต่ปัจจุบันไม่ได้ดื่ม

❑ เคยดื่ม ไม่บ่อย แต่ปัจจุบันเลิกดื่มแล้ว

❑ เคยดื่มบ่อยครั้ง แต่ปัจจุบันเลิกดื่มแล้ว

❑ ปัจจุบันดื่มเป็นครั้งคราว ประมาณว่า.....ครั้ง ต่อปี

❑ ปัจจุบันดื่มทุกเดือน ประมาณว่า.....ครั้ง ต่อเดือน

❑ ปัจจุบันดื่มทุกสัปดาห์ ประมาณว่า.....ครั้ง ต่อสัปดาห์

❑ ปัจจุบันดื่มทุกวัน ประมาณว่า.....ครั้ง ต่อวัน

30.1 คุณดื่ม ในครั้งล่าสุด เมื่อใด

❑ เมื่อ 24 ช.ม. มานี้เอง ❑ 2-15 วัน ที่ผ่านมา ❑ 16-30 วัน ที่ผ่านมา ❑ 31-45 วัน ที่ผ่านมา

❑ 46-60 วัน ที่ผ่านมา ❑ 61-75 วัน ที่ผ่านมา ❑ 76-90 วัน ที่ผ่านมา ❑ มากกว่า 90 วัน ที่ผ่านมา

30.2 เมื่อ ดื่ม แล้ว คุณมีความรู้สึก หรือ อาการ อย่างไรบ้าง (ตอบได้มากกว่า หนึ่งคำตอบ)

❑ มีความสุข ❑ ตื่นเต้น ❑ ปวดหัว ❑ ตื่นตัว ไม่ง่วง ❑ ประสาทหลอน ❑ มีอารมณ์เพศ

❑ ง่วงนอน ❑ สงบ ❑ เข้มแข็ง ❑ ถูกกระตุ้นให้มีกำลัง ❑ เจ็บหรือระคายคอ ❑ กระหายน้ำ

❑ เวียนหัว ❑ เหนื่อย ❑ รู้สึกป่วย ❑ คล้ายจะเป็นลม ❑ เศร้า

❑ ลดอาการของความอยาก ❑ อื่นๆ (โปรดระบุ) .....

30.3 คุณได้ ดื่มเหล้าหรือเบียร์หรือเครื่องดื่มแอลกอฮอล์ ครั้งแรก เมื่อคุณอายุเท่าไร _____ ปี

30.4 โปรดบอกเหตุผลหลักๆ ว่าทำไมคุณจึงดื่มเหล้า เบียร์ เครื่องดื่มแอลกอฮอล์ <u>ในตอนที่คุณดื่มในครั้งแรก</u>

❑ ไม่มีเหตุผล ❑ สงสัย อยากลอง ❑ ลดความเศร้า ❑ ลดความกังวลใจ

❑ เพื่อความสนุก ❑ เพื่อให้สบายใจ ❑ เพื่อกระตุ้นพลังงาน ตื่นตัว ❑ เพราะมีคนชักชวนให้ดื่ม

❑ ดื่มตามเพื่อน ❑ เหตุผลอื่นๆ (โปรดระบุ) .....

30.5 โปรดบอกเหตุผลหลักๆ ว่าทำไมคุณจึงดื่มเหล้า เบียร์ เครื่องดื่มแอลกอฮอล์ <u>ในตอนที่คุณดื่มในครั้งต่อๆมา</u>

❑ ไม่มีเหตุผล ❑ สงสัย อยากลอง ❑ ลดความเศร้า ❑ ลดความกังวลใจ

❑ เพื่อความสนุก ❑ เพื่อให้สบายใจ ❑ เพื่อกระตุ้นพลังงาน ตื่นตัว ❑ เพราะมีคนชักชวนให้ดื่ม

❑ ดื่มตามเพื่อน ❑ เหตุผลอื่นๆ (โปรดระบุ) .....

30.6 คุณมักจะชอบดื่มในที่ใด (ตอบได้มากกว่า หนึ่งคำตอบ)

❑ โรงเรียน ❑ บ้าน ❑ ดิสโก้เทค ❑ บาร์ คอฟฟี่ชอพ ❑ ตามถนน ❑ งานปาร์ตี้ต่างๆ ❑ สถานที่ของเพื่อน ❑ อื่นๆ(ระบุ).....

31. **คุณเคยสดดมสารระเหย** (ทินเนอร์ แลคเกอร์ กาว เป็นต้น) **หรือไม่**

❑ เคย ❑ ไม่เคย → พลิกเลยไปหน้าต่อไป

❑ เคยลอง 1-2 ครั้ง แต่ปัจจุบันไม่ได้ใช้

❑ เคยใช้ ไม่บ่อย แต่ปัจจุบันเลิกใช้แล้ว

❑ เคยใช้บ่อยครั้ง แต่ปัจจุบันเลิกใช้แล้ว

❑ ปัจจุบันใช้เป็นครั้งคราว ประมาณว่า.....ครั้ง ต่อปี

❑ ปัจจุบันใช้ทุกเดือน ประมาณว่า.....ครั้ง ต่อเดือน

❑ ปัจจุบันใช้ทุกสัปดาห์ ประมาณว่า.....ครั้ง ต่อสัปดาห์

❑ ปัจจุบันใช้ทุกวัน ประมาณว่า.....ครั้ง ต่อวัน

31.1 คุณสดดมสารระเหย ในครั้งล่าสุด เมื่อใด

❑ เมื่อ 24 ช.ม. มานี้เอง ❑ 2-15 วัน ที่ผ่านมา ❑ 16-30 วัน ที่ผ่านมา ❑ 31-45 วัน ที่ผ่านมา
❑ 46-60 วัน ที่ผ่านมา ❑ 61-75 วัน ที่ผ่านมา ❑ 76-90 วัน ที่ผ่านมา ❑ มากกว่า 90 วัน ที่ผ่านมา

31.2 เมื่อ สดดมสารระเหย แล้ว คุณมีความรู้สึก หรือ อาการ อย่างไรบ้าง (ตอบได้มากกว่า หนึ่งคำตอบ)

❑ มีความสุข ❑ ตื่นเต้น ❑ ปวดหัว ❑ ตื่นตัว ไม่ง่วง ❑ ประสาทหลอน ❑ มีอารมณ์เพศ
❑ ง่วงนอน ❑ สงบ ❑ เข้มแข็ง ❑ ถูกกระตุ้นให้มีกำลัง ❑ เจ็บหรือระคายคอ ❑ กระหายน้ำ
❑ เวียนหัว ❑ เหนื่อย ❑ รู้สึกป่วย ❑ คล้ายจะเป็นลม ❑ เศร้า
❑ ลดอาการของความอยาก ❑ อื่นๆ (โปรดระบุ) .....

31.3 ตอนคุณ สดดมสารระเหย คุณได้ใช้สารระเหยพร้อมด้วยกันกับสารตัวอื่น ใช่หรือไม่

❑ ใช่ ในทุกครั้งที่ใช้ ❑ ใช่ ในบางครั้งที่ใช้ ❑ ไม่ใช่

ถ้าใช่, **คุณได้ใช้สารระเหยพร้อมด้วยกันกับ** (ตอบได้มากกว่า หนึ่งคำตอบ)

❑ บุหรี่ ❑ เหล้า ❑ ฝิ่น ❑ กัญชา ❑ ยาอี(เอกซ์ตาซี่) ❑ โคเคน ❑ เห็ดขี้ควาย ❑ แอลเอสดี
❑ เฮโรอีน(หรือ ผงขาว) ❑ ยาม้า(หรือ ยาบ้า ยาขยัน ยาโด๊ป) ❑ อื่นๆ (โปรดระบุ) .....

31.4 คุณได้สดดมสารระเหย ครั้งแรก เมื่อคุณอายุเท่าไร _____ปี

31.5 โปรดบอกเหตุผลหลักๆ ว่าทำไมคุณจึงสดดมสารระเหย <u>ในตอนที่คุณใช้สารระเหยครั้งแรก</u>

❑ ไม่มีเหตุผล ❑ สงสัย อยากลอง ❑ ลดความเศร้า ❑ ลดความกังวลใจ
❑ เพื่อความสนุก ❑ เพื่อให้สบายใจ ❑ เพื่อกระตุ้นพลังงาน ตื่นตัว ❑ เพราะมีคนชักชวนให้ใช้
❑ ใช้ตามเพื่อน ❑ เหตุผลอื่นๆ (โปรดระบุ) .....

31.6 โปรดบอกเหตุผลหลักๆ ว่าทำไมคุณจึงสดดมสารระเหย <u>ในตอนที่คุณใช้สารระเหยในครั้งต่อๆมา</u>

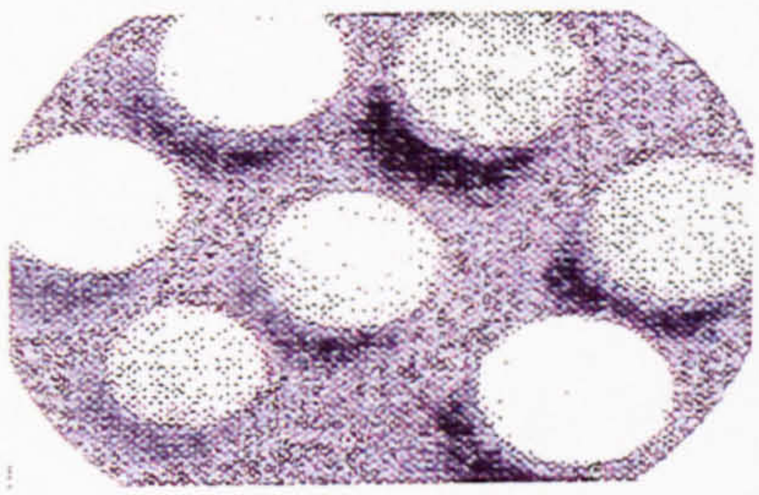
❑ ไม่มีเหตุผล ❑ สงสัย อยากลอง ❑ ลดความเศร้า ❑ ลดความกังวลใจ
❑ เพื่อความสนุก ❑ เพื่อให้สบายใจ ❑ เพื่อกระตุ้นพลังงาน ตื่นตัว ❑ เพราะมีคนชักชวนให้ใช้
❑ ใช้ตามเพื่อน ❑ เหตุผลอื่นๆ (โปรดระบุ) .....

31.7 คุณมักจะชอบสดดมสารระเหย สถานที่ใด (ตอบได้มากกว่า หนึ่งข้อคำตอบ)

❑ โรงเรียน ❑ บ้าน ❑ ดิสโก้เทค ❑ บาร์ คอฟฟี่ชอพ ❑ ตามถนน ❑ งานปาร์ตี้ต่างๆ ❑ สถานที่ของเพื่อน ❑ อื่นๆ(ระบุ).....

32. คุณเคยใช้ยาม้า (หรือ ยาบ้า ยาขยัน ยาโด๊ป) **หรือไม่**

❑ เคย ❑ ไม่เคย → พลิกเลยไปหน้าต่อไป



- ❑ **เคยลอง 1-2 ครั้ง แต่ปัจจุบันไม่ได้ใช้**
- ❑ **เคยใช้ ไม่บ่อย แต่ปัจจุบันเลิกใช้แล้ว**
- ❑ **เคยใช้บ่อยครั้ง แต่ปัจจุบันเลิกใช้แล้ว**
- ❑ **ปัจจุบันใช้เป็นครั้งคราว ประมาณว่า.....ครั้ง ต่อปี**
- ❑ **ปัจจุบันใช้ทุกเดือน ประมาณว่า.....ครั้ง ต่อเดือน**
- ❑ **ปัจจุบันใช้ทุกสัปดาห์ ประมาณว่า.....ครั้ง ต่อสัปดาห์**
- ❑ **ปัจจุบันใช้ทุกวัน ประมาณว่า.....ครั้ง ต่อวัน**

32.1 คุณใช้ ยาม้า (หรือ ยาบ้า ยาขยัน ยาโด๊ป) **ในครั้งล่าสุด เมื่อใด**

❑ เมื่อ 24 ช.ม. มานี้เอง ❑ 2-15 วัน ที่ผ่านมา ❑ 16-30 วัน ที่ผ่านมา ❑ 31-45 วัน ที่ผ่านมา
❑ 46-60 วัน ที่ผ่านมา ❑ 61-75 วัน ที่ผ่านมา ❑ 76-90 วัน ที่ผ่านมา ❑ มากกว่า 90 วัน ที่ผ่านมา

32.2 คุณใช้ ยาม้า (หรือ ยาบ้า ยาขยัน ยาโด๊ป) **(ตอบได้มากกว่าหนึ่งคำตอบ)**

❑ ฉีด ❑ สูบ ❑ กิน ❑ สูดดม ❑ วิธีอื่นๆ(โปรดระบุ).....

32.3 เมื่อคุณใช้ยาม้า(หรือ ยาบ้า ยาขยัน ยาโด๊ป) **แล้วคุณมีความรู้สึก หรือ อาการ อย่างไรบ้าง** (ตอบได้มากกว่าหนึ่งคำตอบ)

❑ มีความสุข ❑ ตื่นเต้น ❑ ปวดหัว ❑ ตื่นตัว ไม่ง่วง ❑ ประสาทหลอน ❑ มีอารมณ์เพศ
❑ ง่วงนอน ❑ สงบ ❑ เข้มแข็ง ❑ ถูกกระตุ้นให้มีกำลัง ❑ เจ็บหรือระคายคอ ❑ กระหายน้ำ
❑ เวียนหัว ❑ เหนื่อย ❑ รู้สึกป่วย ❑ คล้ายจะเป็นลม ❑ เศร้า
❑ ลดอาการของความอยาก ❑ อื่นๆ (โปรดระบุ) .....

32.4 ตอนคุณใช้ ยาม้า (หรือ ยาบ้า ยาขยัน ยาโด๊ป) **คุณได้ใช้พร้อมด้วยกันกับสารตัวอื่น ใช่หรือไม่**

❑ ใช่ ในทุกครั้งที่ใช้ ❑ ใช่ ในบางครั้งที่ใช้ ❑ ไม่ใช่

ถ้าใช่, **คุณได้ใช้ ยาม้า** (หรือ ยาบ้า ยาขยัน ยาโด๊ป) **พร้อมด้วยกันกับ (ตอบได้มากกว่าหนึ่งคำตอบ)**

❑ บุหรี่ ❑ เหล้า ❑ ผิ่น ❑ กัญชา ❑ ยาอี(เอกซ์ตาซี่) ❑ โคเคน ❑ เห็ดขี้ควาย ❑ แอลเอสดี
❑ เฮโรอีน(หรือ ผงขาว) ❑ สารระเหย ❑ อื่นๆ (โปรดระบุ) .....

32.5 คุณได้ใช้ยาม้า (ยาบ้า ยาขยัน ยาโด๊ป) **ครั้งแรก เมื่อคุณอายุเท่าไร** _____ **ปี**

32.6 โปรดบอกเหตุผลหลักๆ ว่าทำไมคุณจึงใช้ยาม้า (ยาบ้า ยาขยัน ยาโด๊ป) **<u>ในตอนที่คุณใช้ครั้งแรก</u>**

❑ ไม่มีเหตุผล ❑ สงสัย อยากลอง ❑ ลดความเศร้า ❑ ลดความกังวลใจ ❑ เพื่อความสนุก
❑ เพื่อให้สบายใจ ❑ เพื่อกระตุ้นพลังงาน ตื่นตัว ❑ เพราะมีคนชักชวนให้ใช้ ❑ ใช้ตามเพื่อน
❑ เหตุผลอื่นๆ (โปรดระบุ) .....

32.7 โปรดบอกเหตุผลหลักๆ ว่าทำไมคุณจึงใช้ยาม้า (ยาบ้า ยาขยัน ยาโด๊ป) **<u>ในตอนที่คุณใช้ในครั้งต่อๆมา</u>**

❑ ไม่มีเหตุผล ❑ สงสัย อยากลอง ❑ ลดความเศร้า ❑ ลดความกังวลใจ ❑ เพื่อความสนุก
❑ เพื่อให้สบายใจ ❑ เพื่อกระตุ้นพลังงาน ตื่นตัว ❑ เพราะมีคนชักชวนให้ใช้ ❑ ใช้ตามเพื่อน
❑ เหตุผลอื่นๆ (โปรดระบุ) .....

32.8 คุณมักจะชอบใช้ยาม้า (ยาบ้า ยาขยัน ยาโด๊ป) **ตามสถานที่ใด** (ตอบได้มากกว่า หนึ่งข้อคำตอบ)

❑ โรงเรียน ❑ บ้าน ❑ ดิสโก้เทค ❑ บาร์ คอฟฟี่ชอพ ❑ ตามถนน ❑ งานปาร์ตี้ต่างๆ ❑ สถานที่ของเพื่อน ❑ อื่นๆ(ระบุ).....

33. คุณเคยใช้กัญชา หรือไม่

❑ เคย ❑ ไม่เคย → พลิกเลยไปหน้าต่อไป

❑ **เคยลอง 1-2 ครั้ง แต่ปัจจุบันไม่ได้ใช้**
❑ **เคยใช้ ไม่บ่อย แต่ปัจจุบันเลิกใช้แล้ว**
❑ **เคยใช้บ่อยครั้ง แต่ปัจจุบันเลิกใช้แล้ว**
❑ **ปัจจุบันใช้เป็นครั้งคราว ประมาณว่า.....ครั้ง ต่อปี**
❑ **ปัจจุบันใช้ทุกเดือน ประมาณว่า.....ครั้ง ต่อเดือน**
❑ **ปัจจุบันใช้ทุกสัปดาห์ ประมาณว่า.....ครั้ง ต่อสัปดาห์**
❑ **ปัจจุบันใช้ทุกวัน ประมาณว่า.....ครั้ง ต่อวัน**

33.1 คุณใช้ กัญชา ในครั้งล่าสุด เมื่อใด

❑ เมื่อ 24 ช.ม. มานี้เอง ❑ 2-15 วัน ที่ผ่านมา ❑ 16-30 วัน ที่ผ่านมา ❑ 31-45 วัน ที่ผ่านมา
❑ 46-60 วัน ที่ผ่านมา ❑ 61-75 วัน ที่ผ่านมา ❑ 76-90 วัน ที่ผ่านมา ❑ มากกว่า 90 วัน ที่ผ่านมา

33.2 คุณใช้ กัญชา โดยวิธีใด (ตอบได้มากกว่าหนึ่งคำตอบ)

❑ ฉีด ❑ สูบ ❑ กิน ❑ สูดดม ❑ วิธีอื่นๆ(โปรดระบุ).....

33.3 เมื่อคุณใช้ กัญชา แล้ว คุณมีความรู้สึก หรือ อาการ อย่างไรบ้าง (ตอบได้มากกว่าหนึ่งคำตอบ)

❑ มีความสุข ❑ ตื่นเต้น ❑ ปวดหัว ❑ ตื่นตัว ไม่ง่วง ❑ ประสาทหลอน ❑ มีอารมณ์เพศ
❑ ง่วงนอน ❑ สงบ ❑ เข้มแข็ง ❑ ถูกกระตุ้นให้มีกำลัง ❑ เจ็บหรือระคายคอ ❑ กระหายน้ำ
❑ เวียนหัว ❑ เหนื่อย ❑ รู้สึกป่วย ❑ คล้ายจะเป็นลม ❑ เศร้า
❑ ลดอาการของความอยาก ❑ อื่นๆ (โปรดระบุ) .....

33.4 ตอนคุณใช้ กัญชา คุณได้ใช้พร้อมด้วยกันกับสารตัวอื่น หรือไม่

❑ ใช่ ในทุกครั้งที่ใช้ ❑ ใช่ ในบางครั้งที่ใช้ ❑ ไม่ใช่

ถ้าใช่, **คุณได้ใช้ กัญชา พร้อมด้วยกันกับ (ตอบได้มากกว่าหนึ่งคำตอบ)**

❑ บุหรี่ ❑ เหล้า ❑ ผิ่น ❑ สารระเหย ❑ ยาอี(เอกซ์ตาซี่) ❑ โคเคน ❑ เห็ดขี้ควาย ❑ แอลเอสดี
❑ เฮโรอีน(หรือ ผงขาว) ❑ ยาม้า(หรือ ยาบ้า ยาขยัน ยาโด๊ป) ❑ อื่นๆ (โปรดระบุ) .....

33.5 คุณได้ใช้ กัญชา ครั้งแรก เมื่อคุณอายุเท่าไร _____ปี

33.6 โปรดบอกเหตุผลหลักๆ ว่าทำไมคุณจึงใช้ กัญชา <u>ในตอนที่คุณใช้กัญชาครั้งแรก</u>

❑ ไม่มีเหตุผล ❑ สงสัย อยากลอง ❑ ลดความเศร้า ❑ ลดความกังวลใจ ❑ เพื่อความสนุก
❑ เพื่อให้สบายใจ ❑ เพื่อกระตุ้นพลังงาน ตื่นตัว ❑ เพราะมีคนชักชวนให้ใช้ ❑ ใช้ตามเพื่อน
❑ เหตุผลอื่นๆ (โปรดระบุ) .....

33.7 โปรดบอกเหตุผลหลักๆ ว่าทำไมคุณจึงใช้ กัญชา <u>ในตอนที่คุณใช้กัญชาในครั้งต่อๆมา</u>

❑ ไม่มีเหตุผล ❑ สงสัย อยากลอง ❑ ลดความเศร้า ❑ ลดความกังวลใจ ❑ เพื่อความสนุก
❑ เพื่อให้สบายใจ ❑ เพื่อกระตุ้นพลังงาน ตื่นตัว ❑ เพราะมีคนชักชวนให้ใช้ ❑ ใช้ตามเพื่อน
❑ เหตุผลอื่นๆ (โปรดระบุ) .....

33.8 คุณมักจะชอบใช้กัญชา ตามสถานที่ใด (ตอบได้มากกว่า หนึ่งข้อคำตอบ)

❑ โรงเรียน ❑ บ้าน ❑ ดิสโก้เทค ❑ บาร์ คอฟฟี่ชอพ ❑ ตามถนน ❑ งานปาร์ตี้ต่างๆ ❑ สถานที่ของเพื่อน ❑ อื่นๆ(ระบุ).....

34. คุณเคยใช้ ฝิ่น หรือไม่

❑ เคย ❑ ไม่เคย → พลิกเลยไปหน้าต่อไป

- ❑ เคยลอง 1-2 ครั้ง แต่ปัจจุบันไม่ได้ใช้
- ❑ เคยใช้ ไม่บ่อย แต่ปัจจุบันเลิกใชแล้ว
- ❑ เคยใช้บ่อยครั้ง แต่ปัจจุบันเลิกใช้แล้ว
- ❑ ปัจจุบันใชเป็นครั้งคราว ประมาณว่า.....ครั้ง ต่อปี
- ❑ ปัจจุบันใชทุกเดือน ประมาณว่า.....ครั้ง ต่อเดือน
- ❑ ปัจจุบันใช้ทุกสัปดาห์ ประมาณว่า.....ครั้ง ต่อสัปดาห์
- ❑ ปัจจุบันใชทุกวัน ประมาณว่า.....ครั้ง ต่อวัน

34.1 คุณใช้ ฝิ่น ในครั้งล่าสุด เมื่อใด

❑ เมื่อ 24 ช.ม. มานี้เอง ❑ 2-15 วัน ที่ผ่านมา ❑ 16-30 วัน ที่ผ่านมา ❑ 31-45 วัน ที่ผ่านมา
❑ 46-60 วัน ที่ผ่านมา ❑ 61-75 วัน ที่ผ่านมา ❑ 76-90 วัน ที่ผ่านมา ❑ มากกว่า 90 วัน ที่ผ่านมา

34.2 คุณใช้ ฝิ่น โดยวิธีใด (ตอบได้มากกว่าหนึ่งคำตอบ)

❑ ฉีด ❑ สูบ ❑ กิน ❑ สูดดม ❑ วิธีอื่นๆ(โปรดระบุ).....

34.3 เมื่อคุณใช้ ฝิ่น แล้ว คุณมีความรู้สึก หรือ อาการ อย่างไรบ้าง (ตอบได้มากกว่าหนึ่งคำตอบ)

❑ มีความสุข ❑ ตื่นเต้น ❑ ปวดหัว ❑ ตื่นตัว ไม่ง่วง ❑ ประสาทหลอน ❑ มีอารมณ์เพศ
❑ ง่วงนอน ❑ สงบ ❑ เข้มแข็ง ❑ ถูกกระตุ้นให้มีกำลัง ❑ เจ็บหรือระคายคอ ❑ กระหายน้ำ
❑ เวียนหัว ❑ เหนื่อย ❑ รู้สึกป่วย ❑ คล้ายจะเป็นลม ❑ เศร้า
❑ ลดอาการของความอยาก ❑ อื่นๆ (โปรดระบุ) .....

34.4 ตอนคุณใช้ ฝิ่น คุณได้ใช้พร้อมด้วยกันกับสารตัวอื่น หรือไม่

❑ ใช่ ในทุกครั้งที่ใช้ ❑ ใช่ ในบางครั้งที่ใช้ ❑ ไม่ใช่

ถ้าใช่, คุณได้ใช้ ฝิ่น พร้อมด้วยกันกับ (ตอบได้มากกว่าหนึ่งคำตอบ)

❑ บุหรี่ ❑ เหล้า ❑ สารระเหย ❑ กัญชา ❑ ยาอี(เอกซ์ตาซี่) ❑ โคเคน ❑ เห็ดขี้ควาย ❑ แอลเอสดี
❑ เฮโรอีน(หรือ ผงขาว) ❑ ยาม้า(หรือ ยาบ้า ยาขยัน ยาโด๊ป) ❑ อื่นๆ (โปรดระบุ) .....

34.5 คุณได้ใช้ ฝิ่น ครั้งแรก เมื่อคุณอายุเท่าไร _____ปี

34.6 โปรดบอกเหตุผลหลักๆ ว่าทำไมคุณจึงใช้ฝิ่น <u>ในตอนที่คุณใช้ฝิ่นครั้งแรก</u>

❑ ไม่มีเหตุผล ❑ สงสัย อยากลอง ❑ ลดความเศร้า ❑ ลดความกังวลใจ ❑ เพื่อความสนุก
❑ เพื่อให้สบายใจ ❑ เพื่อกระตุ้นพลังงาน ตื่นตัว ❑ เพราะมีคนชักชวนให้ใช้ ❑ ใช้ตามเพื่อน
❑ เหตุผลอื่นๆ (โปรดระบุ) .....

34.7 โปรดบอกเหตุผลหลักๆ ว่าทำไมคุณจึงใช้ฝิ่น <u>ในตอนที่คุณใช้ฝิ่นในครั้งต่อๆมา</u>

❑ ไม่มีเหตุผล ❑ สงสัย อยากลอง ❑ ลดความเศร้า ❑ ลดความกังวลใจ ❑ เพื่อความสนุก
❑ เพื่อให้สบายใจ ❑ เพื่อกระตุ้นพลังงาน ตื่นตัว ❑ เพราะมีคนชักชวนให้ใช้ ❑ ใช้ตามเพื่อน
❑ เหตุผลอื่นๆ (โปรดระบุ) .....

34.8 คุณมักจะชอบใช้ฝิ่น ตามสถานที่ใด (ตอบได้มากกว่า หนึ่งข้อคำตอบ)

❑ โรงเรียน ❑ บ้าน ❑ ดิสโก้เทค ❑ บาร์ คอฟฟี่ชอพ ❑ ตามถนน ❑ งานปาร์ตี้ต่างๆ ❑ สถานที่ของเพื่อน ❑ อื่นๆ(ระบุ).....

35. คุณเคยใช้ เฮโรอีน (หรือ ผงขาว) หรือไม่

❑ เคย ❑ ไม่เคย → พลิกเลยไปหน้าต่อไป

- ❑ เคยลอง 1-2 ครั้ง แต่ปัจจุบันไม่ได้ใช้
- ❑ เคยใช้ ไม่บ่อย แต่ปัจจุบันเลิกใช้แล้ว
- ❑ เคยใช้บ่อยครั้ง แต่ปัจจุบันเลิกใช้แล้ว
- ❑ ปัจจุบันใช้เป็นครั้งคราว ประมาณว่า.....ครั้ง ต่อปี
- ❑ ปัจจุบันใช้ทุกเดือน ประมาณว่า.....ครั้ง ต่อเดือน
- ❑ ปัจจุบันใช้ทุกสัปดาห์ ประมาณว่า.....ครั้ง ต่อสัปดาห์
- ❑ ปัจจุบันใช้ทุกวัน ประมาณว่า.....ครั้ง ต่อวัน

35.1 คุณใช้ เฮโรอีน ในครั้งล่าสุด เมื่อใด

❑ เมื่อ 24 ช.ม. มานี้เอง ❑ 2-15 วัน ที่ผ่านมา ❑ 16-30 วัน ที่ผ่านมา ❑ 31-45 วัน ที่ผ่านมา
❑ 46-60 วัน ที่ผ่านมา ❑ 61-75 วัน ที่ผ่านมา ❑ 76-90 วัน ที่ผ่านมา ❑ มากกว่า 90 วัน ที่ผ่านมา

35.2 คุณใช้ เฮโรอีน โดยวิธีใด (ตอบได้มากกว่าหนึ่งคำตอบ)

❑ ฉีด ❑ สูบ ❑ กิน ❑ สูดดม ❑ วิธีอื่นๆ(โปรดระบุ).....

35.3 เมื่อคุณใช้ เฮโรอีน แล้ว คุณมีความรู้สึก หรือ อาการ อย่างไรบ้าง (ตอบได้มากกว่าหนึ่งคำตอบ)

❑ มีความสุข ❑ ตื่นเต้น ❑ ปวดหัว ❑ ตื่นตัว ไม่ง่วง ❑ ประสาทหลอน ❑ มีอารมณ์เพศ
❑ ง่วงนอน ❑ สงบ ❑ เข้มแข็ง ❑ ถูกกระตุ้นให้มีกำลัง ❑ เจ็บหรือระคายคอ ❑ กระหายน้ำ
❑ เวียนหัว ❑ เหนื่อย ❑ รู้สึกป่วย ❑ คล้ายจะเป็นลม ❑ เศร้า
❑ ลดอาการของความอยาก ❑ อื่นๆ (โปรดระบุ) .....

35.4 ตอนคุณใช้ เฮโรอีน คุณได้ใช้พร้อมด้วยกันกับสารตัวอื่น หรือไม่

❑ ใช่ ในทุกครั้งที่ใช้ ❑ ใช่ ในบางครั้งที่ใช้ ❑ ไม่ใช่

ถ้าใช่, **คุณได้ใช้ เฮโรอีน พร้อมด้วยกันกับ (ตอบได้มากกว่าหนึ่งคำตอบ)**

❑ บุหรี่ ❑ เหล้า ❑ ฝิ่น ❑ กัญชา ❑ ยาอี(เอกซ์ตาซี่) ❑ โคเคน ❑ เห็ดขี้ควาย ❑ แอลเอสดี
❑ สารระเหย ❑ ยาม้า(หรือ ยาบ้า ยาขยัน ยาโด๊ป) ❑ อื่นๆ (โปรดระบุ) .....

35.5 คุณได้ใช้ เฮโรอีน ครั้งแรก เมื่อคุณอายุเท่าไร _____ปี

35.6 โปรดบอกเหตุผลหลักๆ ว่าทำไมคุณจึงใช้เฮโรอีน <u>ในตอนที่คุณใช้เฮโรอีนในครั้งแรก</u>

❑ ไม่มีเหตุผล ❑ สงสัย อยากลอง ❑ ลดความเศร้า ❑ ลดความกังวลใจ ❑ เพื่อความสนุก
❑ เพื่อให้สบายใจ ❑ เพื่อกระตุ้นพลังงาน ตื่นตัว ❑ เพราะมีคนชักชวนให้ใช้ ❑ ใช้ตามเพื่อน
❑ เหตุผลอื่นๆ (โปรดระบุ) .....

35.7 โปรดบอกเหตุผลหลักๆ ว่าทำไมคุณจึงใช้เฮโรอีน <u>ในตอนที่คุณใช้เฮโรอีนในครั้งต่อๆมา</u>

❑ ไม่มีเหตุผล ❑ สงสัย อยากลอง ❑ ลดความเศร้า ❑ ลดความกังวลใจ ❑ เพื่อความสนุก
❑ เพื่อให้สบายใจ ❑ เพื่อกระตุ้นพลังงาน ตื่นตัว ❑ เพราะมีคนชักชวนให้ใช้ ❑ ใช้ตามเพื่อน
❑ เหตุผลอื่นๆ (โปรดระบุ) .....

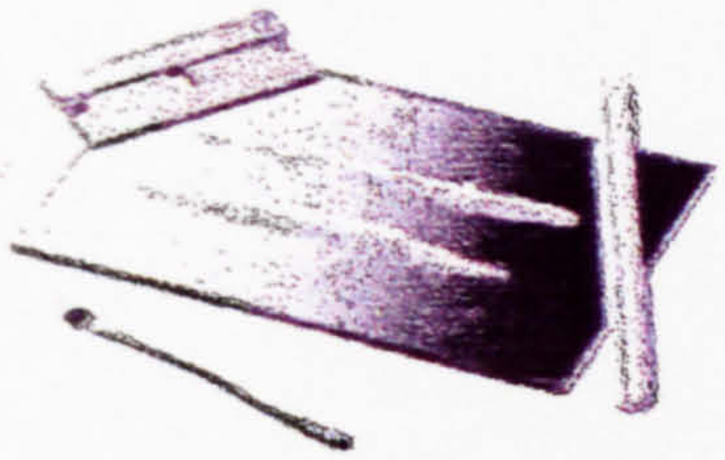
35.8 คุณมักจะชอบใช้เฮโรอีน ตามสถานที่ใด (ตอบได้มากกว่า หนึ่งข้อคำตอบ)

❑ โรงเรียน ❑ บ้าน ❑ ดิสโก้เทค ❑ บาร์ คอฟฟี่ชอพ ❑ ตามถนน ❑ งานปาร์ตี้ต่างๆ ❑ สถานที่ของเพื่อน ❑ อื่นๆ(ระบุ).....

36. คุณเคยใช้ โคเคน หรือไม่

❑ เคย ❑ ไม่เคย → พลิกเลยไปหน้าต่อไป

- ❑ เคยลอง 1-2 ครั้ง แต่ปัจจุบันไม่ได้ใช้
- ❑ เคยใช้ ไม่บ่อย แต่ปัจจุบันเลิกใช้แล้ว
- ❑ เคยใช้บ่อยครั้ง แต่ปัจจุบันเลิกใช้แล้ว
- ❑ ปัจจุบันใช้เป็นครั้งคราว ประมาณว่า.....ครั้ง ต่อปี
- ❑ ปัจจุบันใช้ทุกเดือน ประมาณว่า.....ครั้ง ต่อเดือน
- ❑ ปัจจุบันใช้ทุกสัปดาห์ ประมาณว่า.....ครั้ง ต่อสัปดาห์
- ❑ ปัจจุบันใช้ทุกวัน ประมาณว่า.....ครั้ง ต่อวัน



36.1 คุณใช้ โคเคน ในครั้งล่าสุด เมื่อใด

❑ เมื่อ 24 ช.ม. มานี้เอง ❑ 2-15 วัน ที่ผ่านมา ❑ 16-30 วัน ที่ผ่านมา ❑ 31-45 วัน ที่ผ่านมา
❑ 46-60 วัน ที่ผ่านมา ❑ 61-75 วัน ที่ผ่านมา ❑ 76-90 วัน ที่ผ่านมา ❑ มากกว่า 90 วัน ที่ผ่านมา

36.2 คุณใช้ โคเคน โดยวิธีใด (ตอบได้มากกว่าหนึ่งคำตอบ)

❑ ฉีด ❑ สูบ ❑ กิน ❑ สูดดม ❑ วิธีอื่นๆ(โปรดระบุ).....

36.3 เมื่อคุณใช้ โคเคน แล้ว คุณมีความรู้สึก หรือ อาการ อย่างไรบ้าง (ตอบได้มากกว่าหนึ่งคำตอบ)

❑ มีความสุข ❑ ตื่นเต้น ❑ ปวดหัว ❑ ตื่นตัว ไม่ง่วง ❑ ประสาทหลอน ❑ มีอารมณ์เพศ
❑ ง่วงนอน ❑ สงบ ❑ เข้มแข็ง ❑ ถูกกระตุ้นให้มีกำลัง ❑ เจ็บหรือระคายคอ ❑ กระหายน้ำ
❑ เวียนหัว ❑ เหนื่อย ❑ รู้สึกป่วย ❑ คล้ายจะเป็นลม ❑ เศร้า
❑ ลดอาการของความอยาก ❑ อื่นๆ (โปรดระบุ) .....

36.4 ตอนคุณใช้ โคเคน คุณได้ใช้พร้อมด้วยกันกับสารตัวอื่น หรือไม่

❑ ใช่ ในทุกครั้งที่ใช้ ❑ ใช่ ในบางครั้งที่ใช้ ❑ ไม่ใช่

ถ้าใช่, คุณได้ใช้ โคเคน พร้อมด้วยกันกับ(ตอบได้มากกว่าหนึ่งคำตอบ)

❑ บุหรี่ ❑ เหล้า ❑ ฝิ่น ❑ กัญชา ❑ ยาอี(เอกซ์ตาซี่) ❑ สารระเหย ❑ เห็ดขี้ควาย ❑ แอลเอสดี
❑ เฮโรอีน(หรือ ผงขาว) ❑ ยาม้า(หรือ ยาบ้า ยาขยัน ยาโด๊ป) ❑ อื่นๆ (โปรดระบุ) .....

36.5 คุณได้ใช้ โคเคน ครั้งแรก เมื่อคุณอายุเท่าไร _____ปี

36.6 โปรดบอกเหตุผลหลักๆ ว่าทำไมคุณจึงใช้โคเคน ในตอนที่คุณใช้โคเคนในครั้งแรก

❑ ไม่มีเหตุผล ❑ สงสัย อยากลอง ❑ ลดความเศร้า ❑ ลดความกังวลใจ ❑ เพื่อความสนุก
❑ เพื่อให้สบายใจ ❑ เพื่อกระตุ้นพลังงาน ตื่นตัว ❑ เพราะมีคนชักชวนให้ใช้ ❑ ใช้ตามเพื่อน
❑ เหตุผลอื่นๆ (โปรดระบุ) .....

36.7 โปรดบอกเหตุผลหลักๆ ว่าทำไมคุณจึงใช้โคเคน ในตอนที่คุณใช้โคเคนในครั้งต่อๆมา

❑ ไม่มีเหตุผล ❑ สงสัย อยากลอง ❑ ลดความเศร้า ❑ ลดความกังวลใจ ❑ เพื่อความสนุก
❑ เพื่อให้สบายใจ ❑ เพื่อกระตุ้นพลังงาน ตื่นตัว ❑ เพราะมีคนชักชวนให้ใช้ ❑ ใช้ตามเพื่อน
❑ เหตุผลอื่นๆ (โปรดระบุ) .....

36.8 คุณมักจะชอบใช้โคเคน ตามสถานที่ใด (ตอบได้มากกว่า หนึ่งข้อคำตอบ)

❑ โรงเรียน ❑ บ้าน ❑ ดิสโก้เทค ❑ บาร์ คอฟฟี่ชอพ ❑ ตามถนน ❑ งานปาร์ตี้ต่างๆ ❑ สถานที่ของเพื่อน ❑ อื่นๆ(ระบุ).....

37. คุณเคยใช้ ยาอี หรือ เอคซ์ตาซี่ หรือไม่

❑ เคย ❑ ไม่เคย → พลิกเลยไปหน้าต่อไป

- ❑ เคยลอง 1-2 ครั้ง แต่ปัจจุบันไม่ได้ใช้
- ❑ เคยใช้ ไม่บ่อย แต่ปัจจุบันเลิกใช้แล้ว
- ❑ เคยใช้บ่อยครั้ง แต่ปัจจุบันเลิกใช้แล้ว
- ❑ ปัจจุบันใช้เป็นครั้งคราว ประมาณว่า.....ครั้ง ต่อปี
- ❑ ปัจจุบันใช้ทุกเดือน ประมาณว่า.....ครั้ง ต่อเดือน
- ❑ ปัจจุบันใช้ทุกสัปดาห์ ประมาณว่า.....ครั้ง ต่อสัปดาห์
- ❑ ปัจจุบันใช้ทุกวัน ประมาณว่า.....ครั้ง ต่อวัน

37.1 คุณใช้ ยาอี หรือ เอคซ์ตาซี่ ในครั้งล่าสุด เมื่อใด

❑ เมื่อ 24 ช.ม. มานี้เอง ❑ 2-15 วัน ที่ผ่านมา ❑ 16-30 วัน ที่ผ่านมา ❑ 31-45 วัน ที่ผ่านมา
❑ 46-60 วัน ที่ผ่านมา ❑ 61-75 วัน ที่ผ่านมา ❑ 76-90 วัน ที่ผ่านมา ❑ มากกว่า 90 วัน ที่ผ่านมา

37.2 *คุณใช้ ยาอี หรือ เอคซ์ตาซี่ โดยวิธีใด (ตอบได้มากกว่าหนึ่งคำตอบ)*

❑ ฉีด ❑ สูบ ❑ กิน ❑ สูดดม ❑ วิธีอื่นๆ(โปรดระบุ).....

37.3 เมื่อคุณใช้ ยาอี หรือ เอคซ์ตาซี่ แล้ว คุณมีความรู้สึก หรือ อาการ อย่างไรบ้าง (ตอบได้มากกว่าหนึ่งคำตอบ)

❑ มีความสุข ❑ ตื่นเต้น ❑ ปวดหัว ❑ ตื่นตัว ไม่ง่วง ❑ ประสาทหลอน ❑ มีอารมณ์เพศ
❑ ง่วงนอน ❑ สงบ ❑ เข้มแข็ง ❑ ถูกกระตุ้นให้มีกำลัง ❑ เจ็บหรือระคายคอ ❑ กระหายน้ำ
❑ เวียนหัว ❑ เหนื่อย ❑ รู้สึกป่วย ❑ คล้ายจะเป็นลม ❑ เศร้า
❑ ลดอาการของความอยาก ❑ อื่นๆ (โปรดระบุ) .....

37.4 ตอนคุณใช้ ยาอี หรือ เอคซ์ตาซี่ คุณได้ใช้พร้อมด้วยกันกับสารตัวอื่น หรือไม่

❑ ใช่ ในทุกครั้งที่ใช้ ❑ ใช่ ในบางครั้งที่ใช้ ❑ ไม่ใช่

ถ้าใช่, **คุณได้ใช้ ยาอี หรือ เอคซ์ตาซี่ พร้อมด้วยกันกับ(ตอบได้มากกว่าหนึ่งคำตอบ)**

❑ บุหรี่ ❑ เหล้า ❑ ผึ้น ❑ กัญชา ❑ สารระเหย ❑ โคเคน ❑ เห็ดขี้ควาย ❑ แอลเอสดี
❑ เฮโรอีน(หรือ ผงขาว) ❑ ยาม้า(หรือ ยาบ้า ยาขยัน ยาโด๊ป) ❑ อื่นๆ (โปรดระบุ) .....

37.5 คุณได้ใช้ ยาอี หรือ เอคซ์ตาซี่ ครั้งแรก เมื่อคุณอายุเท่าไร _____ปี

37.6 โปรดบอกเหตุผลหลักๆ ว่าทำไมคุณจึงใช้ยาอี หรือ เอคซ์ตาซี่ <u>ในตอนที่คุณใช้ยาอีในครั้งแรก</u>

❑ ไม่มีเหตุผล ❑ สงสัย อยากลอง ❑ ลดความเศร้า ❑ ลดความกังวลใจ ❑ เพื่อความสนุก
❑ เพื่อให้สบายใจ ❑ เพื่อกระตุ้นพลังงาน ตื่นตัว ❑ เพราะมีคนชักชวนให้ใช้ ❑ ใช้ตามเพื่อน
❑ เหตุผลอื่นๆ (โปรดระบุ) .....

37.7 โปรดบอกเหตุผลหลักๆ ว่าทำไมคุณจึงใช้ ยาอี หรือ เอคซ์ตาซี่ <u>ในตอนที่คุณใช้ยาอีในครั้งต่อๆมา</u>

❑ ไม่มีเหตุผล ❑ สงสัย อยากลอง ❑ ลดความเศร้า ❑ ลดความกังวลใจ ❑ เพื่อความสนุก
❑ เพื่อให้สบายใจ ❑ เพื่อกระตุ้นพลังงาน ตื่นตัว ❑ เพราะมีคนชักชวนให้ใช้ ❑ ใช้ตามเพื่อน
❑ เหตุผลอื่นๆ (โปรดระบุ) .....

37.8 คุณมักจะชอบใช้ ยาอี หรือ เอคซ์ตาซี่ ตามสถานที่ใด (ตอบได้มากกว่า หนึ่งข้อคำตอบ)

❑ โรงเรียน ❑ บ้าน ❑ ดิสโก้เทค ❑ บาร์ คอฟฟี่ชอพ ❑ ตามถนน ❑ งานปาร์ตี้ต่างๆ ❑ สถานที่ของเพื่อน ❑ อื่นๆ(ระบุ).....

38. คุณเคยใช้ เห็ดขี้ควาย หรือไม่

❑ เคย ❑ ไม่เคย → พลิกเลยไปหน้าต่อไป

❑ เคยลอง 1-2 ครั้ง แต่ปัจจุบันไม่ได้ใช้
❑ เคยใช้ ไม่บ่อย แต่ปัจจุบันเลิกใช้แล้ว
❑ เคยใช้บ่อยครั้ง แต่ปัจจุบันเลิกใช้แล้ว
❑ ปัจจุบันใช้เป็นครั้งคราว ประมาณว่า.....ครั้ง ต่อปี
❑ ปัจจุบันใช้ทุกเดือน ประมาณว่า.....ครั้ง ต่อเดือน
❑ ปัจจุบันใช้ทุกสัปดาห์ ประมาณว่า.....ครั้ง ต่อสัปดาห์
❑ ปัจจุบันใช้ทุกวัน ประมาณว่า.....ครั้ง ต่อวัน

38.1 คุณใช้ เห็ดขี้ควาย ในครั้งล่าสุด เมื่อใด

❑ เมื่อ 24 ช.ม. มานี้เอง ❑ 2-15 วัน ที่ผ่านมา ❑ 16-30 วัน ที่ผ่านมา ❑ 31-45 วัน ที่ผ่านมา
❑ 46-60 วัน ที่ผ่านมา ❑ 61-75 วัน ที่ผ่านมา ❑ 76-90 วัน ที่ผ่านมา ❑ มากกว่า 90 วัน ที่ผ่านมา

38.2 คุณใช้ เห็ดขี้ควาย โดยวิธีใด (ตอบได้มากกว่าหนึ่งคำตอบ)

❑ ฉีด ❑ สูบ ❑ กิน ❑ สูดดม ❑ วิธีอื่นๆ(โปรดระบุ).....

38.3 เมื่อคุณใช้ เห็ดขี้ควาย แล้ว คุณมีความรู้สึก หรือ อาการ อย่างไรบ้าง (ตอบได้มากกว่าหนึ่งคำตอบ)

❑ มีความสุข ❑ ตื่นเต้น ❑ ปวดหัว ❑ ตื่นตัว ไม่ง่วง ❑ ประสาทหลอน ❑ มีอารมณ์เพศ
❑ ง่วงนอน ❑ สงบ ❑ เข้มแข็ง ❑ ถูกกระตุ้นให้มีกำลัง ❑ เจ็บหรือระคายคอ ❑ กระหายน้ำ
❑ เวียนหัว ❑ เหนื่อย ❑ รู้สึกป่วย ❑ คล้ายจะเป็นลม ❑ เศร้า
❑ ลดอาการของความอยาก ❑ อื่นๆ (โปรดระบุ) .....

38.4 ตอนคุณ ใช้ เห็ดขี้ควาย คุณได้ใช้พร้อมด้วยกันกับสารตัวอื่น หรือไม่

❑ ใช่ ในทุกครั้งที่ใช้ ❑ ใช่ ในบางครั้งที่ใช้ ❑ ไม่ใช่

ถ้าใช่, คุณได้ใช้ เห็ดขี้ควาย พร้อมด้วยกันกับ(ตอบได้มากกว่าหนึ่งคำตอบ)

❑ บุหรี่ ❑ เหล้า ❑ ผิ่น ❑ กัญชา ❑ ยาอี(เอกซ์ตาซี่) ❑ โคเคน ❑ สาระเหย ❑ แอลเอสดี
❑ เฮโรอีน(หรือ ผงขาว) ❑ ยาม้า(หรือ ยาบ้า ยาขยัน ยาโด๊ป) ❑ อื่นๆ (โปรดระบุ) .....

38.5 คุณได้ใช้ เห็ดขี้ควาย ครั้งแรก เมื่อคุณอายุเท่าไร _____ปี

38.6 โปรดบอกเหตุผลหลักๆ ว่าทำไมคุณจึงใช้ เห็ดขี้ควาย ในตอนที่คุณใช้เห็ดขี้ควายในครั้งแรก

❑ ไม่มีเหตุผล ❑ สงสัย อยากลอง ❑ ลดความเศร้า ❑ ลดความกังวลใจ ❑ เพื่อความสนุก
❑ เพื่อให้สบายใจ ❑ เพื่อกระตุ้นพลังงาน ตื่นตัว ❑ เพราะมีคนชักชวนให้ใช้ ❑ ใช้ตามเพื่อน
❑ เหตุผลอื่นๆ .....

38.7 โปรดบอกเหตุผลหลักๆ ว่าทำไมคุณจึงใช้ เห็ดขี้ควาย ในตอนที่คุณใช้เห็ดขี้ควายในครั้งต่อๆมา

❑ ไม่มีเหตุผล ❑ สงสัย อยากลอง ❑ ลดความเศร้า ❑ ลดความกังวลใจ ❑ เพื่อความสนุก
❑ เพื่อให้สบายใจ ❑ เพื่อกระตุ้นพลังงาน ตื่นตัว ❑ เพราะมีคนชักชวนให้ใช้ ❑ ใช้ตามเพื่อน
❑ เหตุผลอื่นๆ .....

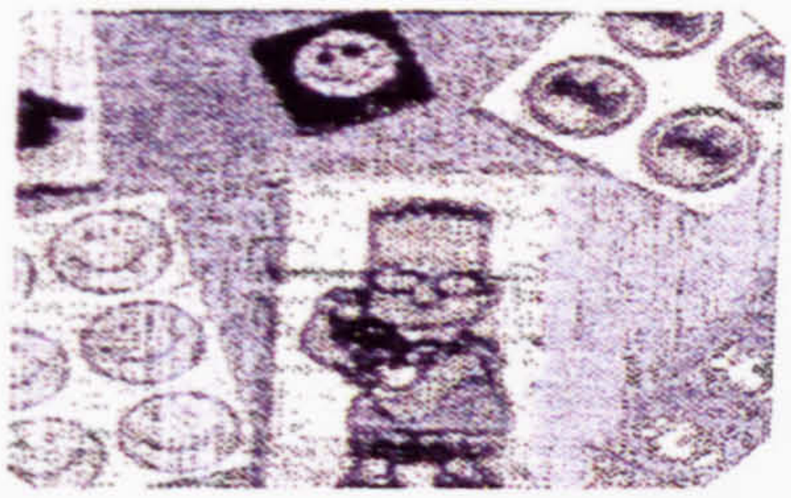
38.8 คุณมักจะชอบใช้เห็ดขี้ควาย ตามสถานที่ใด (ตอบได้มากกว่า หนึ่งข้อคำตอบ)

❑ โรงเรียน ❑ บ้าน ❑ ดิสโก้เทค ❑ บาร์ คอฟฟี่ชอพ ❑ ตามถนน ❑ งานปาร์ตี้ต่างๆ ❑ สถานที่ของเพื่อน ❑ อื่นๆ(ระบุ).....

39. คุณเคยใช้ แอล เอส ดี หรือไม่

❑ เคย ❑ ไม่เคย → พลิกเลยไปหน้าต่อไป

- ❑ เคยลอง 1-2 ครั้ง แต่ปัจจุบันไม่ได้ใช้
- ❑ เคยใช้ ไม่บ่อย แต่ปัจจุบันเลิกใช้แล้ว
- ❑ เคยใช้บ่อยครั้ง แต่ปัจจุบันเลิกใช้แล้ว
- ❑ ปัจจุบันใช้เป็นครั้งคราว ประมาณว่า.....ครั้ง ต่อปี
- ❑ ปัจจุบันใช้ทุกเดือน ประมาณว่า.....ครั้ง ต่อเดือน
- ❑ ปัจจุบันใช้ทุกสัปดาห์ ประมาณว่า.....ครั้ง ต่อสัปดาห์
- ❑ ปัจจุบันใช้ทุกวัน ประมาณว่า.....ครั้ง ต่อวัน



39.1 คุณใช้ แอล เอส ดี ในครั้งล่าสุด เมื่อใด

❑ เมื่อ 24 ช.ม. มานี้เอง ❑ 2-15 วัน ที่ผ่านมา ❑ 16-30 วัน ที่ผ่านมา ❑ 31-45 วัน ที่ผ่านมา
❑ 46-60 วัน ที่ผ่านมา ❑ 61-75 วัน ที่ผ่านมา ❑ 76-90 วัน ที่ผ่านมา ❑ มากกว่า 90 วัน ที่ผ่านมา

39.2 คุณใช้ แอล เอส ดี โดยวิธีใด (ตอบได้มากกว่าหนึ่งคำตอบ)

❑ ฉีด ❑ สูบ ❑ กิน ❑ สูดดม ❑ วิธีอื่นๆ(โปรดระบุ).....

39.3 เมื่อคุณใช้ แอล เอส ดี แล้ว คุณมีความรู้สึก หรือ อาการ อย่างไรบ้าง (ตอบได้มากกว่าหนึ่งคำตอบ)

❑ มีความสุข ❑ ตื่นเต้น ❑ ปวดหัว ❑ ตื่นตัว ไม่ง่วง ❑ ประสาทหลอน ❑ มีอารมณ์เพศ
❑ ง่วงนอน ❑ สงบ ❑ เข้มแข็ง ❑ ถูกกระตุ้นให้มีกำลัง ❑ เจ็บหรือระคายคอ ❑ กระหายน้ำ
❑ เวียนหัว ❑ เหนื่อย ❑ รู้สึกป่วย ❑ คล้ายจะเป็นลม ❑ เศร้า
❑ ลดอาการของความอยาก ❑ อื่นๆ (โปรดระบุ) .....

39.4 ตอนคุณใช้ แอล เอส ดี คุณได้ใช้พร้อมด้วยกันกับสารตัวอื่น ใช่หรือไม่

❑ ใช่ ในทุกครั้งที่ใช้ ❑ ใช่ ในบางครั้งที่ใช้ ❑ ไม่ใช่

ถ้าใช่, **คุณได้ใช้ แอล เอส ดี พร้อมด้วยกันกับ(ตอบได้มากกว่าหนึ่งคำตอบ)**

❑ บุหรี่ ❑ เหล้า ❑ ผิ่น ❑ กัญชา ❑ ยาอี(เอกซ์ตาซี่) ❑ โคเคน ❑ เห็ดขี้ควาย ❑ สารระเหย
❑ เฮโรอีน(หรือ ผงขาว) ❑ ยาม้า(หรือ ยาบ้า ยาขยัน ยาโด๊ป) ❑ อื่นๆ (โปรดระบุ) .....

39.5 คุณได้ใช้ แอล เอส ดี ครั้งแรก เมื่อคุณอายุเท่าไร _____ปี

39.6 โปรดบอกเหตุผลหลักๆ ว่าทำไมคุณจึงใช้ แอล เอส ดี ในตอนที่คุณใช้ แอล เอส ดี ในครั้งแรก

❑ ไม่มีเหตุผล ❑ สงสัย อยากลอง ❑ ลดความเศร้า ❑ ลดความกังวลใจ ❑ เพื่อความสนุก
❑ เพื่อให้สบายใจ ❑ เพื่อกระตุ้นพลังงาน ตื่นตัว ❑ เพราะมีคนชักชวนให้ใช้ ❑ ใช้ตามเพื่อน
❑ เหตุผลอื่นๆ (โปรดระบุ) .....

39.7 โปรดบอกเหตุผลหลักๆ ว่าทำไมคุณจึงใช้ แอล เอส ดี ในตอนที่คุณใช้ แอล เอส ดี ในครั้งต่อๆมา

❑ ไม่มีเหตุผล ❑ สงสัย อยากลอง ❑ ลดความเศร้า ❑ ลดความกังวลใจ ❑ เพื่อความสนุก
❑ เพื่อให้สบายใจ ❑ เพื่อกระตุ้นพลังงาน ตื่นตัว ❑ เพราะมีคนชักชวนให้ใช้ ❑ ใช้ตามเพื่อน
❑ เหตุผลอื่นๆ (โปรดระบุ) .....

39.8 คุณมักจะชอบใช้ แอล เอส ดี ตามสถานที่ใด (ตอบได้มากกว่า หนึ่งข้อคำตอบ)

❑ โรงเรียน ❑ บ้าน ❑ ดิสโก้เทค ❑ บาร์ คอฟฟี่ชอพ ❑ ตามถนน ❑ งานปาร์ตี้ต่างๆ ❑ สถานที่ของเพื่อน ❑ อื่นๆ(ระบุ).....

40.ตามความคิดเห็นของคุณ คุณคิดว่า เพื่อนร่วมชั้นเรียนของคุณ สบบุหรี่ หรือไม่

❑ มีคนสูบ ❑ ไม่มีคนสูบ ❑ ไม่ทราบ

↓

ถ้ามีคนสบ คุณคิดว่ามีคนสูบอย่างน้อยกี่คน โปรดระบุจำนวน_____คน

41.เพื่อนสนิทของคุณ สบบุหรี่ หรือไม่ (เพื่อนสนิท ทั้งในโรงเรียน และ นอกโรงเรียน)

❑ มีคนสูบ ❑ ไม่มีคนสูบ ❑ ไม่ทราบ

42.ตามความคิดเห็นของคุณ คุณคิดว่า เพื่อนร่วมชั้นเรียนของคุณ ดื่มเหล้า เบียร์ หรือไม่

❑ มีคนดื่ม ❑ ไม่มีคนดื่ม ❑ ไม่ทราบ

↓

ถ้ามีคนดื่ม คุณคิดว่ามีคนดื่มอย่างน้อยกี่คน โปรดระบุจำนวน_____คน

43.เพื่อนสนิทของคุณ ดื่ม เหล้า เบียร์ หรือไม่ (เพื่อนสนิท ทั้งในโรงเรียน และ นอกโรงเรียน)

❑ มีคนดื่ม ❑ ไม่มีคนดื่ม ❑ ไม่ทราบ

44.ตามความคิดเห็นของคุณ คุณคิดว่า เพื่อนร่วมชั้นเรียนของคุณ ใช้ยาเสพติด หรือ สารระเหย หรือไม่

❑ มีคนใช้ ❑ ไม่มีคนใช้ ❑ ไม่ทราบ

↓

ถ้ามีคนใช้ คุณคิดว่ามีคนใช้อย่างน้อยกี่คน โปรดระบุจำนวน_____คน

45.เพื่อนสนิทของคุณ ใช้ยาเสพติด หรือ สารระเหย หรือไม่ (เพื่อนสนิท ทั้งในโรงเรียน และ นอกโรงเรียน)

❑ มีคนใช้ ❑ ไม่มีคนใช้ ❑ ไม่ทราบ

ความคิดเห็นต่อสารเสพติด

โปรดขีด ✓ ลงในช่องแสดงความคิดเห็นของคุณ ตามที่คุณคิดว่า ตรงกับ ความคิดเห็นของคุณมากที่สุด ต่อสารเสพติด *(ในที่นี้ สารเสพติด หมายถึง ยาเสพติด และ สารระเหย โดยไม่รวมถึงบุหรี่และเหล้าเบียร์)*

โดยแสดงความคิดเห็นว่า ไม่เห็นด้วยอย่างยิ่ง หรือ ไม่เห็นด้วย หรือ ไม่แน่ใจ หรือ เห็นด้วย หรือ เห็นด้วยอย่างยิ่ง ในแต่ละข้อความดังต่อไปนี้

ข้อความ	ไม่เห็นด้วยอย่างยิ่ง	ไม่เห็นด้วย	ไม่แน่ใจ	เห็นด้วย	เห็นด้วยอย่างยิ่ง
1. โดยมากแล้ว การใช้ยาเสพติดจะไม่ทำให้เกิดปัญหาแก่ผู้ใช้					
2. ผลเสียของการใช้สารเสพติด มากกว่า ผลดี					
3. การใช้สารเสพติดจะทำลายสุขภาพของผู้เสพ					
4. เป็นเรื่องที่ยาก ที่ผู้ติดสารเสพติดจะมีชีวิตที่ดีได้					
5. การใช้สารเสพติดสามารถช่วยทำให้ผู้เสพมีความสุข					
6. การใช้สารเสพติดเป็นเรื่องธรรมดาของคนรุ่นใหม่					
7. สารเสพติดจะทำให้ผู้เสพผ่อนคลาย					
8. สารเสพติดทำให้ผู้ใช้ ไม่สามารถควบคุมอารมณ์ตนเองได้					
9. ใช้สารเสพติดเพียงไม่กี่ครั้ง ก็สามารถทำให้ติดได้แล้ว					
10.นักเรียนควรจะมีสิทธิในการใช้สารเสพติดได้					

ความคิดเห็นต่อเหล้า

โปรดขีด ✓ ลงในช่องแสดงความคิดเห็นของคุณ ตามที่คุณคิดว่า ตรงกับความคิดเห็นของคุณมากที่สุด ต่อเหล้า (ในที่นี้ เหล้า ให้หมายถึง เหล้า เบียร์ เครื่องดื่มแอลกอฮอล์)

โดยแสดงความคิดเห็นว่า ไม่เห็นด้วยอย่างยิ่ง หรือ ไม่เห็นด้วย หรือ ไม่แน่ใจ หรือ เห็นด้วย หรือ เห็นด้วยอย่างยิ่ง ในแต่ละข้อความดังต่อไปนี้

ข้อความ	ไม่เห็นด้วยอย่างยิ่ง	ไม่เห็นด้วย	ไม่แน่ใจ	เห็นด้วย	เห็นด้วยอย่างยิ่ง
1.ดื่มเหล้าแล้วทำให้ผู้ดื่มมีความสุข					
2.การดื่มเหล้า เป็นสาเหตุทำให้ผู้ดื่มมีโรคภัย					
3.ดื่มเหล้าแล้วทำให้ผู้ดื่มผ่อนคลาย					
4.ผลเสียของการดื่มเหล้ามีมากกว่าผลดี					
5.การดื่มเหล้าทำให้ผู้ดื่มไม่สามารถควบคุมอารมณ์ของตนเองได้					
6.การดื่มเหล้าช่วยทำให้ผู้ดื่มมีความมั่นใจตนเองมากขึ้นในการทำกิจกรรมต่างๆ					
7.การดื่มเหล้าช่วยให้ผู้ดื่มลืมความเศร้าเสียใจ					
8.การดื่มเหล้าทำให้ผู้ดื่มเสียบุคลิกภาพ					
9.ดื่มเหล้าเพียงไม่กี่ครั้ง ก็สามารถทำให้ติดเหล้าได้แล้ว					
10.นักเรียนควรจะมีสิทธิในการดื่มเหล้าได้					

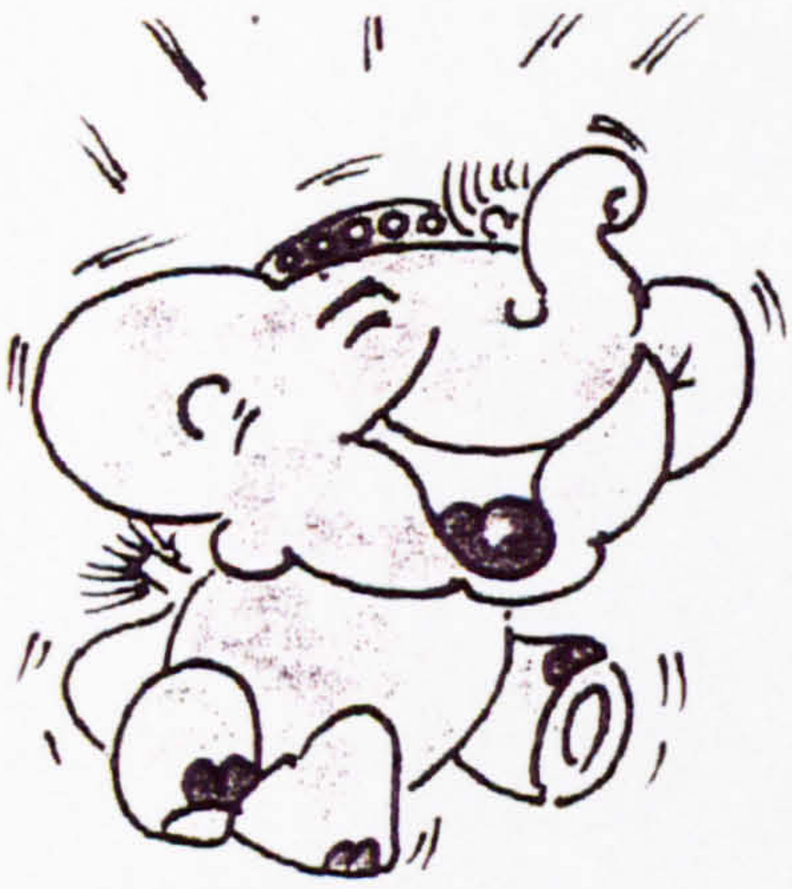
ความคิดเห็นต่อบุหรี่

โปรดขีด ✓ ลงในช่องแสดงความคิดเห็นของคุณ ตามที่คุณคิดว่า ตรงกับความคิดเห็นของคุณมากที่สุด ต่อบุหรี่

โดยแสดงความคิดเห็นว่า ไม่เห็นด้วยอย่างยิ่ง หรือ *ไม่เห็นด้วย* หรือ *ไม่แน่ใจ* หรือ *เห็นด้วย* หรือ *เห็นด้วยอย่างยิ่ง ในแต่ละข้อความดังต่อไปนี้*

ข้อความ	ไม่เห็นด้วยอย่างยิ่ง	ไม่เห็นด้วย	ไม่แน่ใจ	เห็นด้วย	เห็นด้วยอย่างยิ่ง
1.สบบุหรี่เป็นสาเหตุทำให้ผู้สบมีโรคภัย					
2.สบบุหรี่ทำให้ผู้สบได้ผ่อนคลาย					
3.ผลเสียของการสบบุหรี่ มีมากกว่าผลดี					
4.สบบุหรี่แล้ว ทำให้ผู้สบดดีขึ้น					
5.นักเรียนควรจะมีสิทธิในการสบบุหรี่ได้					
6.สบบุหรี่แล้วจะทำให้ผู้สบ มีความมั่นใจตัวเองมากขึ้นในการทำกิจกรรมต่างๆ					
7.สบบุหรี่เพียงไม่กี่ครั้ง ก็สามารถทำให้ติดบุหรี่ได้แล้ว					
8.การสบบุหรี่ เป็นการรบกวนคนอื่นๆ					
9.การสบบุหรี่ไม่ทำให้เกิดอันตรายต่อสุขภาพ ถ้าสบไม่มากนัก					
10.โดยทั่วไปแล้ว การสบบุหรี่ไม่เป็นที่ยอมรับของสังคม					

THE ASTS QUESTIONNAIRE



Please read and answer these questions about your life experiences. We do not want to know your name or anything which can identify you. So please feel comfortable to answer honestly. When you finish answering, please seal this paper in the envelope and put it in the metal box.

❖ Thank you ❖

■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■

1.What is your sex ? (tick one box)

❑ Male ❑ Female

2.Age _____years old

3.What school year are you in ?

Academic school year ❑4 ❑5 ❑6

Vocational school year ❑1 ❑2 ❑3

4.How many brothers and sisters are in your family ?

4.1 The number of brothers ? ____ brothers

4.2 The number of sisters ? ____ sisters

5.Do you live alone in your accomodation ?

❑ Yes ❑ No

if no, who do you live with ?
(tick one or more boxes)

❑ Father ❑ Mother ❑ Brothers or sisters
❑ Relatives ❑ Friends ❑ Others

6.Are your father and mother living together ?

❑ Yes ❑ No

if no, why they are not living together ?

❑ One parent works away from home

❑ Divorced ❑ Separated

❑ One or both pass away ❑ Others

7. What is the highest educational qualification of your father and mother ?

⌘⌘⌘⌘⌘⌘⌘⌘⌘⌘

Father		Mother
❑	Do not know	❑
❑	Nothing	❑
❑	Certificate of primary school	❑
❑	Certificate of secondary school	❑
❑	Bachelor degree	❑
❑	Higher than bachelor degree	❑

8.What is the main job of your parents ?

●●●●●

Father	Mother
❑ Do not know	❑ Do not know
❑ Government service	❑ Government service
❑ Private office employee	❑ Private office employee
❑ Own business	❑ Own business
❑ Farmer	❑ Farmer
❑ Labourer	❑ Labour er
❑ Unemployed	❑ Housewife
❑ Other.....	❑ Other.....
.....	.....

9.What do you think about the financial status of your parents ?

❑ No problems ❑ Some problems

❑ Many problems ❑ Do not know

10.About your study, what average grade were you in your last set of exams?

❑ A or B ❑ C ❑ D or F

11.Compared with the previous set of exams, were your average grade .....?

❑ Increased

❑ Stayed the same

❑ Decreased

12.How often did you have rows or fights with your family's members (parents, brothers, or sisters) in the last 12 months ?

❑ Never ❑ Sometimes ❑ Several times

13.Do your parents restrict your freedom ?

❑ Not at all ❑ A little

❑ A lot ❑ All the time

14.Have you ever run away from your home ?

❑ Yes ❑ No

↓

If yes, how many times have you ever run away from home ?

❑ 1 ❑ 2 ❑ 3 ❑ More than 3 times

15.Have you ever gone to any places for fun at night in the last 12 months ?

❑ Yes ❑ No

↓

If yes, how often have you ever done this ?

❑ Less than once a week ❑ 1-2 times a week

❑ 3-4 times a week ❑ More than 3 times a week

16.Do your parents smoke cigarette ?

16.1 Father ❑ Yes ❑ No ❑ Do not know

↓

If yes, how often ?

❑ Rarely ❑ Weekly ❑ Daily

16.2 Mother ❑ Yes ❑ No ❑ Do not know

↓

If yes, how often ?

❑ Rarely ❑ Weekly ❑ Daily

17.Do your parents drink alcohol ?

17.1 Father ❑ Yes ❑ No ❑ Do not know

↓

If yes, how often ?

❑ Rarely ❑ Weekly ❑ Daily

17.2 Mother ❑ Yes ❑ No ❑ Do not know

↓

If yes, how often ?

❑ Rarely ❑ Weekly ❑ Daily

18.Have you ever stayed away without permission from school in the last 12 months ?

❑ Never ❑ Up to 5 times ❑ 6-12 times ❑ More than 12 times

19.Have you ever stolen money from your parents, brothers, or sisters in the last 12 months ?

❑ No ❑ Yes

If yes, how many times have you done this ? ❑ 1 ❑ 2 ❑ 3 ❑ More than 3 times

20.Have you ever stolen money from other people (not your family) in the last 12 months ?

❑ No ❑ Yes

If yes, how many times have you done this ? ❑ 1 ❑ 2 ❑ 3 ❑ More than 3 times

21.Have you ever tried to hurt yourself ? ❑ No ❑ Yes

22.Have you ever had sex with someone ?

❑ No ❑ Yes

If yes, how old were you when you had first sex ? _____ years old

23.Do you usually feel healthy ? ❑ Yes ❑ No ❑ Not sure

24.Compared with the past month, have you lost weight by more than 1 kilogram ?

❑ Yes ❑ No ❑ Do not know

If yes, did you lose weight because you tried to reduce your weight ? ❑ Yes ❑ No

25.Have you had any problem with these symptoms in the last 3 months?

problem with a sore nose ?	**❑ None**	**❑ A few**	**❑ Several**
problem with cold or allergies ?	**❑ None**	**❑ A few**	**❑ Several**
problem with sore throat ?	**❑ None**	**❑ A few**	**❑ Several**
problem with a cough ?	**❑ None**	**❑ A few**	**❑ Several**
problem with chest pain ?	**❑ None**	**❑ A few**	**❑ Several**
problem with wheezing ?	**❑ None**	**❑ A few**	**❑ Several**
problem with a small appetite ?	**❑ None**	**❑ A few**	**❑ Several**

26.Have you ever found it difficult to pay an attention for long periods in school ?

❑ No ❑ A little ❑ Sometimes ❑ Regularly

27.If you are evaluating yourself, do you think that you are a person who has these characteristics ?

27.1 **Do you often feel aggressive ?** ❑ Yes ❑ No ❑ Not sure

27.2 **Do you often feel depressive ?** ❑ Yes ❑ No ❑ Not sure

27.3 **Are you someone who often takes risks ?** ❑ Yes ❑ No ❑ Not sure

28.Have you ever been offered cigarettes, alcohol, and illegal drugs ?

❑ Yes ❑ No

↓

If yes, which of these substances have you ever been offered ? (tick one or more boxes)

❑ Cigarette ❑ Alcohol ❑ Amphetamine

❑ Cannabis ❑ Opium ❑ Heroin

❑ Cocaine ❑ Ecstasy ❑ LSD

❑ Solvents & gases

❑ Magic mushroom

❑ Other drugs (specified).....

29.Have you ever smoke cigarettes ?

❑ Yes ❑ No → Go to next page

- ❑ Have tried once/twice, but at present, do not smoke
- ❑ Have smoked a few times, but at present, do not smoke
- ❑ Have smoked several times, but at present, do not smoke
- ❑ Still smoke occasionally, about.....times a year
- ❑ Still smoke monthly, about.....times a month
- ❑ Still smoke weekly, about.....times a week
- ❑ Still smoke daily, about.....times a day

29.1 When did you last smoke cigarettes ?

❑ Last 24 hours ❑ 2-15 days ago ❑ 16-30 days ago ❑ 31-45 days ago

❑ 46-60 days ago ❑ 61-75 days ago ❑ 76-90 days ago ❑ More than 90 days ago

29.2 How do cigarettes usually make you feel after smoking ? *(tick as many as you like)*

❑ Happy ❑ Excited ❑ Headache ❑ Awake ❑ Calm down ❑ Sad

❑ Strong ❑ Sleepy ❑ Stimulated ❑ Dizzy ❑ Reduce craving ❑ Sexy

❑ Thirsty ❑ Hallucinated ❑ Light-headed ❑ Ill ❑ Tired ❑ Give you a sore throat

❑ Others (specify)

.....

29.3 How old were you when you first smoked? _____ years old

29.4 What are your main reasons for smoking in the first time ? *(tick as many as you like)*

❑ No reasons ❑ Curious or just like to try ❑ Reduce sadness

❑ Reduce nerves ❑ Just for fun ❑ To help relax

❑ For more energy or to be alert ❑ Because you were offered a cigarette ❑ Copying friends

❑ Other reasons (specify) .....

29.5 What are your main reasons for smoking in the further times ? *(tick as many as you like)*

❑ No reasons ❑ Curious or just like to try ❑ Reduce sadness

❑ Reduce nerves ❑ Just for fun ❑ To help relax

❑ For more energy or to be alert ❑ Because you were offered a cigarette ❑ Copying friends

❑ Other reasons (specify) .....

29.6 Where do you usually smoke cigarettes ? *(tick as many as you like)*

❑ School ❑ House ❑ Disco ❑ Coffee shop ❑ Street ❑ Party ❑ Friends' place

❑ Others (specify)

.....

30.Have you ever drunk alcohol ?

❑ Yes ❑ No → Go to next page

- ❑ Have tried once/twice, but at present, do not drink
- ❑ Have drunk a few times, but at present, do not drink
- ❑ Have drunk several times, but at present, do not drink
- ❑ Still drink occasionally, about.....times a year
- ❑ Still drink monthly, about.....times a month
- ❑ Still drink weekly, about.....times a week
- ❑ Still drink daily, about.....times a day

30.1 When did you last drink alcohol ?

❑ Last 24 hours ❑ 2-15 days ago ❑ 16-30 days ago ❑ 31-45 days ago

❑ 46-60 days ago ❑ 61-75 days ago ❑ 76-90 days ago ❑ More than 90 days ago

30.2 How does alcohol usually make you feel after drink ? ***(tick as many as you like)***

❑ Happy ❑ Excited ❑ Headache ❑ Awake ❑ Calm down ❑ Sad

❑ Strong ❑ Sleepy ❑ Stimulated ❑ Dizzy ❑ Reduce craving ❑ Sexy

❑ Thirsty ❑ Hallucinated ❑ Light-headed ❑ Ill ❑ Tired ❑ Give you a sore throat

❑ Others (specify)

.....

30.3 How old were you when you first drinked ? _____ years old

30.4 What are your main reasons for drinking in the first time ? ***(tick as many as you like)***

❑ No reasons ❑ Curious or just like to try ❑ Reduce sadness

❑ Reduce nerves ❑ Just for fun ❑ To help relax

❑ For more energy or to be alert ❑ Because you were offered ❑ Copying friends

❑ Other reasons (specify) .....

30.5 What are your main reasons for drinking in the further times ? ***(tick as many as you like)***

❑ No reasons ❑ Curious or just like to try ❑ Reduce sadness

❑ Reduce nerves ❑ Just for fun ❑ To help relax

❑ For more energy or to be alert ❑ Because you were offered ❑ Copying friends

❑ Other reasons (specify) .....

30.6 Where do you usually drink alcohol ? ***(tick as many as you like)***

❑ School ❑ House ❑ Disco ❑ Coffee shop ❑ Street ❑ Party ❑ Friends' place

❑ Others (specify)

.....

31. *Have you ever used solvents & gases?*

❑ Yes ❑ No → *Go to next page*

- ❑ Have tried once/twice, but at present, do not use
- ❑ Have used a few times, but at present, do not use
- ❑ Have used several times, but at present, do not use
- ❑ Still use occasionally, about.....times a year
- ❑ Still use monthly, about.....times a month
- ❑ Still use weekly, about.....times a week
- ❑ Still use daily, about.....times a day

31.1 When did you last use solvent & gases ?

❑ Last 24 hours ❑ 2-15 days ago ❑ 16-30 days ago ❑ 31-45 days ago
❑ 46-60 days ago ❑ 61-75 days ago ❑ 76-90 days ago ❑ More than 90 days ago

31.2 How do solvents & gases usually make you feel after use ? *(tick as many as you like)*

❑ Happy ❑ Excited ❑ Headache ❑ Awake ❑ Calm down ❑ Sad
❑ Strong ❑ Sleepy ❑ Stimulated ❑ Dizzy ❑ Reduce craving ❑ Sexy
❑ Thirsty ❑ Hallucinated ❑ Light-headed ❑ Ill ❑ Tired ❑ Give you a sore throat
❑ Others (specify)

.....

31.3 Did you usually use solvents & gases with other substances ?

❑ Yes, every time ❑ Yes, sometimes ❑ No

If yes, which substance did you usually use together with solvents & gases ? *(tick as many as you like)*

❑ Cigarette ❑ Alcohol ❑ Amphetamine ❑ Opium ❑ Heroin ❑ Cannabis
❑ Cocaine ❑ Ectasy ❑ Magic mushroom ❑ LSD ❑ Others (specify)

.....

31.4 How old were you when you had first used or tried them ? _____ years old

31.5 What are your main reasons for using in the first time ? *(tick as many as you like)*

❑ No reasons ❑ Curious or just like to try ❑ Reduce sadness
❑ Reduce nerves ❑ Just for fun ❑ To help relax
❑ For more energy or to be alert ❑ Because you were offered ❑ Copying friends
❑ Other reasons (specify) .....

31.6 What are your main reasons for using in the further times ? *(tick as many as you like)*

❑ No reasons ❑ Curious or just like to try ❑ Reduce sadness
❑ Reduce nerves ❑ Just for fun ❑ To help relax
❑ For more energy or to be alert ❑ Because you were offered ❑ Copying friends
❑ Other reasons (specify) .....

31.7 Where do you usually use solvents & gases ? *(tick as many as you like)*

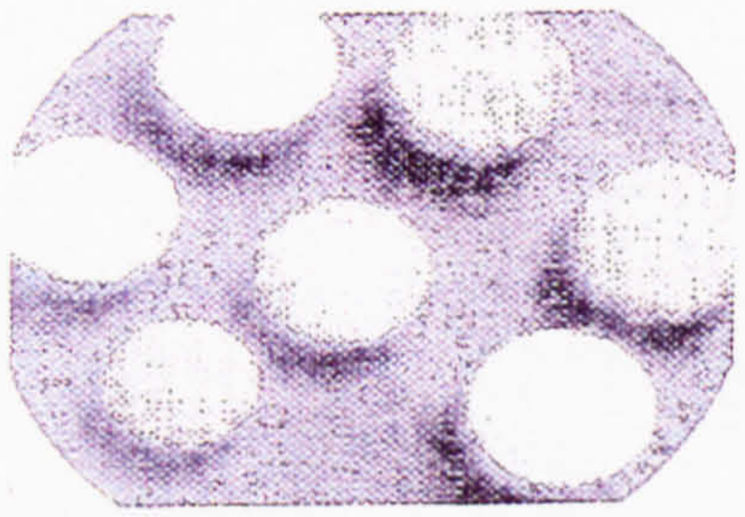
❑ School ❑ House ❑ Disco ❑ Coffee shop ❑ Street ❑ Party ❑ Friends' place
❑ Others (specify)

.....

32.Have you ever used amphetamine ?

❑ Yes ❑ No → Go to next page

- ❑ Have tried once/twice, but at present, do not use
- ❑ Have used a few times, but at present, do not use
- ❑ Have used several times, but at present, do not use
- ❑ Still use occasionally, about.....times a year
- ❑ Still use monthly, about.....times a month
- ❑ Still use weekly, about.....times a week
- ❑ Still use daily, about.....times a day



32.1 When did you last use amphetamine ?

❑ Last 24 hours ❑ 2-15 days ago ❑ 16-30 days ago ❑ 31-45 days ago
❑ 46-60 days ago ❑ 61-75 days ago ❑ 76-90 days ago ❑ More than 90 days ago

32.2 How did you take it ? *(tick as many as you like)*

❑ Injecting ❑ Smoking ❑ Eating ❑ Sniffing ❑ Others (specify)

.....

32.3 How does amphetamine usually make you feel after use ? *(tick as many as you like)*

❑ Happy ❑ Excited ❑ Headache ❑ Awake ❑ Calm down ❑ Sad
❑ Strong ❑ Sleepy ❑ Stimulated ❑ Dizzy ❑ Reduce craving ❑ Sexy
❑ Thirsty ❑ Hallucinated ❑ Light-headed ❑ Ill ❑ Tired ❑ Give you a sore throat
❑ Others (specify)

.....

32.4 Did you usually use amphetamine with other substances ?

❑ Yes, every time ❑ Yes, sometimes ❑ No

If yes, which drug did you usually use together with amphetamine ? *(tick as many as you like)*

❑ Cigarette ❑ Alcohol ❑ Solvents & gases ❑ Opium ❑ Heroin ❑ Cannabis
❑ Cocaine ❑ Ectasy ❑ Magic mushroom ❑ LSD ❑ Others (specify)

.....

32.5 How old were you when you had first used or tried it ? _____ years old

32.6 What are your main reasons for using in the first time ? *(tick as many as you like)*

❑ No reasons ❑ Curious or just like to try ❑ Reduce sadness
❑ Reduce nerves ❑ Just for fun ❑ To help relax
❑ For more energy or to be alert ❑ Because you were offered ❑ Copying friends
❑ Other reasons (specify) .....

32.7 What are your main reasons for using in the further times ? *(tick as many as you like)*

❑ No reasons ❑ Curious or just like to try ❑ Reduce sadness
❑ Reduce nerves ❑ Just for fun ❑ To help relax
❑ For more energy or to be alert ❑ Because you were offered ❑ Copying friends
❑ Other reasons (specify) .....

32.8 Where do you usually use amphetamine ? *(tick as many as you like)*

❑ School ❑ House ❑ Disco ❑ Coffee shop ❑ Street ❑ Party ❑ Friends' place
❑ Others (specify)

.....

33.Have you ever used cannabis ?

❑ Yes ❑ No → Go to next page

- ❑ Have tried once/twice, but at present, do not use
- ❑ Have used a few times, but at present, do not use
- ❑ Have used several times, but at present, do not use
- ❑ Still use occasionally, about.....times a year
- ❑ Still use monthly, about.....times a month
- ❑ Still use weekly, about.....times a week
- ❑ Still use daily, about.....times a day

33.1 When did you last use cannabis ?

❑ Last 24 hours ❑ 2-15 days ago ❑ 16-30 days ago ❑ 31-45 days ago
❑ 46-60 days ago ❑ 61-75 days ago ❑ 76-90 days ago ❑ More than 90 days ago

33.2 How did you take it ? *(tick as many as you like)*

❑ Injecting ❑ Smoking ❑ Eating ❑ Sniffing ❑ Others (specify)

.....

33.3 How does cannabis usually make you feel after use ? *(tick as many as you like)*

❑ Happy ❑ Excited ❑ Headache ❑ Awake ❑ Calm down ❑ Sad
❑ Strong ❑ Sleepy ❑ Stimulated ❑ Dizzy ❑ Reduce craving ❑ Sexy
❑ Thirsty ❑ Hallucinated ❑ Light-headed ❑ Ill ❑ Tired ❑ Give you a sore throat
❑ Others (specify)

.....

33.4 Did you usually use cannabis with other substances ?

❑ Yes, every time ❑ Yes, sometimes ❑ No

If yes, which substance did you usually use together with cannabis ? *(tick as many as you like)*

❑ Cigarette ❑ Alcohol ❑ Solvents & gases ❑ Opium ❑ Heroin ❑ Amphetamine
❑ Cocaine ❑ Ectasy ❑ Magic mushroom ❑ LSD ❑ Others (specify)

.....

33.5 How old were you when you had first used or tried it ? _____ years old

33.6 What are your main reasons for using in the first time ? *(tick as many as you like)*

❑ No reasons ❑ Curious or just like to try ❑ Reduce sadness
❑ Reduce nerves ❑ Just for fun ❑ To help relax
❑ For more energy or to be alert ❑ Because you were offered ❑ Copying friends
❑ Other reasons (specify) .....

33.7 What are your main reasons for using in the further times ? *(tick as many as you like)*

❑ No reasons ❑ Curious or just like to try ❑ Reduce sadness
❑ Reduce nerves ❑ Just for fun ❑ To help relax
❑ For more energy or to be alert ❑ Because you were offered a cigarette ❑ Copying friends
❑ Other reasons (specify) .....

33.8 Where do you usually use cannabis ? *(tick as many as you like)*

❑ School ❑ House ❑ Disco ❑ Coffee shop ❑ Street ❑ Party ❑ Friends' place
❑ Others (specify)

.....

34. Have you ever used opium ?

❑ Yes ❑ No → Go to next page

- ❑ Have tried once/twice, but at present, do not use
- ❑ Have used a few times, but at present, do not use
- ❑ Have used several times, but at present, do not use
- ❑ Still use occasionally, about.....times a year
- ❑ Still use monthly, about.....times a month
- ❑ Still use weekly, about.....times a week
- ❑ Still use daily, about.....times a day

34.1 When did you last use opium ?

❑ Last 24 hours ❑ 2-15 days ago ❑ 16-30 days ago ❑ 31-45 days ago
❑ 46-60 days ago ❑ 61-75 days ago ❑ 76-90 days ago ❑ More than 90 days ago

34.2 How did you take it ? *(tick as many as you like)*

❑ Injecting ❑ Smoking ❑ Eating ❑ Sniffing ❑ Others (specify)

.....

34.3 How does opium usually make you feel after use ? *(tick as many as you like)*

❑ Happy ❑ Excited ❑ Headache ❑ Awake ❑ Calm down ❑ Sad
❑ Strong ❑ Sleepy ❑ Stimulated ❑ Dizzy ❑ Reduce craving ❑ Sexy
❑ Thirsty ❑ Hallucinated ❑ Light-headed ❑ Ill ❑ Tired ❑ Give you a sore throat
❑ Others (specify)

.....

34.4 Did you usually use opium with other substances ?

❑ Yes, every time ❑ Yes, sometimes ❑ No

If yes, which substance did you usually use together with opium ? *(tick as many as you like)*

❑ Cigarette ❑ Alcohol ❑ Solvents & gases ❑ Cannabis ❑ Heroin ❑ Amphetamine
❑ Cocaine ❑ Ectasy ❑ Magic mushroom ❑ LSD ❑ Others (specify)

.....

34.5 How old were you when you had first used or tried it ? _____ years old

34.6 What are your main reasons for using in the first time ? *(tick as many as you like)*

❑ No reasons ❑ Curious or just like to try ❑ Reduce sadness
❑ Reduce nerves ❑ Just for fun ❑ To help relax
❑ For more energy or to be alert ❑ Because you were offered ❑ Copying friends
❑ Other reasons (specify) .....

34.7 What are your main reasons for using in the further times ? *(tick as many as you like)*

❑ No reasons ❑ Curious or just like to try ❑ Reduce sadness
❑ Reduce nerves ❑ Just for fun ❑ To help relax
❑ For more energy or to be alert ❑ Because you were offered ❑ Copying friends
❑ Other reasons (specify) .....

34.8 Where do you usually use opium ? *(tick as many as you like)*

❑ School ❑ House ❑ Disco ❑ Coffee shop ❑ Street ❑ Party ❑ Friends' place
❑ Others (specify)

.....

35.Have you ever used heroin ?

❑ Yes ❑ No → Go to next page

- ❑ Have tried once/twice, but at present, do not use
- ❑ Have used a few times, but at present, do not use
- ❑ Have used several times, but at present, do not use
- ❑ Still use occasionally, about.....times a year
- ❑ Still use monthly, about.....times a month
- ❑ Still use weekly, about.....times a week
- ❑ Still use daily, about.....times a day

35.1 When did you last use heroin ?

❑ Last 24 hours ❑ 2-15 days ago ❑ 16-30 days ago ❑ 31-45 days ago
❑ 46-60 days ago ❑ 61-75 days ago ❑ 76-90 days ago ❑ More than 90 days ago

35.2 How did you take it ? *(tick as many as you like)*

❑ Injecting ❑ Smoking ❑ Eating ❑ Sniffing ❑ Others (specify)

.....

35.3 How does heroin usually make you feel after use ? *(tick as many as you like)*

❑ Happy ❑ Excited ❑ Headache ❑ Awake ❑ Calm down ❑ Sad
❑ Strong ❑ Sleepy ❑ Stimulated ❑ Dizzy ❑ Reduce craving ❑ Sexy
❑ Thirsty ❑ Hallucinated ❑ Light-headed ❑ Ill ❑ Tired ❑ Give you a sore throat
❑ Others (specify)

.....

35.4 Did you usually use heroin with other substances ?

❑ Yes, every time ❑ Yes, sometimes ❑ No

If yes, which substance did you usually use together with heroin ? *(tick as many as you like)*

❑ Cigarette ❑ Alcohol ❑ Solvents & gases ❑ Cannabis ❑ Opium ❑ Amphetamine
❑ Cocaine ❑ Ectasy ❑ Magic mushroom ❑ LSD ❑ Others (specify)

.....

35.5 How old were you when you had first used or tried it ? _____ years old

35.6 What are your main reasons for using in the first time ? *(tick as many as you like)*

❑ No reasons ❑ Curious or just like to try ❑ Reduce sadness
❑ Reduce nerves ❑ Just for fun ❑ To help relax
❑ For more energy or to be alert ❑ Because you were offered ❑ Copying friends
❑ Other reasons (specify) .....

35.7 What are your main reasons for using in the further times ? *(tick as many as you like)*

❑ No reasons ❑ Curious or just like to try ❑ Reduce sadness
❑ Reduce nerves ❑ Just for fun ❑ To help relax
❑ For more energy or to be alert ❑ Because you were offered ❑ Copying friends
❑ Other reasons (specify) .....

35.8 Where do you usually use heroin ? *(tick as many as you like)*

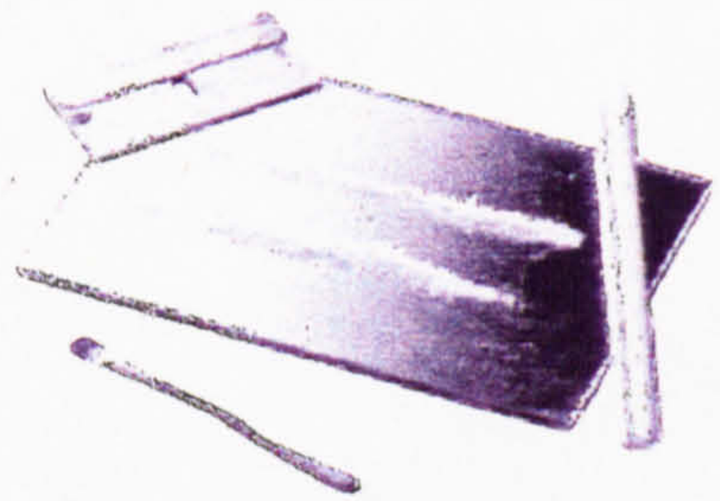
❑ School ❑ House ❑ Disco ❑ Coffee shop ❑ Street ❑ Party ❑ Friends' place
❑ Others (specify)

.....

36.Have you ever used cocaine ?

❑ Yes ❑ No → Go to next page

- ❑ Have tried once/twice, but at present, do not use
- ❑ Have used a few times, but at present, do not use
- ❑ Have used several times, but at present, do not use
- ❑ Still use occasionally, about.....times a year
- ❑ Still use monthly, about.....times a month
- ❑ Still use weekly, about.....times a week
- ❑ Still use daily, about.....times a day



36.1 When did you last use cocaine ?

❑ Last 24 hours ❑ 2-15 days ago ❑ 16-30 days ago ❑ 31-45 days ago
❑ 46-60 days ago ❑ 61-75 days ago ❑ 76-90 days ago ❑ More than 90 days ago

36.2 How did you take it ? *(tick as many as you like)*

❑ Injecting ❑ Smoking ❑ Eating ❑ Sniffing ❑ Others (specify)

.....

36.3 How does cocain usually make you feel after use ? *(tick as many as you like)*

❑ Happy ❑ Excited ❑ Headache ❑ Awake ❑ Calm down ❑ Sad
❑ Strong ❑ Sleepy ❑ Stimulated ❑ Dizzy ❑ Reduce craving ❑ Sexy
❑ Thirsty ❑ Hallucinated ❑ Light-headed ❑ Ill ❑ Tired ❑ Give you a sore throat
❑ Others (specify)

.....

36.4 Did you usually use cocain with other substances ?

❑ Yes, every time ❑ Yes, sometimes ❑ No

If yes, which substance did you usually use together with cocaine ? *(tick as many as you like)*

❑ Cigarette ❑ Alcohol ❑ Solvents & gases ❑ Cannabis ❑ Opium ❑ Amphetamine
❑ Heroin ❑ Ectasy ❑ Magic mushroom ❑ LSD ❑ Others (specify)

.....

36.5 How old were you when you had first used or tried it ? _____ years old

36.6 What are your main reasons for using in the first time ? *(tick as many as you like)*

❑ No reasons ❑ Curious or just like to try ❑ Reduce sadness
❑ Reduce nerves ❑ Just for fun ❑ To help relax
❑ For more energy or to be alert ❑ Because you were offered ❑ Copying friends
❑ Other reasons (specify) .....

36.7 What are your main reasons for using in the further times ? *(tick as many as you like)*

❑ No reasons ❑ Curious or just like to try ❑ Reduce sadness
❑ Reduce nerves ❑ Just for fun ❑ To help relax
❑ For more energy or to be alert ❑ Because you were offered ❑ Copying friends
❑ Other reasons (specify) .....

36.8 Where do you usually use cocaine ? *(tick as many as you like)*

❑ School ❑ House ❑ Disco ❑ Coffee shop ❑ Street ❑ Party ❑ Friends' place
❑ Others (specify)

.....

37.Have you ever used ecstasy ?

❑ Yes ❑ No → Go to next page

- ❑ Have tried once/twice, but at present, do not use
- ❑ Have used a few times, but at present, do not use
- ❑ Have used several times, but at present, do not use
- ❑ Still use occasionally, about.....times a year
- ❑ Still use monthly, about.....times a month
- ❑ Still use weekly, about.....times a week
- ❑ Still use daily, about.....times a day

37.1 When did you last use ecstasy ?

❑ Last 24 hours ❑ 2-15 days ago ❑ 16-30 days ago ❑ 31-45 days ago
❑ 46-60 days ago ❑ 61-75 days ago ❑ 76-90 days ago ❑ More than 90 days ago

37.2 How did you take it ? ***(tick as many as you like)***

❑ Injecting ❑ Smoking ❑ Eating ❑ Sniffing ❑ Others (specify)

.....

37.3 How does ecstasy usually make you feel after use ? ***(tick as many as you like)***

❑ Happy ❑ Excited ❑ Headache ❑ Awake ❑ Calm down ❑ Sad
❑ Strong ❑ Sleepy ❑ Stimulated ❑ Dizzy ❑ Reduce craving ❑ Sexy
❑ Thirsty ❑ Hallucinated ❑ Light-headed ❑ Ill ❑ Tired ❑ Give you a sore throat
❑ Others (specify)

.....

37.4 Did you usually use ecstasy with other substances ?

❑ Yes, every time ❑ Yes, sometimes ❑ No

If yes, which substance did you usually use together with ecstasy ? ***(tick as many as you like)***

❑ Cigarette ❑ Alcohol ❑ Solvents & gases ❑ Cannabis ❑ Opium ❑ Amphetamine
❑ Heroin ❑ Cocaine ❑ Magic mushroom ❑ LSD ❑ Others (specify)

.....

37.5 How old were you when you had first used or tried it ? _____ years old

37.6 What are your main reasons for using in the first time ? ***(tick as many as you like)***

❑ No reasons ❑ Curious or just like to try ❑ Reduce sadness
❑ Reduce nerves ❑ Just for fun ❑ To help relax
❑ For more energy or to be alert ❑ Because you were offered ❑ Copying friends
❑ Other reasons (specify) .....

37.7 What are your main reasons for using in the further times ? ***(tick as many as you like)***

❑ No reasons ❑ Curious or just like to try ❑ Reduce sadness
❑ Reduce nerves ❑ Just for fun ❑ To help relax
❑ For more energy or to be alert ❑ Because you were offered ❑ Copying friends
❑ Other reasons (specify) .....

37.8 Where do you usually use ecstasy ? ***(tick as many as you like)***

❑ School ❑ House ❑ Disco ❑ Coffee shop ❑ Street ❑ Party ❑ Friends' place
❑ Others (specify)

.....

38.Have you ever used magic mushrooms ?

❑ Yes ❑ No → Go to next page

- ❑ Have tried once/twice, but at present, do not use
- ❑ Have used a few times, but at present, do not use
- ❑ Have used several times, but at present, do not use
- ❑ Still use occasionally, about.....times a year
- ❑ Still use monthly, about.....times a month
- ❑ Still use weekly, about.....times a week
- ❑ Still use daily, about.....times a day

38.1 When did you last use magic mushrooms ?

❑ Last 24 hours ❑ 2-15 days ago ❑ 16-30 days ago ❑ 31-45 days ago
❑ 46-60 days ago ❑ 61-75 days ago ❑ 76-90 days ago ❑ More than 90 days ago

38.2 How did you take it ? ***(tick as many as you like)***

❑ Injecting ❑ Smoking ❑ Eating ❑ Sniffing ❑ Others (specify)

.....

38.3 How do magic mushrooms make you feel after use ? ***(tick as many as you like)***

❑ Happy ❑ Excited ❑ Headache ❑ Awake ❑ Calm down ❑ Sad
❑ Strong ❑ Sleepy ❑ Stimulated ❑ Dizzy ❑ Reduce craving ❑ Sexy
❑ Thirsty ❑ Hallucinated ❑ Light-headed ❑ Ill ❑ Tired ❑ Give you a sore throat
❑ Others (specify)

.....

38.4 Did you usually use magic mushrooms with other substances ?

❑ Yes, every time ❑ Yes, sometimes ❑ No

If yes, which substance did you usually use together with magic mushroom ? ***(tick as many as you like)***

❑ Cigarette ❑ Alcohol ❑ Solvents & gases ❑ Cannabis ❑ Opium ❑ Amphetamine
❑ Heroin ❑ Cocaine ❑ Ecstasy ❑ LSD ❑ Others (specify)

.....

38.5 How old were you when you had first used or tried it ? _____ years old

38.6 What are your main reasons for using in the first time ? ***(tick as many as you like)***

❑ No reasons ❑ Curious or just like to try ❑ Reduce sadness
❑ Reduce nerves ❑ Just for fun ❑ To help relax
❑ For more energy or to be alert ❑ Because you were offered ❑ Copying friends
❑ Other reasons (specify) .....

38.7 What are your main reasons for using in the further times ? ***(tick as many as you like)***

❑ No reasons ❑ Curious or just like to try ❑ Reduce sadness
❑ Reduce nerves ❑ Just for fun ❑ To help relax
❑ For more energy or to be alert ❑ Because you were offered ❑ Copying friends
❑ Other reasons (specify) .....

38.8 Where do you usually use magic mushrooms ? ***(tick as many as you like)***

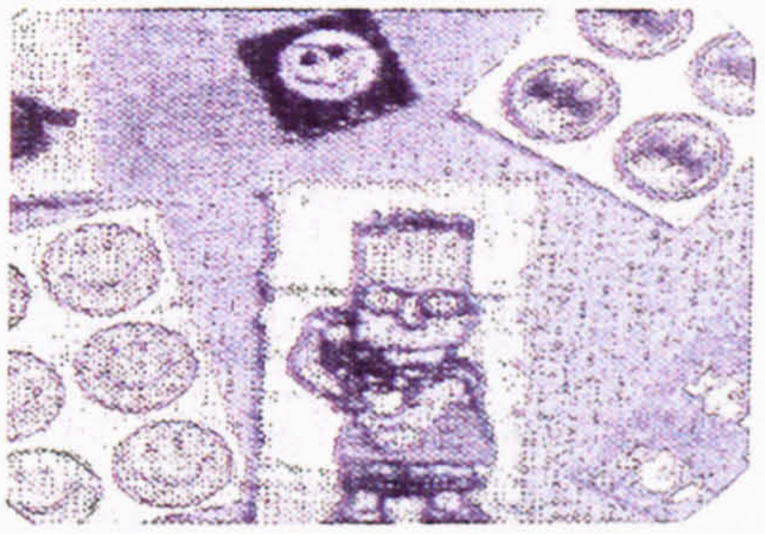
❑ School ❑ House ❑ Disco ❑ Coffee shop ❑ Street ❑ Party ❑ Friends' place
❑ Others (specify)

.....

39.Have you ever used LSD ?

❑ Yes ❑ No → Go to next page

- ❑ Have tried once/twice, but at present, do not use
- ❑ Have used a few times, but at present, do not use
- ❑ Have used several times, but at present, do not use
- ❑ Still use occasionally, about.....times a year
- ❑ Still use monthly, about.....times a month
- ❑ Still use weekly, about.....times a week
- ❑ Still use daily, about.....times a day



39.1 When did you last use LSD ?

❑ Last 24 hours ❑ 2-15 days ago ❑ 16-30 days ago ❑ 31-45 days ago
❑ 46-60 days ago ❑ 61-75 days ago ❑ 76-90 days ago ❑ More than 90 days ago

39.2 How did you take it ? *(tick as many as you like)*

❑ Injecting ❑ Smoking ❑ Eating ❑ Sniffing ❑ Others (specify)

.....

39.3 How does LSD usually make you feel after use ? *(tick as many as you like)*

❑ Happy ❑ Excited ❑ Headache ❑ Awake ❑ Calm down ❑ Sad
❑ Strong ❑ Sleepy ❑ Stimulated ❑ Dizzy ❑ Reduce craving ❑ Sexy
❑ Thirsty ❑ Hallucinated ❑ Light-headed ❑ Ill ❑ Tired ❑ Give you a sore throat ❑ Others (specify)

.....

39.4 Did you usually use LSD with other substances ?

❑ Yes, every time ❑ Yes, sometimes ❑ No

If yes, which substance did you usually use together with LSD ? *(tick as many as you like)*

❑ Cigarette ❑ Alcohol ❑ Solvents & gases ❑ Cannabis ❑ Opium ❑ Amphetamine
❑ Heroin ❑ Cocaine ❑ Magic mushroom ❑ Ecstasy ❑ Others (specify)

.....

39.5 How old were you when you had first used or tried it ? _____ years old

39.6 What are your main reasons for using in the first time ? *(tick as many as you like)*

❑ No reasons ❑ Curious or just like to try ❑ Reduce sadness
❑ Reduce nerves ❑ Just for fun ❑ To help relax
❑ For more energy or to be alert ❑ Because you were offered ❑ Copying friends
❑ Other reasons (specify) .....

39.7 What are your main reasons for using in the further times ? *(tick as many as you like)*

❑ No reasons ❑ Curious or just like to try ❑ Reduce sadness
❑ Reduce nerves ❑ Just for fun ❑ To help relax
❑ For more energy or to be alert ❑ Because you were offered ❑ Copying friends
❑ Other reasons (specify) .....

39.8 Where do you usually use LSD ? *(tick as many as you like)*

❑ School ❑ House ❑ Disco ❑ Coffee shop ❑ Street ❑ Party ❑ Friends' place
❑ Others (specify)

.....

40.Do you think that there are some people in your classroom that smoke cigarettes ?

❑ Yes ❑ No ❑ Do not know

↓

If yes, there are at least _____ students

41.Do any of your close friends *(friends in school, or friends outside school)* smoke cigarettes ?

❑ Yes ❑ No ❑ Do not know

42.Do you think that there are some people in your classroom that drink alcohol ?

❑ Yes ❑ No ❑ Do not know

↓

If yes, there are at least _____ students

43.Do any of your close friends *(friends in school, or friends outside school)* drink alcohiol ?

❑ Yes ❑ No ❑ Do not know

44.Do you think that there are some people in your classroom that use illegal drugs ?

❑ Yes ❑ No ❑ Do not know

↓

If yes, there are at least _____ students

45.Do any of your close friends *(friends in school, or friends outside school)* use illegal drugs ?

❑ Yes ❑ No ❑ Do not know

Please tick ✓ in any column that indicates your agreement in each item about using illegal drugs.(Here illegal drugs mean narchotic drugs, psychotic drugs, and solvents & gases not alcohol or cigarettes)

The choices of agreement are ***'strongly disagree'***, ***'disagree'***, ***'uncertain'***, ***'agree'***, *and* ***'strongly agree'***

ITEM	strongly disagree	disagree	uncertain	agree	strongly agree
1. People who use drugs do not have problems with them.					
2. The disadvantages of drug use are more than the advantages of drug use.					
3. Drug use will ruin users' health.					
4. It is difficult for drug users to have a good life.					
5. Using drugs will make users happy.					
6. Drug use is a normal part of growing up among a new generation of people.					
7. Using drugs will make users relax.					
8. Using drugs will make users out of control.					
9. If you use drugs a few times, you will be addicted to them.					
10.School students should have the right to use drugs.					

Please tick ✓ in any column that indicates your agreement in each item about drinking alcohol.

The choices of agreement are ***'strongly disagree'***, ***'disagree'***, ***'uncertain'***, ***'agree'***, *and* ***'strongly agree'***

ITEM	strongly disagree	disagree	uncertain	agree	strongly agree
1.Drinking alcohol makes the drinker happy.					
2.Drinking alcohol causes diseases.					
3.Drinking alcohol will help the drinker relax.					
4.The disadvantages of drinking alcohol are more than the advantages.					
5.Drinking alcohol makes people out of control.					
6.Drinking alcohol helps people to be confident in what they do.					
7.Drinking alcohol helps people forget sadness.					
8.Drinking alcohol give the drinker a bad personality.					
9. If you drink alcohol a few times, you will be addicted to it.					
10.School students should have the right to drink alcohol.					

Please tick ✓ in any column that indicates your agreement in each item about smoking cigarettes.

The choices of agreement are ***'strongly disagree'***, ***'disagree'***, ***'uncertain'***, ***'agree'***, *and* ***'strongly agree'***

ITEM	strongly disagree	disagree	uncertain	agree	strongly agree
1.Smoking cigarettes causes diseases.					
2.Smoking cigarettes helps people relax.					
3.The disadvantages of smoking cigarettes are more than the advantages.					
4.Smoking cigarettes makes the smoker look good.					
5.School students should have the right to smoke cigarettes.					
6.Smoking cigarettes makes people confident in what they do.					
7.If you smoke cigarettes a few times, you will be addicted to it.					
8.Smoking cigarettes disturbs other people.					
9.Smoking cigarettes will not be unhealthy if smokers do not smoke too much.					
10.Generally, smoking cigarette is acceptable.