



Risk and Protection Factors for Substance Use Among Young People

A Comparative Study of Early School-Leavers and School-Attending Students



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A Comparative Study of Early School-Leavers and School-Attending Students

Commissioned by the
National Advisory Committee on Drugs (NACD)

Authors:
Trutz Haase
in association with
Dr. Jonathan Pratschke

October 2010

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Foreword: Minister

I am delighted to welcome this report from the NACD on the “Risk and Protection Factors for Substance Use among Young People”. The NACD, through its research work programme seeks to address gaps in our knowledge of drug misuse in an Irish context. The results of this work programme, of which this report forms a part, should greatly increase the amount of available research and will facilitate greater evidence-based policy-making in this complex area.

This comparative study of early school leavers and school attending students differs from many studies about substance use among young people in that this study looks at the factors associated with substance use among those who left school early, as well as aiming to identify the risk and protective factors that influence young people’s decisions regarding substance use.

One of the study’s conclusions is that substance use behaviour can be linked quite clearly to a set of underlying risk and protective factors. The study identifies a limited number of highly significant risk and protective factors which can increase or decrease the risk of using substances among 15 to 18 year-olds in Ireland. It draws the conclusion that both the family (the young person’s parents above all) and the educational institution can have a major impact on this decision. The study indicates that the involvement of parents with their children is a major protective factor, reducing the risk of substance use, as is having a positive experience of school and learning. The study suggests that the implementation of a range of policies with the potential to reduce early school-leaving is in itself one of the most effective intervention strategies to reduce substance use among young people.

I hope that a greater understanding of the complex issues involved will aid in the development and implementation of policy and appropriate interventions in this area.

Finally, I would like to express my appreciation to all those involved in putting this report together, particularly Trutz Haase and Dr Jonathan Pratschke, the members of the Research Advisory Group and the Chairperson, Dr Des Corrigan, and staff of the NACD.

Pat Carey, TD

Minister for Community, Equality and Gaeltacht Affairs

Foreword: Chairperson, NACD

This comparative study of early school leavers and school-attending students looking at the Risk and Protection Factors for Substance Use among Young People was undertaken in line with Action 98 of the National Drugs Strategy 2001-2008, which required the NACD to carry out research on “at risk groups” including early school-leavers. Unlike previous studies on substance use which focused almost exclusively on young people attending school, this study aimed to explore the factors associated with substance use amongst those who left school early. The study is based on information collected in 2008 during face-to-face interviews with 991 people between 15 and 18 years of age. The target population comprised school-attending students and young people who, having left school, were attending either a Youthreach or Community Training Centre. The main findings from the study are hugely important from a policy perspective highlighting as they do the following:

- Substance use among the early school-leavers in this study is significantly higher than among the school-attending students, implying that estimates based on school-attending students alone underestimate the prevalence rates for people in the 15-18 year age group
- Parental involvement and concern constitute protective factors against substance use, while the provision of information on substance use to parents within educational settings also reduces the risk of substance use among early school leavers
- Substance use by other family members constitutes a significant risk factor for young people
- A positive school experience (including good relationships with teachers) has a huge effect in terms of reducing the risk of drinking alcohol, and using cannabis or other drugs. This indicates a substantial overlap between the factors that increase the risk of early school-leaving and those which encourage substance use among young people
- Friends can represent a major risk factor for substance use. If friends use substances, the young person is at a considerably greater risk of using the same substances: conversely, friends can also constitute a major protective factor
- Early substance use is a precursor to more serious forms of use. Early substance use involving alcohol and cigarettes, in particular, signals a considerable additional risk of progressing later to “illicit drugs”
- Living in a Drugs Task Force area has a measurable, statistically significant positive effect on drug use among early school leavers

This study has harnessed the talents and hard work of a large number of individuals from inception through to publication. The NACD is indebted to Dr Justine Horgan & to Dr Gemma Cox for their roles at crucial stages of the work and it is only right that I acknowledge the impact of the former Director of the NACD, Ms Mairéad Lyons on the structure and shape of the study. Dr Peter Muhlau of TCD played a key role in the statistical elements and the work of Ipsos MORI in conducting the fieldwork must also be mentioned. My colleagues and I are also indebted to Trutz Haase and Dr Jonathan Pratschke for the insights they have brought to the analysis of the data and the subsequent writing of the report. I am also grateful to the members of the Research Advisory Group; Chris Murphy, Bobby Smyth, Dermot Stokes, Máirín O’Sullivan, Marie-Claire McAleer, John Lahiff, Marian Brattman, Mary Kenny, Andrew Diggins and Susan Scally for their monitoring and mentoring roles during the study. That RAG was ably chaired by Dr Mary Ellen McCann who also chairs the Prevention Sub-Committee and whose members include Máirín O’Sullivan, Bill Ebbitt, Robbie Breen, Mary Johnston, Conor Rowley, Senator Maria Corrigan, Ruby Morrow, Dairearca Ní Néill, Clare O’Reilly, Mary O’Shea, Ger McHugh, and Pat Hanna.

The inputs of so many knowledgeable individuals and the involvement of so many stakeholders has enriched the project and the subsequent discussion on the policy issues arising from the results in a major way. As ever, I am grateful to Susan Scally, our Director and her staff at the NACD for their hard work during all phases of the project. I am delighted to acknowledge all those staff members in the Youthreach and Community Training Centres as well as in the Second-Level Schools for their crucial role in facilitating the research interviews. However the biggest thanks must go to the 991 young people and their parents who allowed the research team intrude into their lives and whose experiences, so vividly captured in this report, highlight the need for a continuation and strengthening of the initiatives in place to tackle both early school-leaving and drug taking among young people.

Having considered the findings from the research and other information available, the NACD makes the following recommendations:

1. Programmes of proven effectiveness which support families need to be strengthened and developed so that families have the capacity to intervene at an early stage to prevent or delay early substance use.
2. The need to strengthen early interventions to support a positive school experience cannot be stressed highly enough. It is important to build on existing education initiatives, which aim to prevent early school-leaving, so that their impact on countering substance use among young people is maintained and further embedded.
3. As foreseen in Action 55 of the National Drug Strategy, the NACD is willing to develop new methodology for estimating prevalence among young people not covered by the ESPAD survey, including those in both non-formal and out-of-schools settings.
4. Research needs to be undertaken into the positive effects of peers on substance misuse behaviour, including an assessment of the different social environments and their role in providing a “safe” developmental context for young people.
5. The study highlights the importance of substance use education (including alcohol and drug education) for students. This should be delivered in the context of a coherent programme in SPHE. The implementation of SPHE, including the whole-school approach to substance use education and the early development and implementation of SPHE in Youthreach and other education and training centres, as called for in the National Drugs Strategy (Interim) 2009-2016, is recommended.
6. The study was not designed to detect risk and protective factors at community or neighbourhood levels. Despite this, the findings do suggest that appropriate local development initiatives and interventions focused on target areas have a role to play. The NACD therefore recommends continued support for local initiatives that are proven to be effective.

The NACD believes that the contents of this report and our recommendations arising from it have implications for many Government Departments and Agencies. It is our hope that it will inform policy making and strengthen efforts to reduce the negative impact of both drug use and early school-leaving on the most vulnerable of the nation’s children.

Dr. Des Corrigan
Chairperson, NACD

Acknowledgements

This study is the fruit of a collaborative process that involved a number of people in addition to the authors. In particular, we are indebted to the members of the Project Steering Group, who provided support, encouragement and feedback during the research.

We would like to thank Dr Justine Horgan (back with the NACD as Senior Researcher after a period working for COSC) who designed the study and was responsible for its implementation and for the process of data collection. A literature review on substance use and early school-leaving, written by Justine Horgan and Evan Kenny, was also made available to the authors.

In particular, we would like to thank the 991 individuals who generously gave of their time to participate in the student survey, whilst complimenting Ipsos MORI on their excellent work in carrying out the interviews. We would also like to thank Feline Engling who assisted with the graphical representation of the results of the analysis.

We are also greatly indebted to all of the Principals, Vice-Principals, Youthreach co-ordinators and other staff who took the time to complete the school/centre surveys with patience and conscientiousness, as well as facilitating the student interviews.

Finally, we would like to express our sincere gratitude to the National Advisory Committee on Drugs (NACD) for entrusting us with this study and for its ongoing commitment to policy-relevant research on substance use in Ireland.

Trutz Haase & Jonathan Pratschke

October 2010

Executive Summary

This report was prepared for the National Advisory Committee on Drugs (NACD) by Trutz Haase, Social & Economic Consultant, and Dr. Jonathan Pratschke. It presents the results of a study of substance use among young people in Ireland based on information collected in 2008 during face-to-face interviews with 991 people, aged between 15 and 18. The target population comprised school-attending students and young people who, having left school, were attending either a Youthreach centre for education or FÁS Community Training Centre. This latter population is described in this study as “early school-leavers” and represents approximately 12% of the full annual cohort of early school-leavers.

Background

This is one of the largest studies ever undertaken on substance use among young people in Ireland, and differs from other studies in two important ways. First, whereas previous studies on substance use in this section of the population focused almost exclusively on young people attending school, this study aims specifically to explore the factors associated with substance use among those who left school early. Secondly, the study aims to identify the risk and protective factors that influence young people’s decisions regarding substance use. The study thus emphasises the underlying conditions for and dynamics of substance use with a view to identifying factors that could be addressed through appropriate policies. In pursuing these two objectives, considerable emphasis is placed on comparing the respective risk and protective factors across the two groups: those who have left school early and are now either attending a Youthreach centre for education or FÁS Community Training Centre, and those who are still attending school.

Conceptualising Substance Use

Substance use is measured in this study with respect to the consumption of 15 specified substances across three time periods. The substances range from tobacco and alcohol to cocaine and heroin, and all the most commonly used drugs – both legal and illegal – are included. Substance use is recorded for the subject’s lifetime, the past year, and the past month. As our main concern is not to measure how many people use each specific substance, but rather to investigate the factors which make different kinds of use more or less likely, it is necessary to group the 15 substances into four broad classes: cigarettes; alcohol and legal party pills; cannabis, and other drugs. The study considers three time periods and analyses data for school-attending students and early school-leavers separately, generating a compact set of 24 models. Considerable effort was taken to identify risk and protective factors that consistently influence substance use among young people, with a view to developing robust inferences regarding the attributes, characteristics, contexts and relationships which impact upon the different types of substance use in the two different samples.

The Prevalence of Substance Use among Young People

The overall level of substance use among young people revealed by this study is far from surprising and confirms the findings of previous drug prevalence studies.

More than four-fifths of early school-leavers (81.6%) have smoked during their lifetime; nearly three-quarters (73.7%) during the past year, and more than two-thirds (68.9%) during the past month. Smoking among the control group of students attending schools that service the same catchment areas as those in the Youthreach and Community Training Centres is significantly lower: just over half (53.3%) have smoked in their lifetime, 38.3% during the past year, and just over one-quarter (27.1%) in the past month. These figures are obtained after adjusting the prevalence estimates for the school sample to match the gender and age characteristics of the early school-leavers and indicate a considerably higher level of smoking among early school-leavers than their school-attending peers.

Alcohol consumption among young people in Ireland is even more prevalent than smoking. Nine out of ten (89.8%) early school-leavers have drunk alcohol at least once; nearly the same proportion (84.3%) has done so in the past year, and no less than two-thirds (65.6%) in the past month. Alcohol consumption among students attending school is somewhat lower, at 86.7% for lifetime, 78.1% for the past year and 56.4% for the past month.

More than half of all early school-leavers (57%) have used cannabis at least once. This drops to 43% over the past year and one-third (33.6%) within the past month. The use of cannabis among school-attending students is much lower, at 24.2% for lifetime, 14.5% for the past year and 7.6% for the past month.

Finally, a considerable proportion of early school-leavers and school-attending students have used other drugs at some point. Two-fifths (40.9%) of early school-leavers have tried at least one of these substances; one-quarter (25.9%) have used one over the past year and more than one in ten (11.5%) have done so over the past month. These levels differ greatly from those observed among school-attending students, where the level of drug use – excluding tobacco, alcohol and cannabis – is only a fraction of that observed among early school-leavers. About one in 10 school-attending students (11.1%) have used other drugs at least once, 6.1% have done so over the past year and 0.8% in the past month.

Overall, the prevalence figures provided by this study for school-attending students are remarkably close to those reported for Irish school-attending students and to the average levels reported for students in the 34 countries that participated in the 2007 European School Survey Project on Alcohol and Other Drugs (ESPAD, Hibell *et al.*, 2009). However, the higher levels of substance use among early school-leavers in this study draw attention to the need to include this group in prevalence studies aimed at young people.

Risk and Protective Factors in Substance Use

Although the differences in rates of substance use between early school-leavers and school-attending students are of obvious interest and concern, the main focus of this study is on the risk and protective factors that affect young people's substance-use behaviour. To this end, the study explores some seventy potential factors, which can be grouped into five broad domains: (i) personal characteristics and attitudes of the young person, (ii) the parental and home environment, (iii) factors relating to the educational centre or school, (iv) the use of substances within the peer group, and (v) characteristics of the neighbourhood in which the young person resides. Of these seventy potential factors, exactly half were found to have a statistically significant and, in certain cases, substantively profound effect on substance use. The most important findings with regard to the risk and protective factors are as follows:

Factors related to the Young Person

- Age has generally only a minor influence on substance use. The only exception is observed for alcohol consumption, which increases with age, particularly across the legal threshold of 18. In line with other studies, the study found no statistically significant effects with regard to gender.
- Ethnicity influences alcohol consumption and the use of cannabis among early school-leavers, but has no effect on smoking or other drugs, nor does it affect substance use in any way among school-attending students. Among early school-leavers, Travellers and non-white ethnic minorities are both significantly less likely to consume alcohol or cannabis. However, it should be noted, particularly with regard to Travellers, that this could be due to self-selection bias, as only a small minority of Travellers re-enter education by participating in Youthreach or FÁS Community Training Centres.
- Low self-concept, or self-esteem, in a young person contributes significantly to his/her likelihood to smoke cigarettes, among early school-leavers and school-attending students alike.
- Aggressive “acting-out” behaviour is an important indicator of a greater propensity to use substances, particularly alcohol, cannabis and other drugs. This applies equally to early school-leavers and school-attending students.
- There are strong interactions between the use of different substances: having tried cigarettes is a strong predictor of drinking alcohol and using cannabis; having drunk alcohol at least once predicts having smoked cigarettes; having used cannabis has a strong effect on the likelihood of using other drugs, and having dabbled in drugs has a strong effect on the use of cannabis among students at school. All of these effects, with the exclusion of the last, apply equally among early school-leavers and school-attending students.

Factors related to the Young Person's Parents and Home

- Parental involvement and concern constitute protective factors of the first order, although these influences appear to affect different substance classes in each of the two groups: for school-attending students, parental concern reduces the likelihood of drinking alcohol and parental involvement reduces the risk of using drugs other than cannabis; for early school-leavers, parental concern reduces the likelihood of drinking alcohol and using cannabis. By contrast, parenting appears to have little effect on smoking.

- Substance use by either parents or siblings has quite specific effects, increasing the risk for the young person of using the same substance. Smoking by a family member, for example, even controlling for a range of other influences, represents a significant additional risk of smoking for the young person. The same applies for drinking alcohol, and the use of cannabis and other drugs. The effects are particularly strong where students are still attending school but slightly weaker among those who left school early.

Factors related to the Centre or School

- Factors relating to the centre or school can be measured at the individual level (what we will refer to as “Level 1”, following the terminology of multi-level modelling), or at the level of the educational establishment (Level 2).
- Some of the most significant protective factors found in this study relate to the young person’s overall school experience. If a school student feels that he or she has a positive relationship with supportive teachers or has a positive school experience, this has a huge effect in terms of reducing the risk of drinking alcohol and using cannabis or other drugs. However, it has no effect on the likelihood of smoking cigarettes, nor can any of these effects be detected with regard to early school-leavers.
- Two considerations follow from this observation. First, the relationship between these aspects of the school experience, on the one hand, and substance use, on the other, is likely to involve reciprocal effects. Students who have a satisfying and enjoyable school experience are less likely to use substances, and those who do not use substances are more likely to have a good relationship with teachers and school. Secondly, this effect is remarkable by its absence among early school-leavers, suggesting that those who have left school early are relatively homogeneous in relation to this characteristic. These are, as other studies have shown, young people who have not had a positive experience of school or good relationships with teachers in general (see, for example, Smyth, 1999; Byrne and Smith, 2010). This underlines the close, internal relationship that exists between early school-leaving and substance use, which forms the backdrop to this study.
- With regard to early school-leavers, small but significant effects may be identified in relation to the educational establishment, including whether it provides drug awareness and information sessions for all staff, which has a small but significant protective effect, reducing the likelihood of using cannabis and other drugs. There is also evidence that unmet counselling needs experienced by those attending centres for education or training are associated with higher alcohol consumption. Within the school sector, small but significant effects were detected with regard to school policies. It is quite striking to find that the number of substance-use classes or information sessions for parents is associated with a lower risk of cigarette smoking among school-attending students.

Factors linked to the Young Person’s Peer Group

- The peer group consistently and repeatedly represents a key risk factor throughout all of the models. It is therefore important to point out that, in this study, peers are only assessed in terms of their substance-use behaviour. By definition, this implies that peers can only be conceived to have negative influences. Since the evaluation of positive peer effects, expressed via participation in sports, music, drama and similar activities, is not studied, we must merely restate that relationships with peers can simultaneously encode a range of risk and protective factors.

- Keeping this in mind, it is particularly interesting to note the specificity of the peer-related effects identified by the statistical models. If most of the interviewee's friends smoke, then there is a greater likelihood that he or she also smokes. The same applies to drinking alcohol and using cannabis and other drugs. In each case, the young person is more inclined to use the specific substance in question, even after controlling for a range of other influences. Of course, it is equally possible that young people choose their friends, at least in part, on the basis of prior substance-use behaviour or factors that are causally related to this. We would, in this case, be faced once again with a situation of potential reciprocal causality; either way, we can learn a lot by looking at young people's friendship networks. Moreover, these strong statistical relationships hold, in an almost identical manner, for those still at school and those who left school early.
- When we turn to the question of access to substances – itself quite often linked to the nature of the peer group, one might argue – a more differentiated picture emerges. Smoking is not strongly affected by ease of access, confirming that access is probably quite straightforward in this case. The same applies for alcohol among early school-leavers. Interestingly, however, ease of access to alcohol constitutes a significant additional risk factor for those still attending school. Ease of access becomes considerably more important in the context of using cannabis and other drugs. In these cases, substance use is significantly greater where access is easier, underlining a self-evident, albeit important, policy-related conclusion that holds for both school-attending students and early school-leavers.

Factors related to the Neighbourhood

- The influence of factors related to the neighbourhood is small when compared with individual and particularly peer effects, although, in practice, these may not always be so easy to separate. If a school student knows, for example, where to go for help with a drug-use problem in their area, the odds of that student using cannabis are lower, while the degree of neighbourhood disapproval of young people using substances reduces the risk of smoking among early school-leavers. Finally, living in a Drugs Task Force area has a measurable, statistically significant effect, associated with lower levels of drug use among early school-leavers. This is an important finding, not so much in terms of the size of the effect, but simply in terms of a statistically significant influence being identified at this level.

Differences between Early School-Leavers and School-Attending Students

When comparing early school-leavers with those still attending school, we find remarkable similarities not only in the risk and protective factors which affect their substance use, but also in the relative importance of the individual factors. This clearly points to an important conclusion: the higher levels of substance use that are observed among early school-leavers are not explained by the nature of their current educational context, but are primarily the result of the factors underlying early school-leaving.

Based on the findings of other studies (Smyth, 1999; Byrne and Smith, 2010), an important factor in this process appears to be the absence of a positive school experience and positive relationships with teachers among those who leave school early. As the school data reveal, these experiences dramatically reduce the risk of substance use. In a similar fashion, one could plausibly argue that the same experience lies at the heart of the decision to leave school prematurely. We do not know to what extent substance use itself contributes to an unsatisfactory school experience, but this is at least a possibility. This suggests that the close relationship between early school-leaving

and substance use is not due merely to the causal effect of one of these variables on the other, but most likely involves reciprocal causality and indirect influences by a range of background variables. Furthermore, the higher levels of substance use observed among early school-leavers are likely to produce stronger peer effects than are encountered among school-attending students, and the models provide evidence of a more extensive and collective form of consumption than is found among school-attending students.

With small and often interesting differences, it is clear that the same broad set of issues must be addressed in both schools and centres for education and training. We will now return to these issues, to highlight what we feel are the most important policy-related findings of the study.

Conclusions and Recommendations

This study identifies a limited number of highly significant risk and protective factors that can increase or decrease the risk of using substances among 15 to 18-year-olds in Ireland. When attention is focused on those factors that are amenable to change, the most important conclusion is that both the family (the young person's parents above all) and the educational institution can have a major impact on this decision.

The involvement of parents with their children is a major protective factor, reducing the risk of substance use, just as parental concern about their children's behaviour and future prospects insulates them, at least to a certain extent, from this risk. This is a most profound finding and should be communicated to parents and those who provide support to parents and families in Ireland.

Equally important is the actual behaviour of parents and other members of the immediate family, including brothers and sisters. If other family members use specific substances, this poses a significant risk that the young person will follow in their footsteps. Conversely, a family environment in which substances are not present and are not used on a regular basis can reduce this risk by limiting early experimentation and providing positive role models. It is important to remember, in this context, that behaviours that are socially acceptable and quite unproblematic for adults can pose much greater problems for young people during specific stages in their development. Awareness of this mechanism, and a more self-reflexive approach to role modelling within the family could therefore provide parents with the tools to cushion their children against the risks of early substance use.

At the school level, by far the most important factor is for the young person to feel supported by their teachers and to have a positive experience of school and learning. These are the strongest potential effects detected in this study and cannot be emphasised enough. At the same time, negative experiences are a crucial factor in the decision of at least some students to leave school prematurely, and, as we have seen, substance use is considerably higher among early school-leavers than among school-attending students. Therefore, ensuring that young people have a positive experience of school, and feel supported and capable of studying, will not only keep them longer at school, but also serve as a decisive protective factor against substance use. This logical argument also indicates that the implementation of a range of policies with the potential to reduce early school-leaving is itself one of the most effective intervention strategies to reduce substance use among young people.

The study confirms that the peer group generates very strong influences on young people's behaviour in relation to substances. This relationship is complex, involving self-selection as well as reciprocal effects, as the choice of friends and the collective consumption of substances are not independent processes, but are intertwined in important ways. All the statistical models confirm that peers can have an extraordinary influence on the behaviour of young people, and point to quite complex patterns of collective, consecutive and combined consumption of substances that involve the peer group. Parental involvement and concern are key factors in relation to substance use partly because of the way in which they relate to young people's choice of friends, their exposure to negative and positive influences within the peer group and the young person's behaviour when they are together with their friends.

A key characteristic of substance use among young people involves either progression from one substance to another, the combined use of more than one substance, or their consumption within a context characterised by polydrug use. The most obvious example of this is young people drinking and smoking in a group setting, but other contexts involving combined use of different substances are also evident (clubs, discos, parties, etc). The pattern of associations that can be observed between different types of substance use suggests that these situations are very important. For example, we find regular associations between drinking alcohol and smoking cigarettes, or smoking cigarettes and having friends who use other drugs, or using cannabis and having friends who use other drugs. In some cases, having used one substance (e.g. cigarettes) is linked with experimentation with another (e.g. cannabis), rather than its more regular use.

With regard to school-attending students, this study confirms what existing research reveals about levels of substance use among young people in Ireland. Its findings are in line with the averages reported for the 34 countries that participated in the 2007 European School Survey Project on Alcohol and Other Drugs (ESPAD, Hibell *et al.*, 2009). However, the significantly higher rate of substance use found among early school-leavers also suggests that the methodology underlying these studies may need to be revised to include those not attending school.

One of the positive conclusions of the study is that substance-use behaviour can be linked quite clearly and unequivocally to a set of underlying risk and protective factors, many of which can be influenced by appropriate policies. As far as policy-makers are concerned, equal weight should be accorded to parents (and the home environment), on the one hand, and ensuring that all students have the possibility to experience positive and satisfying relationships and challenges at school.

Tackling substance use among early school-leavers is not qualitatively different to tackling this phenomenon in school-attending students and many of the risk and protective factors are similar across these two groups. However, specific risk factors form part of the early school-leavers' world, and these should not be confused with the nature of their current educational setting. Neutralising these risks and activating key protective factors raises fundamental questions about the social processes that shaped their earlier school experiences and led them towards the decision to leave school.

Introduction

This report was prepared for the National Advisory Committee on Drugs (NACD) by Trutz Haase, Social & Economic Consultant, and Dr Jonathan Pratschke. It presents the results of a study of substance use among young people in Ireland, which was carried out in 2008 by means of face-to-face interviews with 991 people aged between 15 and 18. The target population comprised school-attending students and young people who, having left school, were attending either a Youthreach or FÁS Community Training Centre.

The survey was conceived in 2006 in response to the lack of knowledge about substance use by young people outside the formal school system (NACD, 2003, 2004). In the past, surveys dealing with substance use by young people in Ireland were typically limited to those attending schools (cf. Brinkley *et al.*, 1999; Hibell *et al.*, 2009; Morgan *et al.*, 1999; Heywood, 1996; Grube & Morgan, 1990; O Fathaigh, 1990). However, because of the possibility – indeed, the likelihood – of a relationship between substance use and early school-leaving itself (Griffin *et al.*, 2003; Loughran & McCann, 2006), it was felt that a broader approach was needed, which included young people outside the formal school setting.

The survey was planned by the NACD on the basis of an initial literature review undertaken by Dr Justine Horgan. The overall design was followed by careful development of the survey instruments and sampling methodology. The proposal was then submitted for ethical approval, which it received in 2007. Fieldwork was commissioned from Ipsos MORI, which conducted the interviews with great professionalism, particularly in light of the enormous challenges posed by field research in this area and with a young target population (NACD, 2003). An initial analysis of the survey data was commissioned from Dr Peter Mühlau of Trinity College Dublin. The authors of the present study were commissioned in September 2009 to undertake further analysis of the data and to present a full report on the findings to the NACD.

The report is structured as follows:

- Chapter 1 provides an extensive literature review of the substantive and conceptual issues surrounding early school-leaving and substance use
- Chapter 2 describes the overall approach adopted in the study and the methods applied
- Chapter 3 introduces the reader to the data and describes the key concepts and measures
- Chapter 4 provides headline results on substance use among young people, distinguishing between early school-leavers and school-attending students
- Chapter 5 presents the findings of the multi-level models
- Chapter 6 summarises the key findings on the risk and protective factors identified
- Chapter 7 outlines the policy-relevant conclusions that emerge from the study

1 Literature Review

1.1 Review of Literature

Research on substance use among young people in Ireland began in earnest during the 1980s, when a series of studies by researchers at the ESRI reported that roughly one-quarter of school-attending students aged between 13 and 17 were regular smokers, more than one-third were regular drinkers, and just over one-fifth had tried other substances (Grube & Morgan, 1986, 1990). Subsequent studies (e.g. Brinkley *et al.*, 1999) identified an increase in the use of substances among Irish school-attending students during the late 1980s and early 1990s, particularly in urban areas. This finding was confirmed by the 1995 ESPAD study (Hibell *et al.*, 1997), which recorded high rates of use for substances among Irish school pupils when compared to the 25 other European countries that took part in the survey.

The most recent ESPAD survey (2007) suggests that this situation may now be changing, at least among school-attending students, with a decrease of roughly 14 percentage points in illicit drug use when compared to the 1995 study. In 2007,

- 23% of Irish school-attending students were estimated to have smoked cigarettes over the past month, compared to an average of 29% for participating countries
- 78% had drunk alcohol in the past year (82% in the sample as a whole)
- 20% had tried cannabis at least once (19% in the sample)
- 10% had used another illicit drug (ecstasy, amphetamines, LSD, crack, cocaine or heroin; the equivalent figure for all countries was 7%)

This points to a convergence between Irish school-student prevalence rates and those of other European countries, a convergence that appears to be mirrored by the gender-specific rates for young men and women, as reported in a different study:

*“The findings indicate only small differences between boys and girls in the prevalence of substance use. This shows that gender differences in the use of substances are fragmenting. Traditionally the rate of substance use among boys was almost double that among girls. The present study found that only a slightly higher number of boys had used alcohol and illegal drugs, and girls were more likely than boys to smoke. Amongst those who did use a particular substance, however, boys used a larger quantity of the substance and started using at a younger age than girls.” (Brinkley *et al.*, 1999, p. 64)*

The most important individual characteristics associated with more serious forms of substance use, according to the research literature, are low self-esteem, poor competence, gender, age, disadvantaged socio-economic status, attitudes towards substances, and maternal affective problems (Hofler *et al.*, 1999; von Sydow *et al.*, 2002). Although disadvantaged youth are no less likely than their more affluent peers to experiment or to seek the pleasurable effects of intoxication, it would appear that the nature of their social and cultural context tends to transform this experience and its relationship to the other activities and goals that they may have.

Adolescent substance use has been identified as an important factor influencing early school-leaving (Mensch & Kandel, 1988), while poor academic performance and early school-leaving, particularly in disadvantaged areas, are often precursors of substance misuse (Arthur *et al.*, 2002; Jessor *et al.*, 1995; Newcomb and Bentler, 1988; Paulson *et al.*, 1991; Stoiber & Good, 1998). However, we know little about the factors affecting substance among those who have dropped out of school, and it is

possible that the social contexts, processes and structures that influence the behaviour of high-risk groups, such as early school-leavers, are different to those of the school-going population. This provides strong motivation for research that focuses specifically on such groups and seeks to provide additional insights for the development of effective evidence-based policies.

The psychological literature underlines the great importance of the learning environment for young people's personal and social development. During adolescence and young adulthood, young people are presented with opportunities to develop their ideas, attitudes and self-image. Participation in different kinds of learning environments (both school and non-school) exposes them to new influences, particularly those associated with peers, teachers, the learning institution itself and the local community. Research indicates that young people often start to experiment with substances during early adolescence (Griffin *et al.*, 2003), and those undergoing drug treatment report having first used substances like alcohol, tobacco and cannabis as young as 13 (Comiskey & Cox, 2007; NDTRS, 2008). Research suggests that young people have the greatest probability of using cannabis between 14 and 18 years of age (Perkonig *et al.*, 1999).

Young people's first experiences with substances frequently involve alcohol and tobacco (Collins, 2004), which can often be found in the home or be purchased from local shops, while illicit substances are most commonly sourced through peers or, less frequently, siblings (Brinkley *et al.*, 1999). Previous research suggests that early experimentation is primarily motivated by curiosity, where peers are perceived to use substances and availability makes this possible. When studying this phenomenon, it is therefore necessary to consider personality attributes that might encourage this behaviour, as well as the network of social relations in which the young person is involved and various aspects of the social context.

Crowley (2004) notes that, in about 80% of cases, young people try cannabis for the first time with friends, a finding that holds for both Ireland and European countries in general:

"This ties in with the finding that friends' use of cannabis is a significant predictor of the likelihood of a young person experimenting with the substance. Close friends are a much more significant influence than are peers, even those in the same school."

(Crowley, 2004, p. 12)

Before discussing these and other influences on substance use among young people, it may be useful to introduce a few of the concepts that guide academic research on this issue. First, it is important to distinguish between lifetime use of drugs (essentially an indicator of experimentation), use over the past year (a proxy for recent use), and use over the past month (an indicator of current use).

Given the relatively high rates of experimentation with different substances – both legal and illegal – found in studies of young people, it is necessary to examine the differences that exist between those who have tried cigarettes, alcohol, cannabis or other drugs, on the one hand, and those who use them more regularly. Dryfoos (1990) argues that "experimentation with substances must be viewed as one of the developmental tasks of early adolescents" (p. 45), pointing out that only a small number experience problems associated with their use (cf. Brinkley *et al.*, 1999; Howard, 1997). Gutierrez *et al.* (1994) report that infrequent or experimental users actually share more similarities with abstainers than with frequent substance users.

The preceding observations do not imply that early experimentation is unproblematic or free of health or other risks, but it is important to acknowledge the real differences that exist between different forms of substance use among young people and the range of factors that interact with access to determine use. Following these insights, we will present three sets of multi-level models for each category of substance, corresponding to "experimentation", "recent use" and "current use", with a view to highlighting the differences that exist between these groups.

Secondly, extensive debates have taken place in relation to the issue of “progression”, which will also receive considerable attention below when we discuss the statistical models. These debates are based on the finding that young people who smoke cigarettes or drink alcohol are more likely to use cannabis; that those who use cannabis are more likely to use other illicit substances, and so on. This clear temporal pattern of progression has been confirmed by longitudinal studies. Early attempts to theorise this phenomenon centred on the notion of “stepping stones”, with cannabis use, in particular, predisposing young people to the use of more serious drugs.

Research into the progression of adolescent substance use indicates that most people start by experimenting with alcohol and cigarettes during early adolescence, as we noted above (Johnson *et al.*, 2000; Kandel *et al.*, 1992; Griffin *et al.*, 1999). Longitudinal studies show that those who experiment with cigarette smoking during early adolescence are three times more likely to be smoking a packet every day during the final years of secondary school (Griffin *et al.*, 1999). According to Kandel (2002), young people who use cigarettes and alcohol are more likely to experiment with cannabis, and those who use cannabis are more likely to progress to the use of depressants, stimulants, hallucinogens and narcotic drugs (Griffin *et al.*, 2003).

However, it is also clear that most young people who try cannabis do not “progress” to either heavier use of this drug or to other illegal substances. Moreover, the temporal ordering of a “hierarchy” of substance use does not necessarily imply a direct causal relationship between the substances themselves. Recent research has sought to identify why certain individuals do move on to using other substances – a complex task, as there is no evidence of specific pharmacological or physiological mechanisms that might explain this, and it is exceedingly difficult to control for the full range of potential confounding variables and “spurious” associations. Many plausible social and cultural hypotheses have been advanced:

“The ‘gateway’ theory suggests that cannabis users may also use other drugs due to predisposing risk factors or experience. The gateway hypothesis acknowledges cannabis primes the user into taking other substances but that the mediating influences are not direct and also that more than one pathway may be involved. The gateway theory also acknowledges the role of legal substances (alcohol and tobacco) predisposing adolescents to using cannabis in the first place ... One elaboration of the gateway hypothesis is that social disadvantage and low levels of parental attachment are associated with early cannabis use and that these factors are themselves influential in progression to other drugs (Rigter & van Laar, 2002). There are indications that this may be part of the story but not the complete picture.”

(Collins, 2004, p. 61)

This extract highlights the importance of studying how young people start using substances that are legally available, such as alcohol and tobacco:

“Looking at the results of the present study however, it is clear that the prevalence of alcohol and cigarette use is particularly high. The health implications of such widespread use are enormous ... Despite the danger to health there is ambivalence and a certain amount of complacency in the attitude to adolescent drinking and smoking in Ireland. There is an urgent need for prevention strategies that address the use of legal substances, rather than focusing exclusively on illegal substances.” **(Brinkley *et al.*, 1999, p. 70)**

Alternative explanations for “progression” focus on the combined influence of a variety of underlying mechanisms, including the “normalisation” of drug use in certain kinds of peer groups, the gradual acceptance of a wider range of substances and a lowering of the threshold of perceived risk (Parker *et al.*, 1998), the social context of use, perhaps in interaction with individual attributes (Connolly, 2004; Mayock, 2000), alternative sources of identity and status, and the ways in which substance use itself can reinforce and intensify the risk factors that encourage early experimentation. It could be hypothesised, for example, that negative school experiences and poor academic achievement encourage early experimentation with substances, which, in turn, could have a distinct and negative impact on academic attainments. We will return to this issue later in this report, when discussing the research findings in greater detail. Further research, using both quantitative and qualitative methods, is needed in this area to develop more detailed hypotheses about possible “mechanisms” of progression.

Another important pattern of substance use involves forms of combined consumption and what is often referred to as “polydrug use”, defined by the Drug Misuse Research Division of the EMCDDA as “the use of different substances and different combinations at different times” (Sinclair *et al.*, 2001). We will focus closely on how the combined use of different substances, either together or at different moments, or the use of different substances by different people in the same contexts, could play a role in “progression” and experimentation with new substances among young people. It is important to consider how these forms of social consumption intersect with social relationships among young people more generally, including both the construction of relationships through substance use and the ways in which existing relationships can influence substance use.

The third fundamental concept relates to “risk” and “protective” factors, and is derived from a meta-theoretical approach to the study of substance use that has acquired a prominent role in applied research in recent years (Newcomb *et al.*, 1987; Bry, 1983). Clayton (1992) provides some useful definitions, describing a risk factor as “an individual attribute, individual characteristic, situational condition, or environmental context that increases the probability of drug use or abuse or a transition in level of involvement with drugs”, and a protective factor, in analogous terms, as an attribute or characteristic that “inhibits, reduces, or buffers the probability of drug use or abuse or a transition in level” (quoted in Brinkley *et al.*, 1999). The distinction between the two is largely conventional and contextual, as Spooner observes:

“... a variable that is associated with drug abuse could be a risk factor, a protective factor, a correlate and/or a consequence; and that relationship can change over time. Furthermore, it is the net effect of the combination of risk factors and protective factors, rather than any individual risk factor, that predicts drug abuse. Simple answers to the question – what causes drug abuse? do not exist.” (Spooner, 1999)

The conceptual advance represented by the use of this meta-theoretical approach lies in its emphasis on the complex and multidimensional nature of substance use and the interplay between a range of factors (associated with personal attributes and characteristics of the family, school/work, peer and neighbourhood contexts), including mediating and moderating effects, resilience as well as exposure to risk. A large number of risk and protective factors influencing substance use by young people have been identified, including the following (cf. Hawkins, Catalano, Miller, 1992):

- Commitment to school/cognitive impairment/academic success or failure
- Early persistent problem behaviour/attention deficit/hyperactivity
- Family management/family conflict/family bonds
- Family drug behaviour
- Peer relations in elementary school/association with drug-using peers
- Alienation/rebellion/sensation-seeking
- Laws and social norms/religious identity
- Level of autonomic and central-nervous-system arousal
- Hormonal factors
- Availability of substances
- Economic deprivation
- Neighbourhood disorganisation

We have already discussed the personal characteristics associated with substance use among young people; in the following paragraphs we will provide a brief overview of the principal risk and protective factors that have been identified in relation to the family context, the school environment, peer relations and the neighbourhood context. We will conclude by reviewing the evidence concerning the link between early school-leaving and substance use, one of the issues that motivates the present study.

Risk and Protective Factors: The Family

The relationship between the young person and his or her parents is critical in developmental terms (Youniss, 1983). Family structure is, in itself, an important variable, and several studies have shown that young people from “disrupted” families use substances more heavily and more frequently than others (Needle, Su, & Doherty, 1990; Doherty & Needle, 1991). As far as parental monitoring and discipline are concerned, it has been reported that “authoritative” parenting (Baumrind, 1991) is linked with improved outcomes in both school performance and individual development (Steinberg *et al.*, 1989). “Authoritarian” parenting, by contrast, tends to have a negative outcome upon school performance and other behaviours (Steinberg *et al.*, 1994).

Single parents often exert a weaker influence over their children, which reduces their ability to contrast the risk factors that contribute to early school-leaving and substance use (Dornbush *et al.*, 1985). By contrast, two-parent families tend to have higher levels of monitoring, which contribute positively to behaviour and school performance (Fisher *et al.*, 2003; Borawski *et al.*, 2003). Young people whose parents are divorced are reported to have more friends who use substances and weaker coping skills than those whose parents have not divorced (Neher & Short, 1998). Studies have found that children from broken families, those who are dissatisfied with their parents, and those who were not supervised were more likely to use drugs (Ledoux *et al.*, 2002).

In a series of studies, Brook and colleagues have found that low levels of parental attachment and high levels of permissiveness increase the likelihood that a young person may move from non-use or light use to moderate use (Brook *et al.* 1986, 1991, 1992). A five-year follow-up study of over 1,000 families found that divorce or separation in a young person’s family is a significant predictor of their experimentation with drug use and transition towards problematic use (Needle, Su & Doherty, 1990). Stein, Newcomb and Bentler (1987) found that their family-disruption factor was significantly correlated with adolescent drug use, albeit largely mediated through lack of social conformity, suggesting that the relationship is not a direct one.

The post-war scientific literature placed particular emphasis on this issue, focusing on the extent to which the adolescent feels supported by significant others (Zelkowitz, 1978; Viney, 1976). Rowe and Gully (1992) report that siblings may use illegal drugs together, while rates of co-offending are higher among siblings who are close in age (Reiss & Farrington, 1991). Older siblings have also been identified as a source of drugs for younger siblings (Needle *et al.*, 1990). Young people from families with a history of substance misuse are likely to be influenced by these role models, as well as having easier access to the substances themselves. This access can facilitate experimentation with substance use and young people may, as a consequence, be exposed to a raft of other risk factors, including neglect, an unhealthy home environment, financial hardship, insufficient parental support or a lack of interest in school performance. Families thus play a central role in preventing substance use among young people and positive phenomena such as family cohesion, interaction and parental monitoring have been identified as key protective factors that contribute to a reduction in drug misuse (Velleman *et al.*, 2005; Liddle, 2004; Borawski *et al.*, 2003; Annunziata *et al.*, 2006). High educational attainment among parents, more positive attitudes towards education, and skilled jobs are also protective factors in relation to early school-leaving. Similarly, young people who perceive that their families care for them and would intervene in their substance use tend to have lower levels of substance use (Scheer *et al.*, 2000).

Parent-school links have also been identified as having a strong influence on educational disadvantage, and consequently on substance use and early school-leaving (Weir *et al.*, 2002). Having an interest in a child's school performance and peer group, and maintaining a channel of communication between parents and children, are recognised in the literature as having a positive influence on substance use and early school-leaving. However, once young people become involved in moderate drug use, parental attempts to intervene tend to be ineffective in preventing more serious drug use (Spooner, 1999: 457), which raises, once again, the important issue of progression.

Risk and Protective Factors: The School Environment

Young people's early school experiences are of immense significance both for their subsequent school performance and their personal and social development. The scientific literature emphasises the importance of the relationship between the educational environment and substance use. Social isolation and the absence of positive relationships at school is a risk factor for substance use in later years (Bond *et al.*, 2007). Conversely, when substance use coincides with other risk factors, it becomes a powerful predictor of early school-leaving. Such risk factors, within the school environment, include low levels of literacy, low self-esteem, bullying, poor school performance and lack of school integration. This is why observers emphasise the role of truancy and interruptions in school attendance as early indicators of precocious substance use and the risk of leaving school early (Loughran & McCann, 2006, p. 14).

Young people who continue to experiment and go on to develop a more regular pattern of substance use may have a poor academic performance and weaker or more conflictual relationships with teachers, leading to withdrawal from extracurricular activities, lack of interest in school, poor attention levels, challenging behaviours and communication difficulties. These behaviours may lead to a progressive disengagement from school, characterised by truancy and disciplinary problems that result in the young person being suspended or expelled from school:

“One interesting point emerging in recent research is that cannabis use is involved in a large number of suspensions/expulsions from school. Those who were suspended or expelled were found to be much more likely than their peers to use cannabis, alcohol and other drugs. It is also of interest to note that students suspended from school are less likely to have access to further education, thus contributing to the relationship between poor educational achievement and cannabis use.” (Collins et al., 2004)

For these reasons, it is essential to identify ways of tackling behaviour problems, substance use, truancy, and disengagement within the school setting, with a view to identifying the factors underlying these phenomena and protecting both those involved in substance use and other young people attending the school. This clearly represents a major challenge, but it is important to emphasise that academic failure and a lack of commitment to school are consistently associated with a greater risk of substance use (Maguin & Loeber, 1996). A recent study emphasised the quality of relationships among people in schools – in particular, relations between teachers and students and among students themselves – as factors influencing the process of disengagement (Smyth et al., 2006). The key importance of this kind of study is underlined by the negative effects of early school-leaving on future work and life opportunities:

“The message has been consistently clear – poor attainment at school, leaving school early, lack of qualifications, all lead, more often than not, to unemployment, poorly paid employment and greatly reduced opportunities in adult life.” (Rourke, 2003)

Some of the young people in Ireland who have left school early seek alternative education pathways, such as those provided by Youthreach, Community Training Centres (CTCs) and Senior Training Centres (STCs). These provide second-chance education, focusing on work-related skills, personal development, sports, computer and literacy programmes. Students attending these centres can either sit Junior or Leaving Certificate exams or complete other FETAC-accredited education modules. However, the availability of these educational environments can also act as a “pull factor”, in that potential early school-leavers may be attracted to what is sometimes viewed as an easier route to educational attainment. This perception may be reinforced by the receipt of allowances for attendance. Together, these effects can generate a “concentration effect”, whereby young people who are already exposed to a greater risk of substance use are “selected into” a relatively homogeneous learning context where the use of other substances is also more prevalent as a background factor.

Risk and Protective Factors: Peers

There is widespread agreement that the peer group is of great social and psychological importance during adolescence (Huba & Bentler, 1980). In addition to family influences, affiliation with substance-using peers is a strong risk factor for experimentation (Hawkins, Lishner & Catalano, 1985; Needle et al., 1986). The peer group has an important influence on young people’s attitudes, behaviours, perceptions and values. This can generate powerful protective as well as risk factors (Maxwell, 2002). Young people actively seek out peers who are similar to them, and this can reinforce both negative and positive behaviours and attitudes (Ackerman, 2003). Contact with pro-social peers has been identified as leading to improved extracurricular involvement and favourable academic and psychological outcomes (Fredricks & Eccles, 2005). Peers are also an important social resource for young people, with and without substance-use problems (Windle et al., 1991).

Longitudinal and cross-sectional studies generally support the contention that drug use among peers is one of the most important factors predicting experimentation and continued use of substances (Ennett & Bauman, 1993; Oetting & Beauvais, 1987; Wills & Cleary, 1999). Swadi (1988) found that young people who perceived their peers to be using drugs were four times more likely to have used drugs and 13 times more likely to use drugs repeatedly. The effects of peer influences on substance use can take a variety of forms, including increased availability, social modelling of substance use, peer pressure and normalisation of use (Graham *et al.*, 1991). In a study of Dublin pupils reporting cannabis use, 64% said that they obtained the drug from a friend and 62% reported that the cannabis was “shared around a group of friends” (Brinkley *et al.*, 1999).

It has been suggested that peer environments characterised by substance use may attract adolescents who are seeking attention or attempting to cope with tensions originating elsewhere (Jenkins & Zunguze, 1998). The same may be true of those who feel that they have failed at school and are seeking an alternative identity through participation in non-conforming peer groups or “counter-cultures”. Brinkley *et al.* (1999) provide a good summary of the key issues raised by scientific research, and the theoretical frameworks that may be mobilised in order to explain these behaviours:

*“Social learning theory sees the use of substances as a learned behaviour. According to problem behaviour theory substance use in adolescence is an aspect of a general anti-establishment unconventional behaviour. Strain theory sees substance use as resulting from frustrated needs or wants while social control theory links it with weak internalised social controls. One of the shortcomings of the above theories is that they focus on one dimension of drug abuse. Each theory can be said to relate to and have explanatory power for one type or pattern of substance use, but they do not take into account the fact that the non-medical use of substances is a multi-dimensional phenomenon.” (Brinkley *et al.*, 1999, p. 7)*

Where the parent-child link is weak, the influence of peers tends to increase (Elliot *et al.*, 1985; McArdle *et al.*, 2002). Bronfenbrenner (1979) suggests that adolescents may turn to their peers in an attempt to receive companionship and emotional support if they do not receive these from their parents. This may be extended to the school environment, leading to a multi-centric model where a range of different contexts have the potential to provide positive role models, social support and a positive source of identity, or to generate isolation, refusal, sensations of failure, rejection or boredom. The combined effect of these different contexts may, in a cumulative and interactive manner, powerfully shape individual behaviour. From this perspective, the combined effect of disruption or deprivation across a range of contexts (family breakdown or tension, academic failure or negative experiences at school, lack of social support in the local area, etc) becomes decisive, as it can undermine the young person’s capacity to mobilise protective factors and develop resilience to the notion that substance use can suspend or distract from their problems and difficulties.

Risk and Protective Factors: The Neighbourhood

Young people tend to spend a larger proportion of their time in specific localities than adults, who generally have greater geographical mobility. This is particularly the case among young people living in disadvantaged areas, especially where their families do not have the means to organise social activities outside the neighbourhood. Peer networks, in this context, tend to be geographically quite circumscribed, reinforcing the link between the young person and their local community. The expectations, norms, behaviours and resources present at this local level thus have an immediate impact on young people, above and beyond the nature of their peer groups and family relationships. In fact, many of the family, school and peer group factors described above are “played out” within the spatial context of the neighbourhood. This context is not neutral, however, and can give rise to

powerful “neighbourhood effects” due to the concentration and interaction of distinct dimensions of disadvantage within the boundaries of specific localities.

For age reasons, many of the young people included in the present study who use substances – even “legal” ones such as cigarettes and alcohol – must do so in public areas such as parks, streets and seafronts where they are relatively “free” from parental and other types of adult supervision. Collins reports that approximately 50% of European students know a place where they could buy cannabis, a figure that rises to 78% in Ireland, with “street, park, etc” being mentioned by 40% of respondents and “school” by 23% (Collins, 2004, pp. 51-2).

These neighbourhood contexts of substance access and use – and the intense social interactions that accompany this – play an important role in the formation of young people’s habitual behaviours and expectations, and may shed light on early forms of polydrug use (Mayock, 2002). At the same time, problematic forms of substance use by young people can rapidly become problems for their communities:

“Already marginalised communities, experiencing economic deprivation, are further marginalised as problems within their communities form the basis for social and moral panic. This interpretation of drug use considers the possibility that harmful effects are induced on the individual and the communities in which they live not by virtue of the intrinsic harmfulness of the drugs themselves but rather through the social response to their use.” (Royal College of Psychiatrists and Royal College of Physicians Working Party, 2000, p. 41)

As we have noted, risk factors rooted in the community or neighbourhood include normative expectations, community organisation and disadvantage (Sampson *et al.*, 1997; Sampson & Raudenbush, 1999). Communities with a high level of poverty and “social disorder” often face greater difficulties in developing a “sense of community”, attachment to the neighbourhood (Sampson & Raudenbush, 1999; CPA, 2003) and control over the behaviour of young residents.

The social supports and material well-being of neighbourhoods may also restrict or limit positive forms of community participation. An area that lacks recreational facilities, has a history of deprivation and high levels of substance use lacks many of the resources necessary to contrast the risk factors that encourage substance use among young people. Substance use and other social behaviours are strongly mediated by their interaction within specific social contexts, as we have already seen. Morgan (2001) emphasises that “[t]he most serious drug problems involve opiates and are largely associated with deprivation. Addressing this problem requires a comprehensive approach involving not only family and community factors but also broad socio-political influences, especially educational opportunities.” This is quite different to the kinds of experimentation with substances found in less-deprived contexts and much more intractable in terms of intervention strategies.

The Link between Substance Use and Early School-Leaving

Adolescents involved in problem substance use and those who are early school-leavers often share strikingly similar experiences in key domains or contexts of their lives, including their neighbourhood, family, peer group and school, as well as in their individual attributes (Hawkins *et al.*, 1995; Hetherington *et al.*, 1983; Thompson *et al.*, 1998). Young people from disadvantaged backgrounds have a particularly high risk of early school-leaving.

A detailed analysis of retention rates in Ireland (DE&S, 2009) may be obtained from the Post-Primary Pupils Database (PPPDB), which tracks cohorts of pupils throughout the secondary education cycle. Analysis of the 1991-2001 cohorts reveals an increase in the rate completing the Junior Certificate (from 93.4% to 96.1%), while the rate for the Leaving Certificate increased from 77.1% to 81.3%.

The report further identifies the continuing existence of a gender gap, as well as marked differences depending on the type of school. The retention rate to Leaving Certificate for males in the 2001 cohort was 76.9%, compared with a rate of 85.8% for females, a difference of 8.9 percentage points. While the gender gap remains, it is slightly lower than in previous years.

With regard to school types, Secondary Schools continue to have the highest retention rates at both the Junior Certificate and Leaving Certificate (96.7% for Junior Certificate and 84.3% for Leaving Certificate in 2001), followed by Community and Comprehensive Schools (96.3% and 80.6% respectively) and then by Vocational Schools (94.5% and 74.5% respectively). However, there has been an encouraging trend, particularly with regard to the Leaving Certificate, as the gap for Community and Comprehensive Schools fell from roughly 10 to four percentage points, and the gap for Vocational Schools from 23 to 10 percentage points, between 1991 and 2001. The gap for retention rates at Junior Certificate has now almost disappeared (DE&S, 2009).

The reasons for early school-leaving include the high costs of education, low levels of parental support, lack of interest in school curricula and the failure of the education system to address the needs of minority groups such as Travellers, refugees and children with disabilities (Combat Poverty Agency, 2001).

Young people who are already exposed to risk factors for early school-leaving have an even greater risk of disengagement from education if they get involved in substance use, although the type of substance used, the reasons for using it and the social setting in which this occurs are all important factors. Research suggests that there is an increased risk of early school-leaving with weekly cannabis use by children under 15, diminishing with age (Lynskey *et al.*, 2003). Crowley (2004) provides the following summary of this correlation (but see also Grube & Morgan, 1986; Fergusson, Lynskey & Horwood, 1995):

“A strong association between cannabis use and poor educational outcomes, and especially early school leaving, is one of the best established findings in the literature on the consequences of cannabis use. It is likely that part of this relationship is due to other factors. However, the association still remains even when controls are applied to a range of factors like social background, parental expectations and supervision ... Those who were suspended or expelled [from school] were found to be much more likely than their peers to use cannabis, alcohol and other drugs.” (Crowley, 2004, p. 14)

Factors such as family cohesion, socio-economic status, low levels of family education, single-parent homes and an unstable family environment have all been linked with early school-leaving (Brooks-Gunn, Guo & Furstenberg, 1993; Franklin, 1992; Harris, 1983; Haveman *et al.*, 1991; McLanahan, 1985; Rumberger, 1983). The mechanisms involved in this set of risk factors include the low educational aspirations of parents (Ekstrom *et al.*, 1986), low levels of parental monitoring, supervision and discipline (Baumrind, 1991) as well as an absence of positive role models, support and guidance within the family. These variables predict student achievement, perceived competence, sense of relatedness to peers, academic effort and interest in school (Connell *et al.*, 1995).

1.2 Brief Overview of Education Initiatives

This section briefly outlines the main initiatives currently implemented within the Irish education system that may influence both early school-leaving and substance use by young people. No attempt will be made here to evaluate the impact of these initiatives, as this lies outside the scope of the current study. However, many of the factors identified in this study form part of the rationale for these initiatives; our literature review would therefore be incomplete without providing a cursory outline of these initiatives.

The Youthreach Programme

The Youthreach programme offers second-chance education and training to young people who drop out of school. It is directed at young, unemployed early school-leavers aged 15-20 and operates on a full-time, year-round basis. Youthreach seeks to provide early school-leavers with the knowledge, skills and confidence required to participate fully in society and to progress to further education, training and employment. Its objectives, in relation to participants, may be summarised as follows:

- Personal and social development, and increased self-esteem
- Second-chance education and introductory-level training
- The promotion of independence, personal autonomy, active citizenship and a pattern of lifelong learning
- Integration into further education, training opportunities or the labour market
- The promotion of social inclusion

At the time of the research, Youthreach is funded by the Department of Education and Skills and the Department of Enterprise, Trade and Employment. It is delivered through a network of 110 Centres for Education managed by Vocational Education Committees (VECs) and 43 Community Training Centres. The centres in which the programme is delivered are out-of-school settings and are distributed throughout the country, generally serving disadvantaged areas.

The School Completion Programme

The School Completion Programme (SCP) is a Department of Education and Skills school and community-based initiative that aims to produce a positive impact on pupil retention rates in primary and second-level schools and on the number of pupils who successfully complete the senior cycle (or equivalent). SCP entails targeting individuals of school-going age – both in and out of school – and putting support measures in place to address inequalities in education access, participation and outcomes. It is based on the project model with an integrated approach involving primary and post-primary schools, parents and the relevant statutory, voluntary and community agencies.

Projects are required to engage in a consultative and planning process with school staff, parents and local representatives of the relevant statutory, voluntary and community agencies in the development of annual retention plans. What makes the SCP unique is its “bottom-up” approach, which allows local management committees to put together plans and supports that target the needs of local young people at risk of early school-leaving. Each project employs a co-ordinator to run the project at local level.

In 2006/2007, the SCP was integrated into the new School Support Programme, which forms part of the action plan for educational inclusion known as Delivering Equality of Opportunity in Schools (DEIS), which is being implemented on a phased basis over five years. There are currently 124 School Completion clusters in operation nationwide, encompassing 473 primary schools and 223 post-primary schools.

Since September 2009, the SCP has also been integrated into the operational framework of the National Educational Welfare Board (NEWB). As part of its extended remit, the NEWB is currently developing an integrated model of service to deliver a child-focused and integrated approach to school attendance, retention and participation.

The Home School Community Liaison Scheme

The Home School Community Liaison Scheme (HSCL) is a major mainstream preventative school and community-based strategy targeted at pupils at risk of not reaching their potential in the educational system because of background characteristics that tend to impair educational attainment and school retention. The scheme is concerned with establishing partnership and collaboration between parents and teachers in the interests of children's learning. It focuses directly on the salient adults in children's educational lives and seeks indirect benefits for the children themselves.

In total, 150,000 pupils attending 543 DEIS schools have access to Home School Community Liaison, and approximately 50,000 families have been specifically targeted for the services of 402 local Home School Community Liaison Co-ordinators. A total of 8,500 pupils attending 333 rural primary DEIS schools have the services of 48 rural co-ordinators, 50% of whose time is dedicated to HSCL services.

The aims of Home School Community Liaison are to:

- Encourage active participation in the learning process by children, in particular those at risk of failure
- Promote active cooperation between home, school and relevant community agencies in promoting the educational interests of children
- Raise awareness in parents of their own capacities to enhance their children's educational progress and to assist them in developing relevant skills
- Enhance children's benefits from education, their retention by the education system, and continuation to post-compulsory and third-level education, and to cultivate in them a positive attitude towards lifelong learning
- Disseminate the positive outcomes of the scheme throughout the school system more generally

Alongside the School Completion Programme, the HSCL scheme has been integrated into the operational framework of the National Education Welfare Board since September 2009.

1.3 Social, Personal and Health Education

Although the personal development of the young person is the aim and outcome of the school experience, a key role in this process is assigned to Social, Personal and Health Education (SPHE) in both primary and post-primary schools. SPHE aims to:

- Enable the students to develop skills for self-fulfilment and living in communities
- Promote self-esteem and confidence
- Enable the students to develop a framework for responsible decision-making
- Provide opportunities for reflection and discussion
- Promote physical, mental and emotional health and well-being

Education on substance use (including tobacco, alcohol and drug education) is an integral part of the SPHE programme in both primary and post-primary schools. Introduced in 2000, SPHE became a mandatory part of the curriculum at primary level and in junior cycle at post-primary level in 2003. However, implementation at post-primary level remains uneven, as the programme faces a number of challenges in establishing itself in a crowded curriculum. The latest available figures (2004) show that up to 94% of schools implemented SPHE during First Year, but that this dropped to 54% in Third Year (Department of Education and Science, 2005).

1.4 The National Drugs Strategy (Interim) 2009-2016

The National Drugs Strategy (NDS) sets out a number of actions – which relate to the school and out-of-school settings – that are relevant to this study. As we are concerned with young people between 15 and 18, the most relevant actions are found in the prevention pillar of the NDS, which relates to four areas: (i) early school-leaving, (ii) education programmes in school settings, (iii) education programmes in non-school settings, and (iv) awareness campaigns. The NDS actions include the following:

- Action 19: to develop a framework for the future design of targeted prevention and education interventions in relation to drugs and alcohol, using a “tiered” approach
- Action 20: to improve the delivery of SPHE in primary and post-primary schools by implementing the recommendations of the SPHE evaluation in post-primary schools and developing a whole-school approach to substance-use education in the context of SPHE
- Action 21: to ensure that substance-use policies are in place in all schools and are implemented, while monitoring the effectiveness of substance-use policies and ensuring that best practices are disseminated
- Action 23: to implement SPHE in Youthreach Centres of Education and in Youth Encounter Projects and to ensure that substance-use policies are put in place in these recognised Centres for Education, with age-appropriate substance prevention and awareness programmes
- Action 25: to continue to develop facilities for both the general youth population and those most at risk through increased access to community, sports and school facilities in out-of-school hours and youth cafés
- Action 26: to implement a uniform set of drugs and alcohol education standards using the Drug Education Workers Forum (DEWF) framework currently implemented by Drugs Task Forces
- Action 29: to develop a series of prevention measures that provide supports for families experiencing difficulties due to drug/alcohol use, enhancing parenting skills and focusing on protecting the children of problem drug and/or alcohol users
- Action 31: to maintain the focus of existing programmes targeting ESL and the retention of students in schools, while improving the measurement of the outcomes of such programmes

2 Research Design

Meetings with a large number of stakeholders (see Annex 1) were convened at an early stage in the preparation of the research project, to discuss the feasibility of a study on substance use among young people. These meetings confirmed both the feasibility of the study and the considerable support that existed among stakeholders for its implementation. The feasibility study included three separate meetings with: (i) members of staff from a Local Drugs Task Force (LDTF) and a Partnership (ii) members of staff from a second LDTF and (iii) the principal and senior staff of a school in a third LDTF area. The specific obstacles associated with the study were discussed, together with ways of overcoming them.

2.1 Objectives of the Study and Research Design

The question at the centre of this research project is:

How do the key social contexts of an adolescent's life affect substance use among early school-leavers, in contrast to those who are attending school?

To answer this question, the study must:

- (i) Describe accurately the levels and types of substance use among young people in different social contexts, and the associated risk factors
- (ii) Describe the key control and support structures, as perceived by young people, as well as the other protective factors to which they have access
- (iii) Examine the relationship between substance use and social context, controlling for individual-level risk and protective factors

Given the centrality of the social context to the phenomenon of substance use, the sampling strategy for the study was prepared with a view to comparing two distinct populations: young people attending schools, and those who left school early and are currently attending a Youthreach or Community Training Centre. Early school-leavers are defined as young people who have not completed senior cycle. As young people aged 16 or over are legally entitled to decide whether to stay in the education system or not, early school-leaving may represent a perfectly legitimate decision on the part of the young person. Those who are attending a Youthreach or FÁS Community Training Centre represent one part of the overall population of early school-leavers, and are the focus of this study as they provide insights into the relationship between substance use and educational trajectories.

It would perhaps have been preferable to extend this sample to include school-leavers who are no longer participating in any form of education; however, the difficulties involved in identifying and interviewing members of this sub-group precluded this possibility. The reason for this is that, while details of individual pupils are compiled by state-aided schools – e.g. for the purposes of reporting retention details to the Post-Primary Pupils Database (PPPDB) – details of ex-pupils (individuals who have left school early) are not recorded. This means that, using the information that is currently available, no overall sample frame for early school-leavers can be constructed.

Estimates indicate that as many as 9,000 young people leave post-primary education without attempting the Leaving Certificate every year, and an additional 750 to 1,000 fail to make the transition from primary to post-primary education. About 6,000 attend either a Youthreach or FÁS Community Training Centre, which cater for those aged 16 to 20. The sample population for this study

thus represents approximately 12% of the full annual cohort of early school-leavers. These young people are not entirely representative of early school-leavers in general, precisely because they have returned to education and training through participation at a Youthreach or FÁS Community Training Centre. This needs to be kept in mind when interpreting the results of this study.

A comparative analysis of school-attending students and participants at Youthreach and FÁS Community Training Centres can nevertheless help to identify some of the mechanisms and processes that underlie substance use among young people and help to explain the interruption of their school careers. A cross-sectional analysis cannot, however, identify the causal pathways and reciprocal influences that are likely to exist between social context, substance use and early school-leaving. To the extent that we find higher levels of substance use among early school-leavers, for example, this is compatible with a range of possible hypotheses, such as the following: (a) substance use was a key factor in their leaving school early; (b) substance use was an effect of their leaving school early; (c) both substance use and early school-leaving are effects of some other factor (or set of factors), such as individual difficulties, disadvantaged family background and/or residence in a disadvantaged neighbourhood. Further research, based on a longitudinal design, which follows a specific cohort of students from a relatively early age through to early adulthood, would be needed in order to address this complex issue.

The present study seeks to identify the factors that are most strongly related to substance use in the two contexts mentioned above. Critical to this is the “nested” structure of the social context within which young people live, as they are exposed to shared, aggregate-level effects within their learning environment, social circle and local neighbourhood. A multi-level design is the most appropriate way of studying this hierarchical structure, as it distinguishes between the different “levels” of influence from the individual to the school level (Bryk & Raudenbush, 1988; Garner & Raudenbush, 1991; Snijders & Bosker, 1999). This approach is more appropriate than traditional, individual-level statistical analyses, as it enables us to explore whether the effect of different schools or alternative learning centres on substance use may be related to higher-level influences such as the composition and “culture” of the school or centre and the policies adopted by it. Multi-level statistical techniques also enable us to ascertain whether these higher-level effects can strengthen or weaken the relationship between individual risk and protective factors, on the one hand, and substance use, on the other, acting as “triggers” or “buffers”.

A key issue in the present study relates to the oft-cited reluctance of survey participants to report accurately about the sensitive or stigmatised behaviours in which they may have engaged. Survey researchers often seek to encourage accurate reporting of sensitive behaviours by allowing respondents to complete a paper-and-pencil, self-administered questionnaire, which is immediately sealed in an envelope and returned to the interviewer. However, this approach requires that respondents be sufficiently literate to complete a written questionnaire, a requirement that becomes particularly problematic when the questionnaire includes “branching” and complex “skip patterns”. For this reason, Computer-Assisted Personal Interviewing (CAPI) was adopted as the preferred technique, relying on professional, highly-trained interviewers and strong guarantees of anonymity to reassure participants.

2.2 Sampling Strategy

As mentioned above, this study was designed with a multi-level statistical analysis in mind, which has far-reaching consequences in terms of sampling strategy. Most importantly, multi-level analyses of this kind comprise two kinds of sample. The first sample pertains to the higher-level units – the school or non-school context in which young people participate, for example – while the second contains the young people themselves, who are sampled within the schools/centres included in the first sample. These two samples are referred to as the “level 2” and “level 1” samples respectively.

One of the issues raised by this study relates to the problem of “differential selection”, which arises when groups differ on variables that are related to the dependent variable. For example, social class (or socio-economic status) is known to be related to both early school-leaving and substance use. This has the potential to generate “confounding”; i.e. where the effects of two or more factors become merged and can no longer be distinguished, as the compositional effects are superimposed with the differences between the two contexts per se (schools and centres). In this study, precautions were taken to reduce this risk of confounding by using “critical matching” techniques to select young people from school and non-school settings (these techniques will be discussed below). Although information on gender and age was collected, and can be used to control for confounding during the statistical analysis, no information on social class, socio-economic status, the education level of parents or the employment status of other family members was collected. This means that it is not possible to control for the risk of confounding between these antecedents of early school-leaving, on the one hand, and the direct and indirect effects they may have on substance use, on the other.

Sampling was carried out directly by NACD and initially focused on centres for education and training which either offer early school-leavers a pathway to re-enter education or provide young people with an alternative to mainstream education (i.e. Youthreach and FÁS Community Training Centres). Fifty centres were randomly selected from a list which was stratified according to whether the centres were located in or outside Dublin. Centres that could not be contacted were replaced by other randomly selected units from the original list.

In the second stage, a selection of “post-primary feeder schools”, including Secondary, Vocational, Community and Comprehensive Schools – which were associated with each of the centres sampled during the first phase – were identified and contacted. Feeder schools, in this context, are the schools that were attended by early school-leavers prior to interrupting their school career. The next step in the sampling strategy was thus to make a random selection of up to 40 students from the enrolment lists of each centre. From this list of 40 individuals, one young person was randomly selected and the school that they had previously attended was included in the sample. If the selected school declined to participate, another random selection was made and the relevant school was contacted. This step was repeated for each of the alternative education centres.

The final step involved compiling a list of students in the school who matched the early school-leaving group according to gender and age. From this list a random selection of up to 40 students was identified for inclusion in the sample. Each individual selected was contacted via the centre/school and provided with information on the study as well as with a parental consent form. Ipsos MORI provides the following summary of the difficulties encountered during the “recruitment” phase:

A key challenge was a reluctance amongst certain individuals to take part in the study, or their unavailability when the interviewer was on location. Feedback from interviewers suggested that, despite an initial willingness to take part in the study a number dropped out when they learned from peers the exact nature of the survey and that it requested details on drug-taking behaviour ... Interestingly the refusal rate varied widely between locations, with certain locations delivering a 100% response rate whereas others may only deliver one or two individuals out of ten selected. (Ipsos MORI, 2009: 21)

To summarise, the initial sample comprised 50 centres and 50 schools. Within each centre, 40 students in the target age group (aged 15-18) were sampled randomly from enrolment lists. While the centres were stratified by location and randomly selected within specific strata, the schools were identified by selecting one of the “feeder schools” that participants had previously attended. This selection was made on a random basis, implying that the probability of selection was proportional to the school’s “share” among the young school-leavers. In other words, if a large proportion of those at the centre had attended a specific school, then the probability of selecting that school was proportionally greater. Within each of the selected schools, students were stratified by gender and age (on the basis of the profile of the related centre), and then randomly selected (within strata) for inclusion.

This complex procedure generated a sample of 50 “pairs” of centres and schools, with 40 young people in each centre or school, i.e. $50 \times 40 \times 2 = 4,000$ individuals. During the fieldwork phase, interviewers were set a target of 20 young people per centre or school, for a total of 2,000 individuals. As *Table 2.1* indicates, 991 interviews were actually carried out (479 early school-leavers grouped in 51 centres and 512 students from 31 schools). This implies some potential for “selection bias” in the composition of the final sample, as young people who were not available for interview, or who were unwilling to participate, are likely to differ from those who were available and willing (less than one-quarter of those sampled actually participated in the survey). This selection bias is likely to produce a relatively conservative estimate of substance use, as heavier and more frequent users are, arguably, more likely to have been unavailable or unwilling to participate in the survey. This should be taken into account when interpreting the results of the study.

The “pairing” of centres and schools is likely to somewhat attenuate the risk of confounding, noted earlier, in relation to social class and other background variables. Indeed, if early school-leavers were identical to those attending school, at least in terms of socio-economic situation, there would be little or no risk of confounding. To the extent that more disadvantaged students have a greater risk of leaving school before the age of 16, this confounding effect will influence the results of the study. As a result, any differentials that may be observed in relation to substance use, between early school-leavers and school-attending students, cannot be attributed to a specific factor such as socio-economic background, the aggregate effect of centres/schools or having left school early. All that we can conclude is that, operating together, these different factors (and perhaps others) give rise to the observed differences.

When discussing survey sampling, great importance is attributed to the “representative” nature of the resulting sample; i.e. whether it is possible to generalise from the sample to a wider population. From this perspective, it is clear from the preceding discussion that the sample used in this study is representative of alternative learning centres in Ireland, but not of schools. Moreover, because the level 2 units (centres or schools) were not sampled randomly from a homogeneous population, they cannot be included in a single multi-level model. This is because one of the assumptions of the multi-level model is that the level 2 units are randomly sampled from a single population.

We will therefore estimate two sets of models: one for early school-leavers and one for school-attending students. As the model for the school-attending students is not entirely representative of Irish schools more generally, we must be careful about how we interpret the results. The model for school-attending students is effectively representative of students living in relatively disadvantaged areas, where a higher proportion of students leave school early. Nevertheless, as will be shown later, the prevalence rates for substance use among the school-attending students in this study are very similar to those established by previous studies for the Irish school-going population as a whole. This suggests that the differences may not be as pronounced as one might have anticipated on the basis of the sampling scheme.

The sample sizes for the two sets of models are 479 early school-leavers in 51 Youthreach and Community Training Centres and 512 school-attending students in 31 schools, implying that exactly one out of three centres is represented in the effective sample (see *Table 2.1* below). The total number of students in the two samples would be considered more than adequate from the perspective of the classical linear regression model and related techniques, including ANOVA and the analysis of differences in means. As far as multi-level models are concerned, however, these samples are only just acceptable, as these are often described as requiring a minimum of 25 level 1 units within 25 level 2 aggregate units (625 cases). Although the precise sample size required at each level depends on the nature of the phenomenon under study and the strength of the relationships involved (including the strength of the contextual effects), simulation studies indicate that 100 level 2 units provide a more satisfactory level of statistical power in the situations that are most commonly encountered in social research, with 20-30 observations for each of these units.

The fact that the sample size is relatively small in this study (for the purpose of a strong multi-level model) will have consequences for the analysis, including (i) low statistical power, which may reduce our capacity to identify all the relevant explanatory factors; (ii) limits to the size and complexity of the models that can be estimated; and (iii) potential problems during model estimation itself in relation to the stability of the estimates. Aware of these considerations, we will tackle the analysis in this light, paying close attention to diagnostic tests and indicators.

It is important to state clearly what the multi-level modelling techniques applied in this study can reveal about the relationship between social context, early school-leaving and substance use. By treating the level 2 units (schools or centres, in the present case) as forming part of a distribution, multi-level models permit efficient and powerful estimates. Rather than estimating the aggregate effect of each centre or school separately, the estimates are obtained for the whole distribution of early school-leavers or school-attending students simultaneously. This means that more extreme observations, based on a small number of cases, are “adjusted” on the basis of the full range of information available from all units. An advantage of the technique is that varying numbers of interviews across the level 2 units are permitted.

From the models for early school-leavers and for school-attending students, we will gain insights into: (i) whether the relationship between individual-level explanatory variables and substance use varies across this aggregate context, in terms of levels (intercepts) and slopes (the magnitude of the effects); (ii) whether the characteristics of and policies adopted by the different centres and schools influence substance use; and (iii) whether the characteristics of and policies adopted by the centres or schools influence the individual-level factors. As the centres and schools can only be modelled separately, due to the sampling strategy adopted, the multi-level models cannot provide any definitive conclusions about the differences between early school-leavers and school-attending students. These differences will therefore be analysed using descriptive techniques (both univariate and multivariate), although we will also discuss the outcomes of the statistical models from this perspective.

2.3 Questionnaire Design

Two questionnaires were developed for the study, one for the young people and one for school principals and co-ordinators of Youthreach centres. Both questionnaires were primarily designed by the NACD, although Ipsos MORI provided input on question wording, layout and flow with a view to improving the measurement instruments and “to ensure that they were easily understood by the intended respondents” (Ipsos MORI, 2009: 4).

2.4 Pilot Study

In October 2007, the NACD commissioned Ipsos MORI to undertake the pilot stage of the research project, which was conducted in December of that year. Four centres and one post-primary school were selected to take part. The NACD liaised with each of these in advance in order to secure their participation and to obtain parental permission for each person taking part in the study. During the preparation phase, some of the local contacts reported that only a small number of parents had provided consent, and one indicated that the study could not proceed due to reluctance among students. In the end, 57 interviews were conducted across the four locations (two-thirds with young women), and none of the respondents identified by the schools and centres refused to participate in the interview.

In light of the pilot study, a number of changes were made to question wording and routing, as detailed in the Ipsos MORI report on the data-collection process. To overcome the difficulties mentioned above in relation to participation and consent, it was recommended that a structured communication process be used when recruiting each centre/school, to ensure that they understood their role and how to go about obtaining parental permission.

2.5 Data Collection

The main fieldwork was carried out in two periods: March-May and September-December 2008. The second period of interviews was rendered necessary by the difficulties encountered in recruiting schools and centres to take part in the study and by logistical difficulties at certain locations. All interviews with young people were conducted using Computer-Assisted Personal Interviewing (CAPI) in order to avoid routing errors, to facilitate real-time checks and edits, and to prevent data-entry errors, while the interviews with school principals or co-ordinators relied on a paper-based survey questionnaire, which was designed to gather information on the nature of the educational establishment and specific details relating to it.

The interviews were conducted by experienced interviewers from Ipsos MORI, all of whom received extensive training prior to the study. Parental consent was secured for all young participants, and an information leaflet was provided to all those selected to participate in the study. This leaflet outlined the purpose of the study, providing them with assurances of confidentiality and contact details in the NACD should they have any questions. Anyone participating in the study had the opportunity to withdraw at any point, even during the interview itself. It was made known to all those selected that their participation was entirely voluntary. In addition, Ipsos MORI set up and staffed a telephone helpline for respondents, school/centre co-ordinators and respondents. The helpline handled queries, refusals and requests for information or appointments.

Table 2.1: Number of Completed Interviews by County

County	Number of Youthreach/ CTC Centres	Number of Early School-Leavers Interviewed	Number of Schools	Number of School-Attending Students Interviewed
Dublin	9	89	10	142
Kildare	2	31	0	0
Laois	1	2	0	0
Longford	1	7	2	33
Louth	1	15	1	21
Meath	1	3	2	25
Offaly	1	19	0	0
Westmeath	1	7	0	0
Wexford	1	6	0	0
Wicklow	2	17	0	0
Clare	3	27	2	38
Cork	6	57	4	53
Kerry	3	34	3	48
Limerick	2	16	1	27
Tipperary	2	9	0	0
Waterford	3	20	2	47
Galway	2	27	1	23
Mayo	1	7	0	0
Roscommon	1	17	0	0
Sligo	0	0	1	16
Cavan	3	27	1	26
Donegal	4	33	1	13
Monaghan	1	9	0	0
Total	51	479	31	512

In total, 40 Youthreach centres (out of 110) and 11 Community Training Centres (out of 43) participated in the study. The 31 participating schools comprise 12 Secondary Schools and 19 Vocational, Community or Comprehensive Schools.

3 Data Analysis

3.1 Introduction

The main objective of this study is to analyse substance use among 15 to 18-year-old early school-leavers and those still attending school, and between different educational and training contexts. The classical, linear regression model (CLRM), which is frequently used to analyse survey data, would be unable to incorporate the nested structure of the data, due to the sampling procedures described above. Not only is this type of model unable to shed light on the hierarchical nature of the phenomena in question, the CLRM yields biased standard errors and inefficient estimates in the presence of what is referred to by methodologists as “serial autocorrelation”. This is due to the experiences and attributes that students who frequent the same schools or centres have in common. Multi-level statistical analysis techniques are used here to circumvent this problem and to permit more accurate estimates of variation both within and between groups.

A detailed discussion of multi-level models and the strategy followed here in relation to model construction will be provided below. Before presenting the results of the multi-level models, however, we will provide an outline of the nature and patterning of substance use by the young people included in the study, using tables and graphs. This analysis will provide in-depth insights into the issues at the heart of this research project and assist in the interpretation of the modelling results presented later in this report.

3.2 Description of Variables

In the development of statistical models, the construction of a set of explanatory variables is a theoretically guided process that involves some important decisions. For example, information on schools/centres collected at the individual level may actually reflect aspects of the aggregate context, rather than individual attributes. In these cases, we use the average for the school or centre as a level 2 explanatory variable, rather than using the individual responses at level 1.

3.3 Dependent Variables

Drug-use variables are counts of positive answers to three questions about the use of 15 substances during three different time periods:

Q32a. Which of the following have you ever done?

Q32b. Which of the following have you done in the last 12 months?

Q32c. Which of the following have you done in the last 30 days?

This generates 45 substance-use variables (*Table 3.1*).

Table 3.1: Dependent Variables for Substance Use

Substance	Lifetime	Last Year	Last Month
1 – Tobacco	TobLT	TobLY	TobLM
2 – Alcohol	AlcLT	AlcLY	AlcLM
3 – Cannabis	CanLT	CanLY	CanLM
4 – Cocaine	CocLT	CocLY	CocLM
5 – Crack	CraLT	CraLY	CraLM
6 – Amphetamines	AmpLT	AmpLY	AmpLM
7 – LSD	LsdLT	LsdLY	LsdLM
8 – Magic Mushrooms	MmLT	MmLY	MmLM
9 – Heroin	HerLT	HerLY	HerLM
10 – Tranquillisers or Sedatives	TraLT	TraLY	TraLM
11 – ‘Legal’ party pills	PpLT	PpLY	PpLM
12 – Anti-depressants (without prescription)	AdeLT	AdeLY	AdeLM
13 – Ecstasy	EcsLT	EcsLY	EcsLM
14 – Solvents	SolLT	SolLY	SolLM
15 – Anabolic steroids	AsLT	AsLY	AsLM

Analysing the potential risk and protective factors in relation to 45 different dependent variables would result in an enormous number of models, the output of which would be incomprehensible to most readers. Furthermore, the low rates of consumption of many specific substances, particularly during the past month, would render many of these models unstable and weak. The consultants therefore decided to reduce the dependent variables by constructing a simple typology of substance use, with a view to obtaining more robust results and generating more focused, policy-relevant recommendations.

In this context, it may be useful to cite a small number of published studies, to provide an idea of the broad strategies that are available to the researcher in relation to substance-use typologies. For example, Merikangas *et al.* (1998) distinguish between three broad categories of drugs, including “hard” drugs (opiates, cocaine, stimulants, hallucinogens, or inhalants), “soft” drugs (cannabis, sedatives, benzodiazepines, or barbiturates), alcohol and nicotine. Many other studies conducted among young people (Griffin *et al.*, 2003) are limited to a restricted range of consumption behaviours, such as smoking, drinking alcohol, smoking cannabis and using inhalants, perhaps distinguishing between “light” and “heavy” use on the basis of frequency of consumption or quantity consumed. Similarly, Keough *et al.* (1999) distinguish between smoking cigarettes, drinking beer/wine/coolers, drinking “hard” alcohol, smoking cannabis and using other drugs. Martin *et al.* (1996) classified women into one of four groups, using the following categories: (i) no substance use; (ii) use of one substance (either cigarettes, alcohol or drugs); (iii) use of two substances (some combination of cigarettes, alcohol or drugs); and (iv) use of three substances (cigarettes, alcohol and drugs).

Harrison *et al.* (1997) use the *Monitoring the Future* lifetime and annual substance-use questions (Johnston *et al.*, 1994), which inquire about how many times adolescents have used alcohol, cannabis, inhalants, hallucinogens, cocaine, amphetamines, barbiturates and tranquillisers, heroin and other opiates, as well as other people's prescription drugs. They also asked at what age respondents started using these substances and in what context. A hierarchy of substance-use patterns was then created, using data on reported use during the past 12 months. A distinction was made between any use and more frequent use (defined as at least 10 times), based on the finding that infrequent users typically exhibit few dangerous use patterns or use consequences (Harrison, 1990). Young people who reported no substance use were classified as "non-users", while those who reported use of one or more substances one to nine times were classified as "infrequent users". The authors found that most young people used only one substance, and most used specific substances only once or twice. Respondents who reported having used a substance at least 10 times were classified as "one-substance users". Those who reported use of two substances at least 10 times were classified as "two-substance users", and those who reported use of three or more substances at least 10 times were classified as "multiple-substance users".

There are good reasons for seeking to operationalise substance use via broad categories like these, that distinguish between qualitatively different kinds of use. For the purposes of this study, we begin by developing a categorical measure that distinguishes between young people: (i) who do not use any substances; (ii) who drink alcohol, smoke tobacco or take legal party pills but do not use any other substances; (iii) who use cannabis, but do not use any other illegal substances; and (iv) who use solvents, illicit prescription drugs (tranquillisers, sedatives or anti-depressants), cocaine, crack, LSD, magic mushrooms, amphetamines, ecstasy or heroin. Anabolic steroids, which were used by just two individuals, were not included in the analysis.

As far as the statistical analysis is concerned, it would have been useful to have "quantitative" measures of how often different kinds of substances were used. It would have been desirable to have a dependent variable that measured the frequency with which the respondents drink alcohol, for example, or smoke cigarettes. Although this kind of information was included in the survey, the time-frame used to collect information on frequency of use varies within the sample. For some respondents, for example, we have information on how often they used a specific substance over the past month, while, for others, the information recorded relates to the past year. Responses were recorded on a four-point frequency scale that ranges from "less than once a week" to "every day", for those who had smoked or drunk in the last month, and from "just once or twice" to "more than once a month" for those who had not smoked or drunk in the last month, but had done so in the previous year. It is therefore impossible to "unify" these two response scales within a common time interval.

There is no way to correct for this, so we are forced to either restrict the sample (which would give rise to a serious decline in statistical power) or to rely on simple measures of substance use (the respondent either used or did not use a given substance). The consultants have adopted the latter approach, using four dichotomous dependent variables that refer to the consumption of the following categories of substance over lifetime, past year and past month: (i) cigarettes; (ii) alcohol and/or legal party pills; (iii) cannabis; and (iv) solvents, tranquillisers/sedatives, anti-depressants, cocaine, crack, LSD, magic mushrooms, amphetamines, ecstasy, heroin. The combined use of these dependent variables permits analysis of how these different groups of substances are used, including overlapping and multiple substance use. The aggregation of various substances to form macro-categories undoubtedly carries the risk of overlooking the differences between them, and the differences in their educational, health and social consequences, but is both necessary (due to the low rates of use of many of these individual substances) and beneficial in terms of our broad understanding of risk and protective factors. The headline results for the grouped substance-use variables will be presented in Chapter 4.

3.4 Independent Variables

The independent variables include all the measures and scales used to study the range of potential risk and protective factors that affect a young person's likelihood of using substances. The project database contains some 450 such variables, derived from the responses received to specific questions. However, many of these questions form part of scales – groups of items that reflect a specific concept. Researchers frequently use a battery of different questions in order to tap the different “facets” of their concepts, with a view to combining these later to derive a robust measure, with a structure and measurement scale that is identical for all respondents. A full list of the individual variables and multi-item scales used in the statistical models is provided in Annex 2.

4 Substance Use among Young People

4.1 Introduction

In this section, we will report the level of substance use in the sample of early school-leavers and the matched sample of school-attending students. As the school sample has significantly different demographic characteristics, the estimates we present for the school sample have been adjusted for age and gender so that they mirror the composition of the early school-leavers, in order to facilitate direct comparisons of prevalence rates.

As noted above, the prevalence rates for school-attending students are not representative of school-attending students in general, but refer broadly to the schools that cater for the same catchment areas as the centres that were sampled.

4.2 Level of Substance Use among Early School-Leavers and School-Attending Students

Table 4.1: Level of Substance Use – Individual Substances

Substance	Lifetime		Past Year		Past Month	
	Early School-Leavers	School-Attending Students	Early School-Leavers	School-Attending Students	Early School-Leavers	School-Attending Students
1 – Tobacco	81.6	53.3	73.7	38.3	68.9	27.1
2 – Alcohol	89.6	85.7	84.3	78.1	65.3	54.4
3 – Cannabis	57.0	24.2	43.0	14.5	33.6	7.6
4 – Cocaine	25.9	3.7	14.8	2.5	5.4	0.2
5 – Crack	1.3	1.2	0.4	1.0		
6 – Amphetamines	18.4	3.1	5.6	1.0	0.8	
7 – LSD	5.6	2.0	2.3	2.0		
8 – Magic Mushrooms	12.1	2.5	5.4	0.4	0.4	
9 – Heroin	1.3		0.4			
10 – Tranquillisers or Sedatives	3.8	1.2	1.9	0.2	0.8	
11 – ‘Legal’ party pills	23.4	6.8	13.2	3.9	2.9	0.2
12 – Anti-depressants	8.4	2.0	5.4	0.4	2.1	0.4
13 – Ecstasy	27.3	4.9	17.5	2.3	7.1	0.4
14 – Solvents	14.4	5.5	2.9	0.4	0.8	
15 – Anabolic steroids	0.8	.02	0.2	0.2	0.2	

Note: Figures for school-attending students are adjusted by age and gender to match the composition of early school-leavers.

As we have seen, it would not only be difficult to study the factors that influence 45 different dependent variables related to different kinds of substances, but the results would also lack robustness due to the small numbers of users in many cases. Furthermore, whether a young person uses one substance rather than another may be influenced by contingent factors or local influences that do not express qualitatively different forms of substance use. It is, therefore, more meaningful to aggregate individual substances into broader classes.

In the rest of this report, the 15 types of substance (shown in *Table 4.1*) will be aggregated into the following four categories:

- **Tobacco** = use of tobacco (item 1)
- **Alcohol or Party Pills** = use of either alcohol (item 2) or party pills (item 11)
- **Cannabis** = use of cannabis (item 3)
- **Other Drugs** = use of any other drug; i.e. cocaine (item 4), crack (item 5), amphetamines (item 6), LSD (item 7), magic mushrooms (item 8), heroin (item 9), tranquillisers or sedatives (item 10), anti-depressants (item 12), ecstasy (item 13), solvents (item 14) or anabolic steroids (item 15)

Table 4.2 below presents our survey-based estimates of the incidence of these aggregate classes of substance use for early school-leavers and school-attending students. *Table 4.3* compares the levels of substance use among early school-leavers compared to school-attending students.

Table 4.2: Prevalence of Substance Use – Key Categories

Substance	Lifetime		Past Year		Past Month	
	Early School-Leavers	School-Attending Students	Early School-Leavers	School-Attending Students	Early School-Leavers	School-Attending Students
Tobacco	81.6	53.3	73.7	38.3	68.9	27.1
Alcohol	89.8	86.7	84.3	78.1	65.6	56.4
Cannabis	57.0	24.2	43.0	14.5	33.6	7.6
Other Drugs	40.9	11.1	25.9	6.1	11.5	0.8

Note: Figures for school-attending students are adjusted by age and gender to match the composition of early school-leavers.

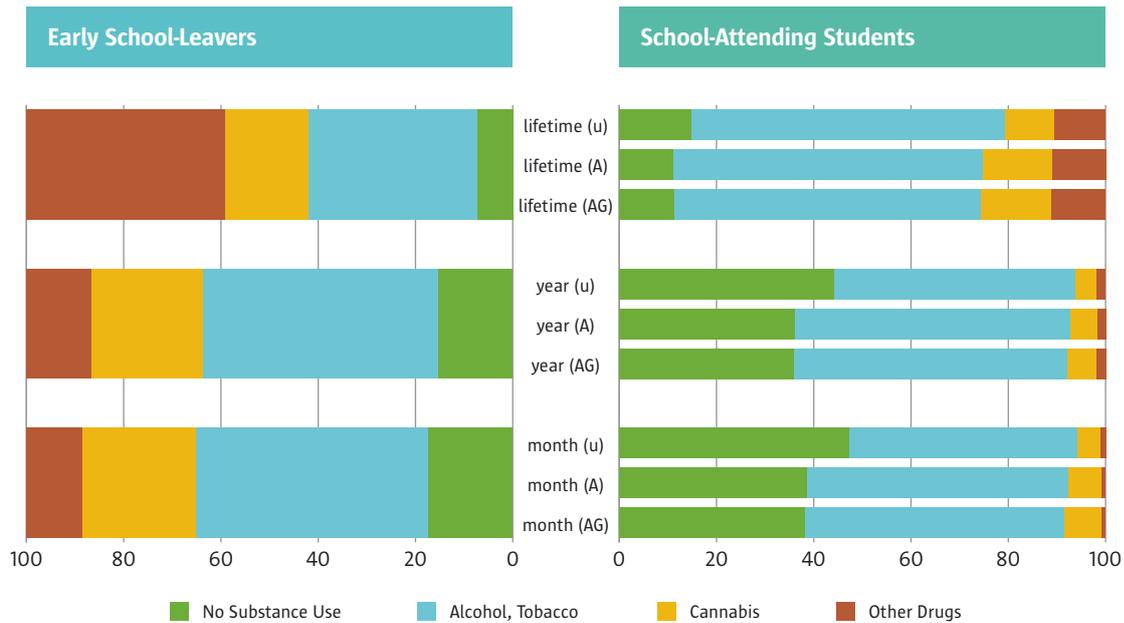
Table 4.3: Ratio of Prevalence Rates for Early School-Leavers to School-Attending Students

Substance	Lifetime	Past Year	Past Month
Tobacco	1.5	1.9	2.5
Alcohol	1.0	1.1	1.2
Cannabis	2.4	3.0	4.4
Other Drugs	3.7	4.2	14.4

When compared to their school-attending peers, early school-leavers are between 1.5 and 2.5 times more likely to smoke cigarettes (lifetime and past month), up to 1.2 times more likely to drink alcohol, between 2.4 and 4.4 times more likely to use cannabis and between 3.7 and 14.4 times more likely to use other drugs.

Figure 4.1 shows an alternative way of visualising the same information, after merging alcohol and tobacco into a single category and recoding any overlaps of substance use into the higher category. In addition, the school data includes the effects of re-weighting when adjusting for the differences in age and gender between the two populations (unweighted; weighting for age only; weighting for age and gender).

Figure 4.1: Substance Use over Lifetime, Last Year and Last Month



Note: u = unweighted; A = weighting for age only; AG = weighting for age and gender.

4.3 Comparison with other Studies on Drug Prevalence

It is of particular interest to compare these figures to the 2007 European School Survey Project on Alcohol and Other Drugs (Hibell *et al.*, 2009). The survey was carried out during spring 2007 and the target population comprised students born in 1991, with a mean age of 15.8 years at the time of data collection. The ESPAD survey reports that 58% of students in participating countries had smoked cigarettes and 29% had done so during the past 30 days. The study indicates that 23% of Irish students had smoked cigarettes within the past month. At least two-thirds of students in all ESPAD countries had drunk alcohol.

Table 4.4: Categories of Substance Use, ESPAD 2007

Substance	Lifetime		Past Year		Past Month	
	Ireland	Europe	Ireland	Europe	Ireland	Europe
Tobacco		58			23	29
Alcohol		90	78	82		61
Cannabis	20	19				
Other Drugs	10	7				

Source: Hibell *et al.*, 2009. ESPAD figures relate to the 34-country unweighted averages.

In the rest of this chapter, we will examine the risk and protective factors that are correlated with young people's decision to use the four classes of substances described above. We will concentrate initially on substance use over the past month, as this is arguably the most appropriate measure of current behaviour, excluding cases of "experimentation" in the past which were not followed by more regular use.

The factors considered here represent *potential* influences on substance use, as the analysis presented in this section relies on a bivariate analysis. In other words, we study different types of substance use in relation to one factor at a time. As we will see later, the multivariate analysis provides a more complete picture of the factors at play, while accounting for the relationships between the different influences themselves and controlling, to a high degree, for potentially spurious effects. The picture that emerges from the bivariate analysis is nevertheless extremely useful and provides insights into the patterning of substance use in the different groups.

During the data-preparation phase, we constructed around 70 measures, using the responses obtained from the 991 interviewees. Some of these measures comprise a single item, although many were constructed by combining several questionnaire items into a single construct. This process has already been described (Chapter 3) and further information is included in Annex 2.

Some of the measures comprise a simple yes/no variable; others assume the form of a scale which varies continuously between a minimum and maximum value. For conceptual clarity, we have grouped the factors into five domains: (i) individual attributes and characteristics; (ii) family-related variables; (iii) school-related variables; (iv) peer-related variables; and (v) neighbourhood variables. This division not only provides a structure for the presentation of results but also represents an important conceptual step in the analysis process, as each group of factors refers to a different policy arena, enabling clear recommendations to be drawn from the study in relation to each domain.

4.4 Headline Findings with regard to Individual Factors

Figure 4.2 (below) shows how levels of substance use vary in relation to the four different classes of substance (tobacco, alcohol and party pills, cannabis and other drugs) at different ages. In all the graphs presented in this chapter, the left-hand part of the graph refers to early school-leavers and the right-hand part to school-attending students. Each graph shows the percentage of young people using each category of substance and is scaled from 0% at the centre of the graph to 100% at the left and right margins (in other words, the bars extend outwards in both directions from the centre of the page).

Figure 4.2 provides a clear impression of the higher overall level of substance use among early school-leavers (as opposed to school-attending students) as well as revealing a gradual increase in substance use with age. It is also apparent that the age effect is more pronounced among school-attending students (particularly with respect to alcohol) than among early school-leavers. However, it must be remembered that each of the figures looks at the effect of one factor at a time. The multivariate analysis presented in Chapters 5 and 6 will demonstrate that age and gender, for example, have almost no effect, after controlling for other influences.

Figure 4.2: Substance Use by Age Group

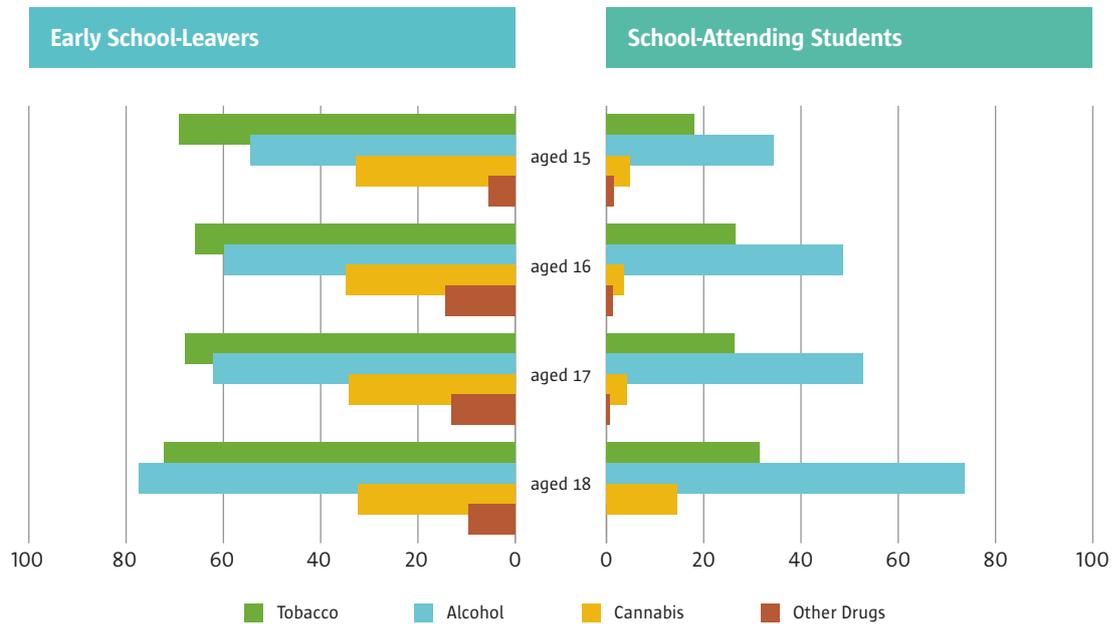
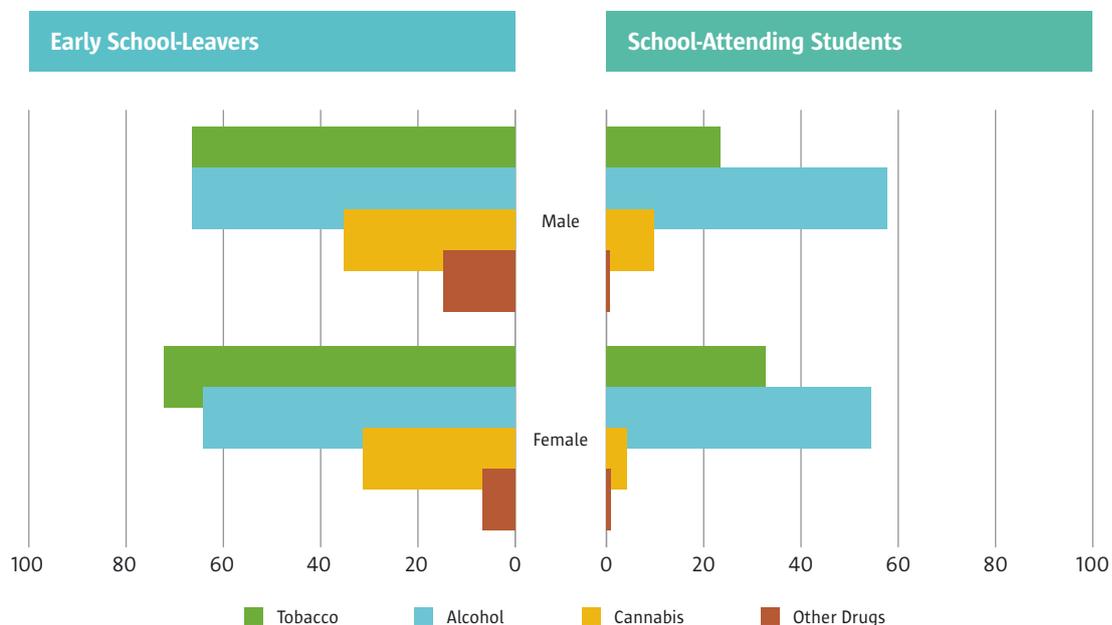


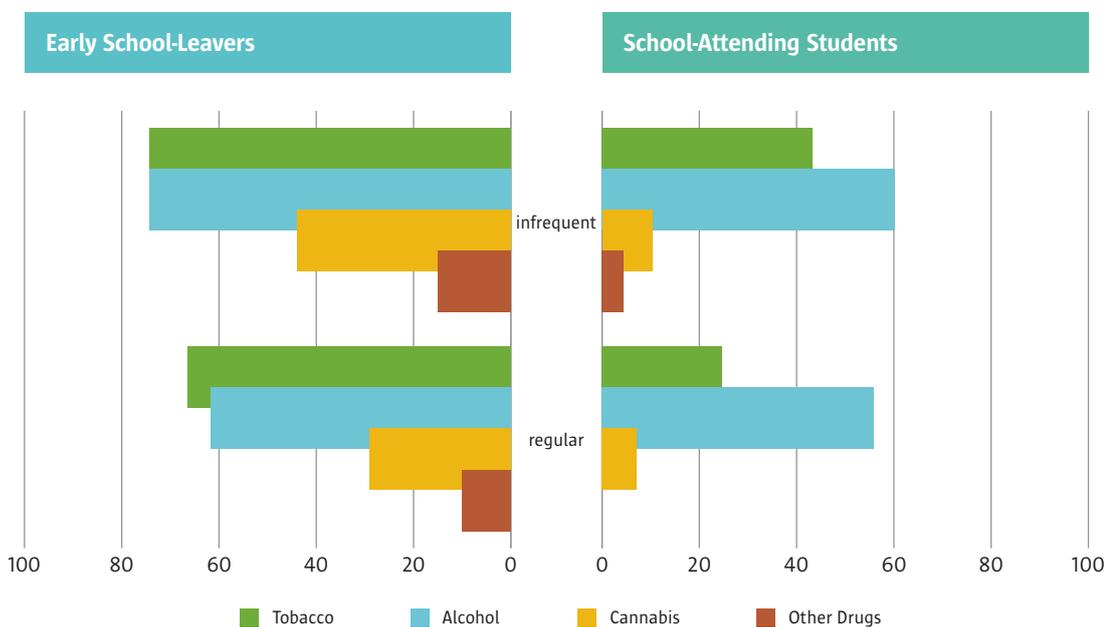
Figure 4.3 shows that girls are significantly more likely to smoke than boys, but less likely to drink alcohol, and use cannabis or other drugs.

Figure 4.3: Substance Use by Gender



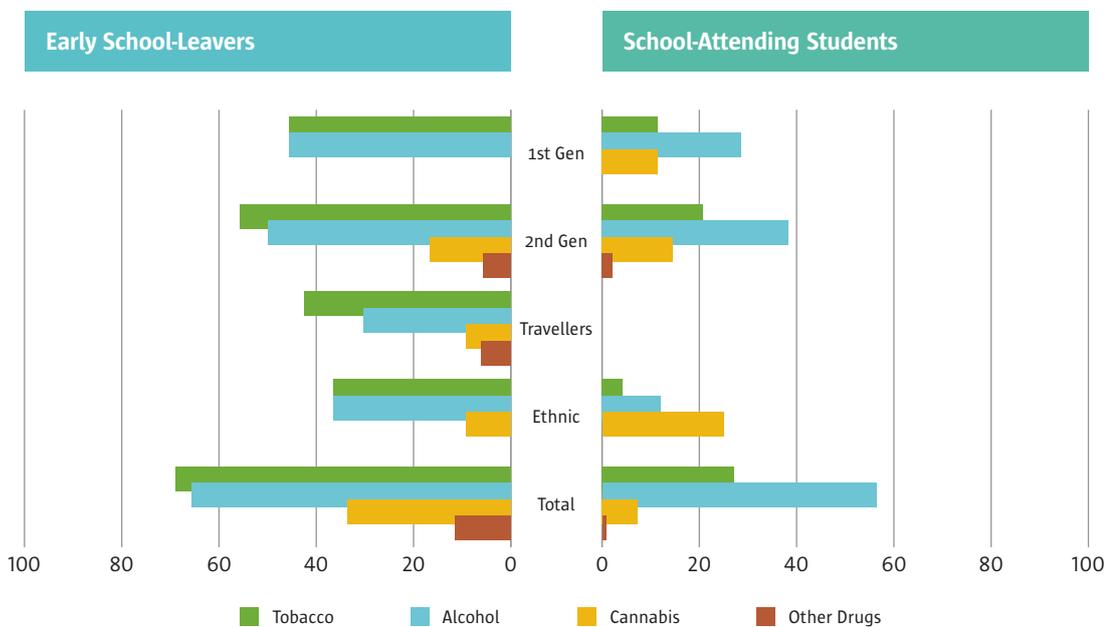
In what follows, we will take differences in the overall level of substance use between early school-leavers and school-attending students as given, and will not repeat this point, as it applies to all graphs in this chapter. Furthermore, we will present only the most interesting cross-tabulations, as there are too many possible combinations to permit an exhaustive treatment. In selecting the graphs presented here, we paid particular attention to the measures that were found to be most significant in the multivariate statistical modelling presented in the subsequent chapters.

Figure 4.4: Substance Use by Frequency of Contact with Natural Parents



While not applying to a large number of cases, contact with natural parents is associated with a lower propensity to use substances. Substance use among those with infrequent contact is consistently higher across all four categories and this pattern holds in both educational settings.

Figure 4.5: Substance Use by Various Minorities



There is a lower level of substance use among first and second generation immigrants, Travellers and non-white ethnic minorities, when compared with the rest of the sample. This certainly holds with respect to smoking, alcohol, and drug use, but possibly not for cannabis, where there appears to be a higher level of use among non-white ethnic groups at school.

Figure 4.6: Substance Use by Self-Concept

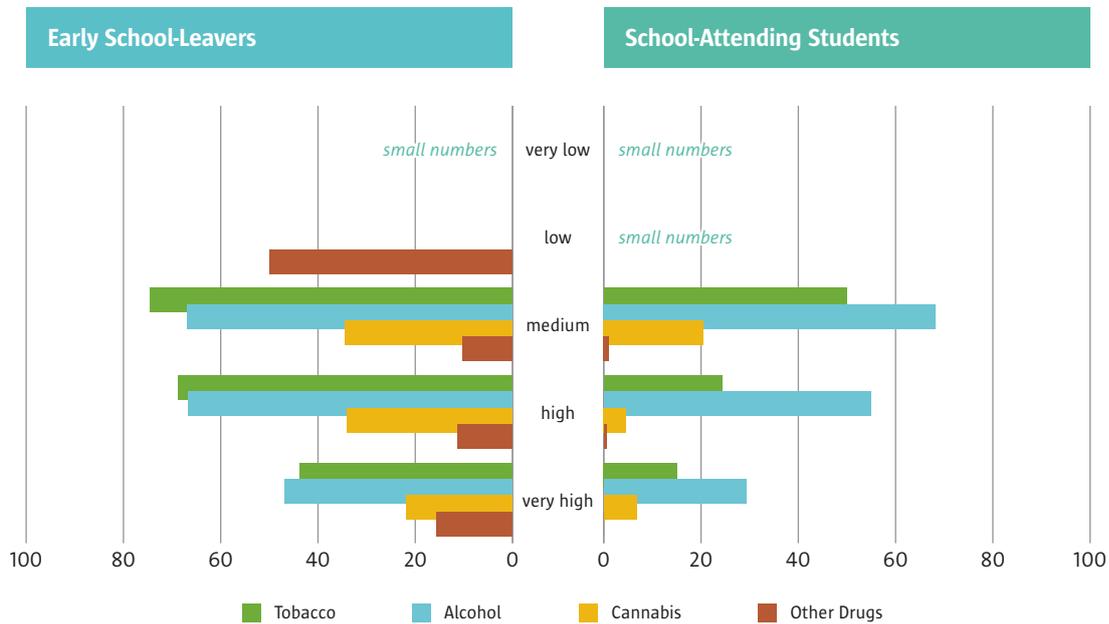
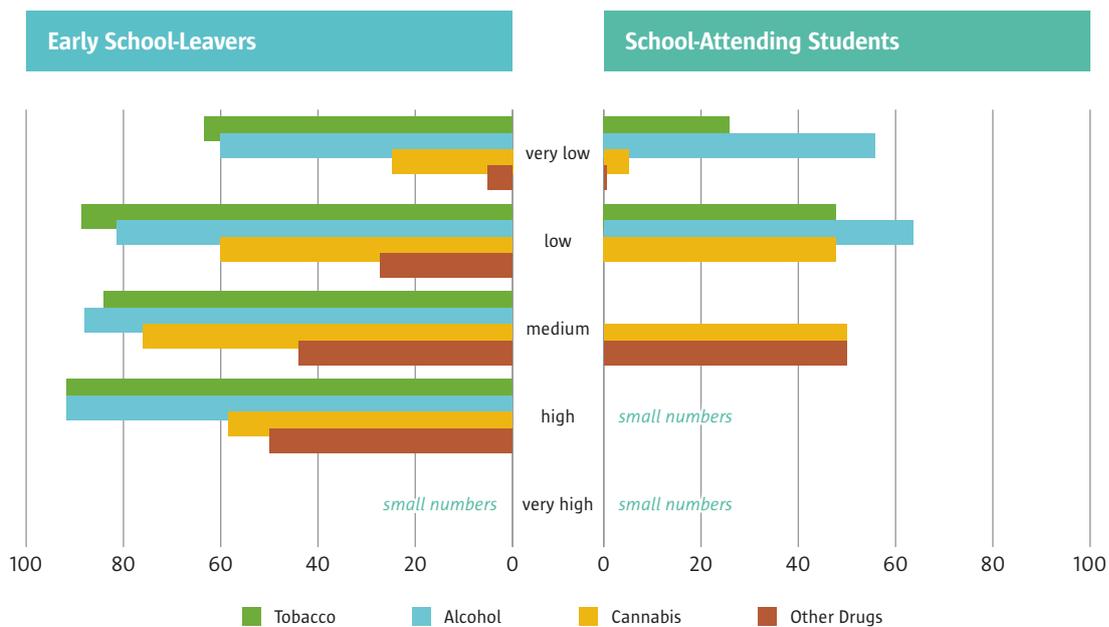


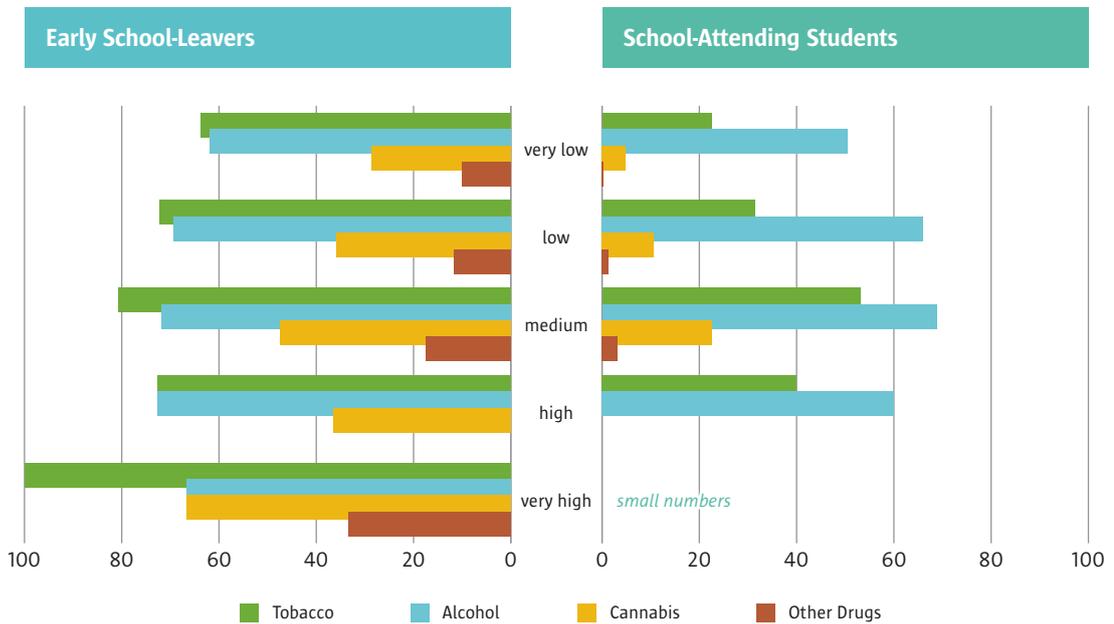
Figure 4.6 shows the great importance of self-concept (comprising items relating to self-esteem and self-image) in relation to substance use. Smoking, drinking, and cannabis use all increase in prevalence as self-concept declines. A further observation is required in relation to drug use, which reveals a “bimodal” distribution (higher at both extremes) among early school-leavers, which most likely reflects the existence of distinct types of substance use.

Figure 4.7: Substance Use by Acting Out



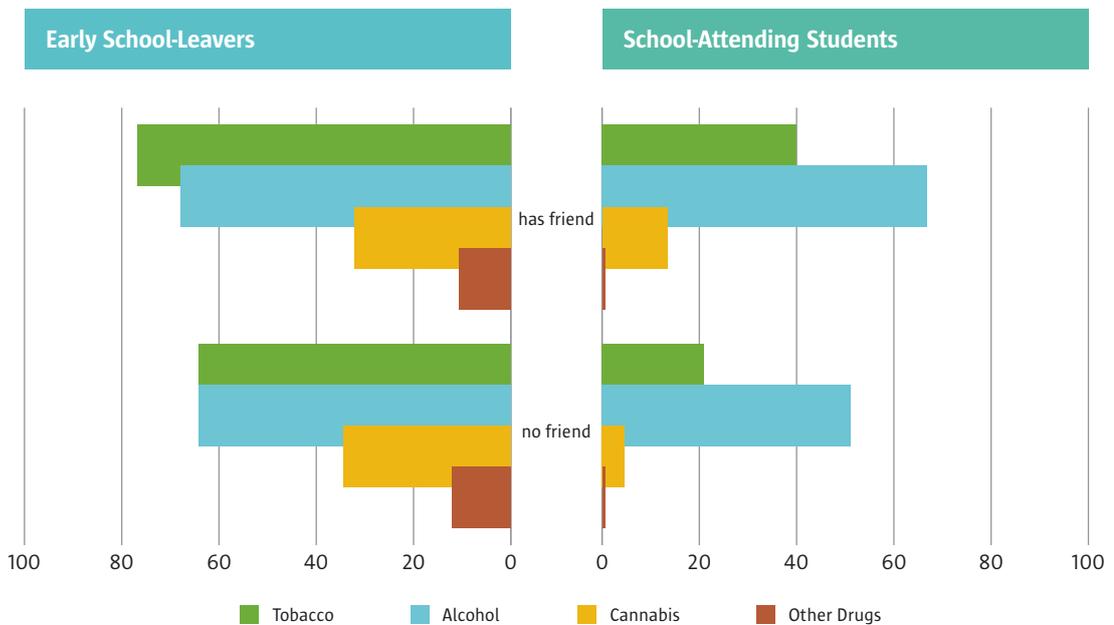
“Acting-out” behaviour among young people who engage in aggressive, violent or disruptive behaviours is also correlated with substance use. This applies to smoking and alcohol, albeit to a moderate degree, and is more pronounced for cannabis and other drugs.

Figure 4.8: Substance Use by Level of Depression



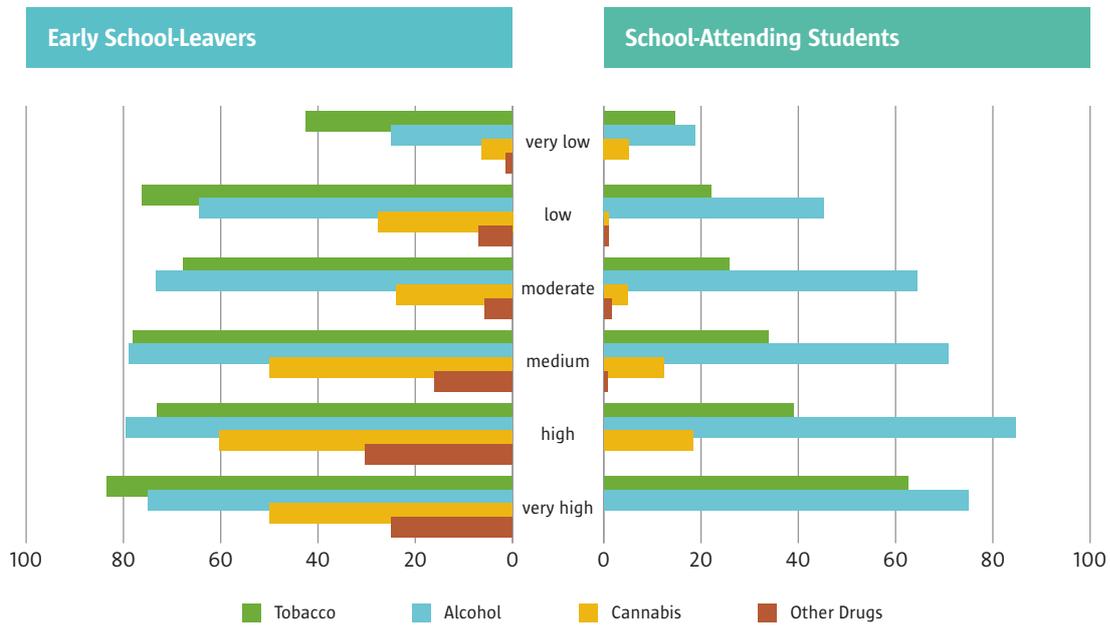
The relationship between alcohol and depression is well documented in the literature. This relationship is, however, not observed among young people in the two samples considered here, perhaps by virtue of their age. By contrast, smoking and the use of cannabis and other drugs all rise considerably with depression. These relationships apply equally to young people in both educational settings.

Figure 4.9: Substance Use by having a Boyfriend or Girlfriend



Having a boyfriend or girlfriend is associated with higher levels of smoking and drinking, but lower levels of using drugs other than cannabis. As far as cannabis is concerned, rates of use are marginally higher among early school-leavers without a boyfriend or girlfriend, but markedly lower among school-attending students.

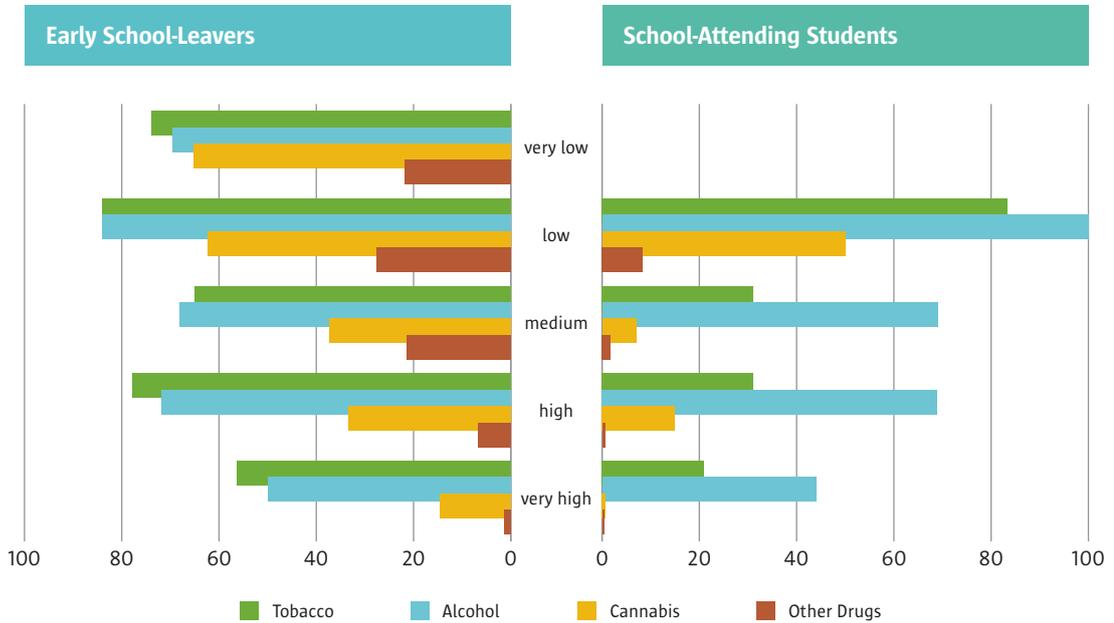
Figure 4.10: Substance Use by Expected Positive Effects of Drinking Alcohol



There is a clear correlation between the young person’s expectations in relation to alcohol and the actual use of this (and other) substances. Despite this strong statistical association, this measure was not included in the multivariate models due to its rather tautological nature.

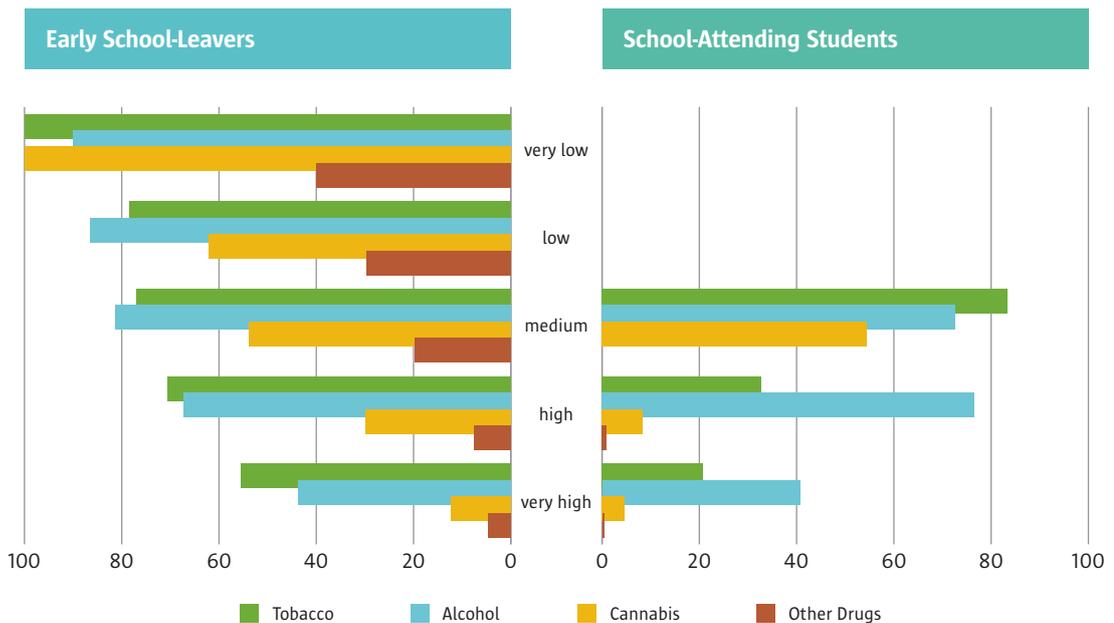
4.5 Findings with regard to Parental and Home Factors

Figure 4.11: Substance Use by Parental Monitoring



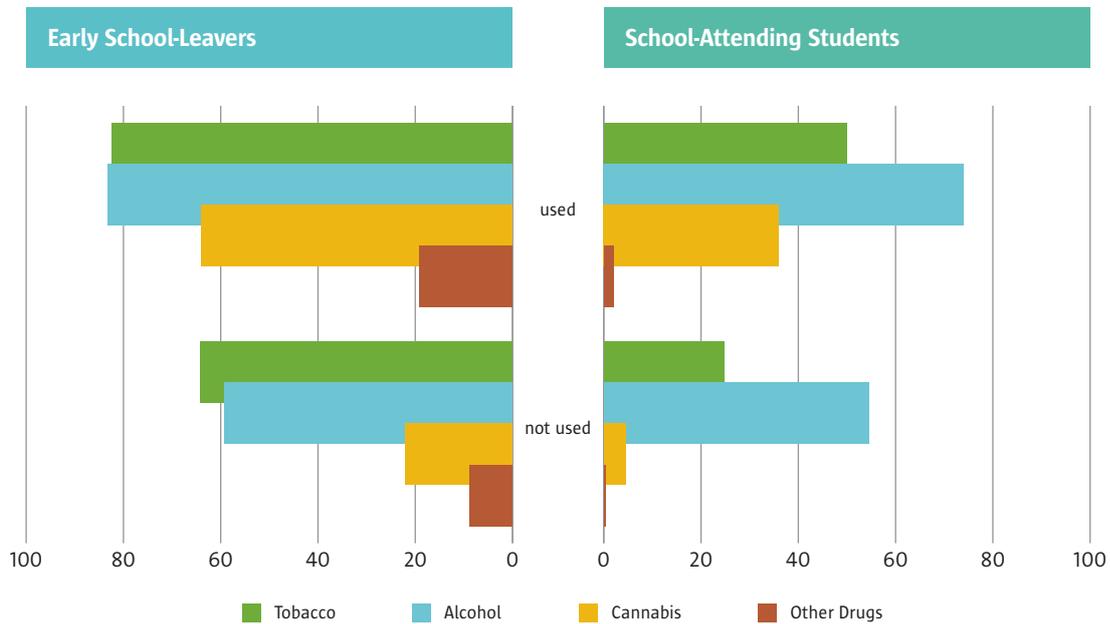
Parental monitoring is strongly and inversely correlated with substance use. Among early school-leavers, parental monitoring appears to have a greater influence on the use of cannabis and drugs than on smoking and drinking. For school-attending students, however, parental monitoring also appears to be highly significant in reducing smoking and alcohol consumption.

Figure 4.12: Substance Use by Parental Concern about Drugs



Parental concern about drugs is associated with very large differences in rates of substance use among school-attending students and early school-leavers alike. It should be borne in mind, however, that we do not directly measure parental concern, but rather the young person's awareness of it.

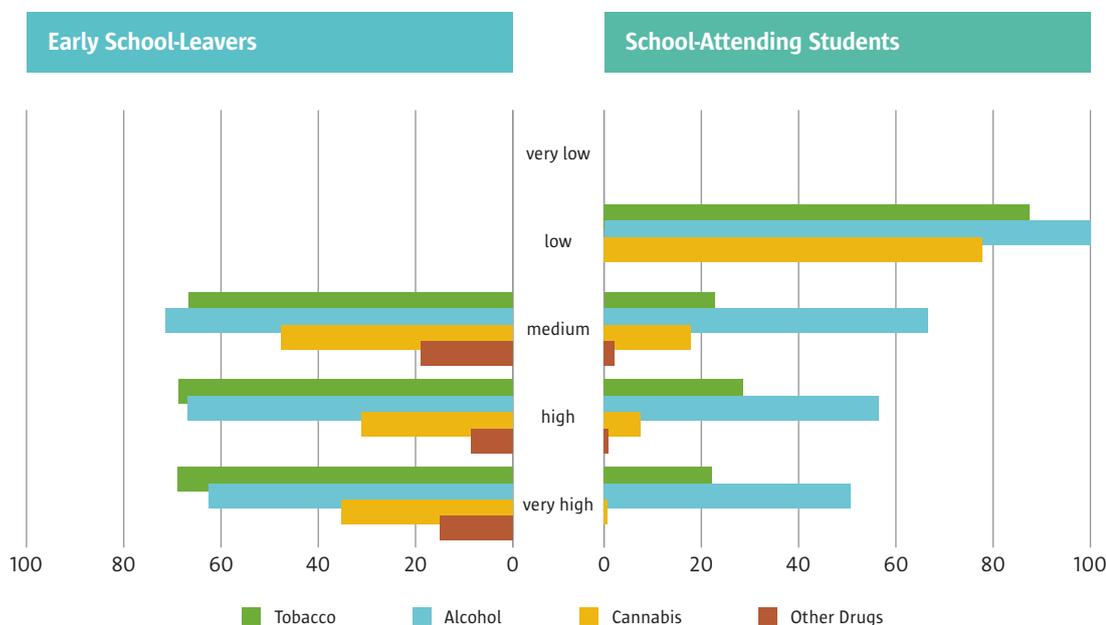
Figure 4.13: Substance Use by Family Member Using Cannabis



If other family members use substances, this provides both an example and an opportunity for young people to engage in the same behaviour. Interestingly, if a family member smokes or uses drugs other than cannabis, this is not associated with higher rates of substance use. In contrast, the consumption of alcohol and use of cannabis (Figure 4.13) by a family member is linked with an increase in consumption of various kinds of substances by young people.

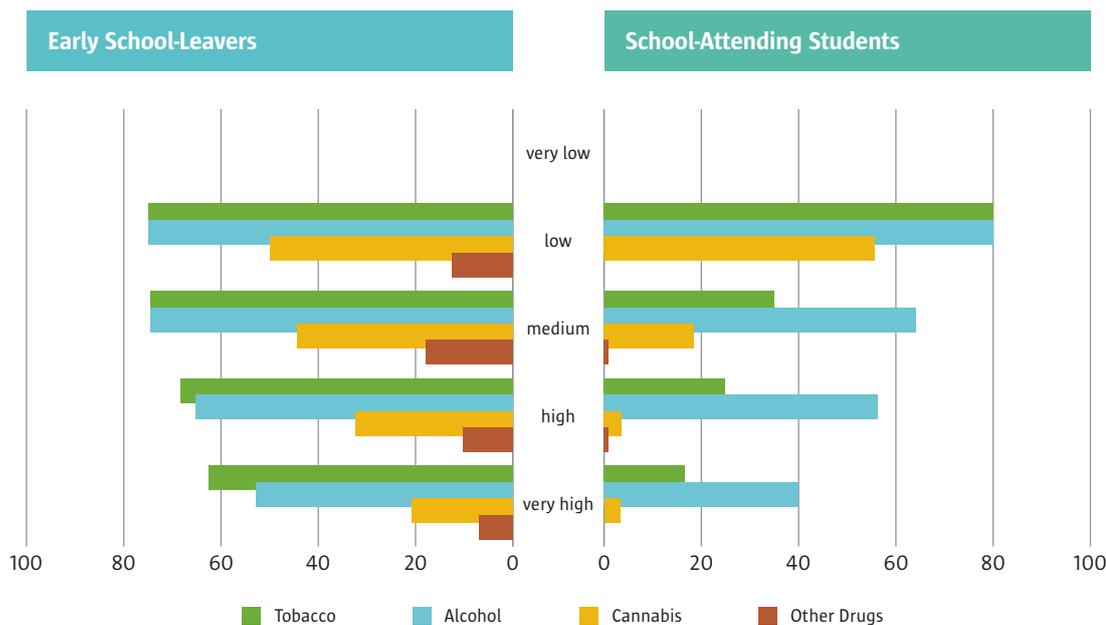
4.6 Findings with regard to Centre/School-related Factors

Figure 4.14: Substance Use by Positive Relationship with Teacher



School-attending students who have a good relationship with their teachers have lower rates of smoking, drinking and using cannabis, but almost no difference is observed for smoking and drinking among early school-leavers. This does, however, correlate with lower rates of using cannabis and other drugs among early school-leavers.

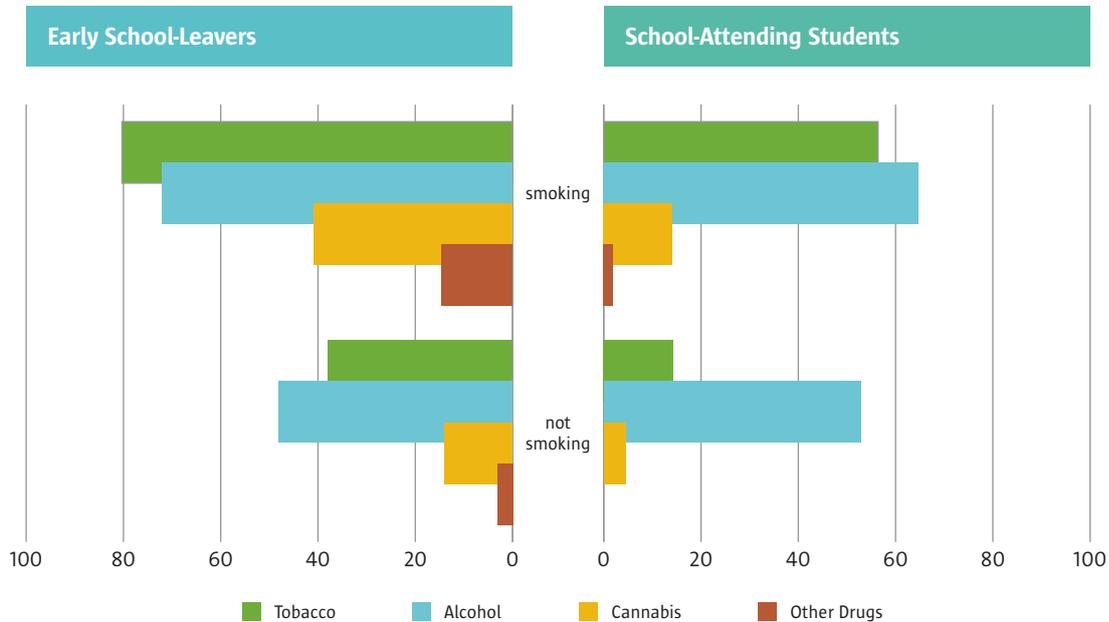
Figure 4.15: Substance Use by Positive Centre/School Experience



A positive learning experience is associated with consistently lower substance use across all categories of substances and applies equally to both groups of young people.

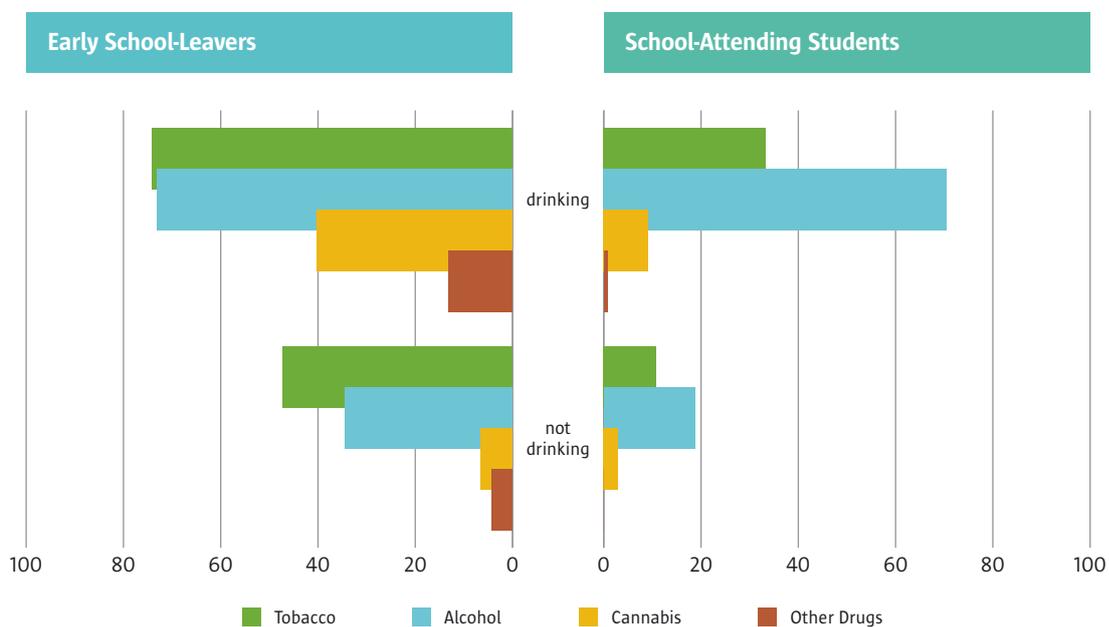
4.7 Findings with regard to Neighbourhood and Peer-related Factors

Figure 4.16: Substance Use by whether Most Friends Smoke Cigarettes



There is a strong association between whether most of a young person’s friends smoke and his or her use of substances. For whatever reason, it would appear that young people tend to frequent peers with whom they share a “pattern” of substance use. This effect is shown in *Figure 4.16* for smoking cigarettes and in *Figure 4.17* for drinking alcohol, but applies to all categories of substance use. One must be careful when interpreting these associations, as the causal relationships involved are likely to be reciprocal.

Figure 4.17: Substance Use by Friends Drinking Alcohol



Figures 4.2 to 4.17 show a small sample of (bivariate) relationships between a selection of risk and protective factors and differential use of substances among early school-leavers and school-attending students. A couple of points should be made in relation to the interpretation of these graphs:

- i. The graphs all relate to the substance use during the past month. Similar graphs could be derived for behaviour over the past year and during the young person's lifetime.
- ii. Only a small selection of relationships are shown. In total, more than 70 constructs were tested during the data-analysis phase. The choice of which relationship to present in graphical form was informed, above all, by the multivariate analysis presented later in this report and concentrates on those variables that proved, in the combined models, to be the most informative and statistically significant.
- iii. When interpreting the graphs, it is important to remember that they are based on a bivariate analysis; i.e. they show how use of four groups of substances (the dependent variables) changes over different levels of a single independent variable. This does not necessarily imply a causal or unidirectional relationship. The relationship could, for example, be spurious, if both observations are partially or totally determined by a third factor. The multivariate analysis presented in Chapter 5 will evaluate whether these variables represent potential risks or protective factors in a statistically significant fashion, after accounting for other possible influences.
- iv. Because of the limitations inherent in any bivariate analysis, we have kept our observations to a minimum. A full understanding of the complex relationship will only be gained from the simultaneous analysis of all possible influences on the substance use of young people.

Nevertheless, the graphs presented in this chapter do provide an important initial picture of the multitude of influences on a young person's decision to use substances. The initial findings confirm what most practitioners who work with young people already know from their own experience, and are in line with many of the factors mentioned in the literature review.

5 A Multi-Level Model of Substance Use

5.1 Introduction to Multi-Level Models

As we noted earlier, this study was designed, from the outset, on the basis of an awareness of the importance of social context in relation to substance use. In describing the sampling strategy and the structure of the resulting data, we emphasised the potential of multi-level modelling techniques to control for the differences between educational contexts and to shed light on the role of contextual effects in relation to risk and protective factors for substance use. In this study, these aggregate-level contextual effects represent the independent influences associated with various aspects of the different learning institutions (the schools and centres included in the research), including the nature of their catchment areas, the policies they adopt and their institutional structure.

Our starting point is thus the hypothesis that aggregate-level, contextual influences could give rise to distinct risk and protective factors in relation to substance use among young people via concentration effects; the “normalisation” of certain behaviours; ease of access; combined consumption; educational interventions on substance use for staff members, parents and students as well as the structuring of the learning environment itself (activities, resources, facilities, etc). By using multi-level statistical techniques, we will seek to ascertain whether these higher-level effects can strengthen or weaken the relationship between individual risk and protective factors, on the one hand, and substance use, on the other.

Although we can measure and analyse the household and peer group at the individual level (asking each young person about his or her family situation and friends), the neighbourhood and learning institution cannot be treated in the same way, as they give rise to influences that are common to young people within each local sample. For this reason, a large number of potential influences were conceptualised and measured at the aggregate level (school or centre) by gathering data from representatives of each learning institution and by computing averages and other aggregate measures from the individual-level data.

Contextual effects rooted in the neighbourhood, school or centre give rise to a hierarchical structure that makes it more difficult to correctly identify the risk and protective factors for substance use. This is because different kinds of factors may operate and interact at different levels, but also because the most commonly used statistical techniques (such as the Classical Linear Regression Model) generate biased results in the presence of hierarchical structure (Jones, 1991; Goldstein, 1995; Kreft and de Leeuw, 1998). This bias affects the estimates produced by the statistical models (in particular, the identification of statistically significant effects) because young people who reside in the same neighbourhood or frequent the same school or centre do not, in statistical terms, generate fully independent observations. In fact, there are a number of common aspects within their social environment, which arise from the way they interact with each other, from the institutional context in which they study, and from the processes (sorting and selection into learning institutions and neighbourhoods) that bring individuals together to form specific social groups (cf. Goldstein, 1995; Smyth, 1999).

One of the strengths of the present research is its ability to shed light on the ways in which individual attributes interact with the social context to influence substance-use behaviour. The multi-level models that will be presented in the following pages of this report will thus explore the relative importance of individual-level and aggregate-level risk and protective factors among early school-leavers and school-attending students in Ireland.

Multi-level modelling techniques have experienced rapid development and increasing popularity since the early 1980s, due initially to concerns about the influence of schools on educational outcomes. Although researchers have, for some time, been aware that the nesting of pupils within schools can generate misleading results, the potential of statistical models to provide insights into the hierarchical structure of social reality only became apparent when powerful personal computers and sophisticated software tools became widely available.

There are few published examples of multi-level models based on Irish data. This is due to the complexity and relative novelty of these techniques, their sampling requirements and implications for study design, and the difficulties involved in correctly conceptualising and measuring the social context. At the same time, it is important to realise that contextual effects are typically not the most important influences at work, and often have quite a specific and circumscribed role in relation to observed social phenomena. Nevertheless, in a detailed study that relies on multi-level modelling techniques, Smyth concludes: "... social class inequalities persist in academic achievement, absenteeism rates, and drop-out rates. Furthermore, the social class context of the school has an additional effect on pupil outcomes, over and above a pupil's individual background. Working-class pupils in predominantly working-class schools tend to have lower exam grades, higher absenteeism, and higher drop-out rates than those in predominantly middle-class schools" (Smyth, 1999). The most important finding of Smyth's research, in this context, is that the neighbourhood context not only matters, but has a measurable and significant impact on schooling outcomes.

The specification of multi-level models should be guided by theoretical hypotheses regarding the nature of these contextual influences, as they must often be identified at a theoretical level before they can be effectively measured. Given the flexibility and complexity of multi-level models, theoretical reflection represents the best way to avoid "capitalising on chance" and to obtain stable, reliable results. For this reason, a structured approach was adopted in this study, starting with the careful conceptualisation of key aspects of the social context, moving from relatively simple models to more complex ones in a logical progression. This process was repeated across the different families of substances, in an iterative fashion, with a view to understanding how the different parameters in the models change as we relax our initial assumptions, implement various specifications and integrate individual and contextual variables.

Technical Description of Multi-Level Models

All models were estimated using MLwiN 2.10 software, and were specified as two-level logistic regression equations with random intercepts. We let y_{ij} denote the binary (0,1) response variable (e.g. alcohol use; 0 = respondent has not drunk alcohol, 1 = respondent has drunk alcohol) for the i_{th} respondent in location j . The probability that $y_{ij} = 1$ is denoted by π_{ij} . The general two-level random intercept model with P level-1 predictor variables and Q level-2 predictor variables for binary response data is given by the following formula:

$$f(\pi_{ij}) = \beta_{00} + \sum_{p=1}^P \beta_{p0} x_{p_{ij}} + \sum_{q=1}^Q \beta_{0q} z_{qj} + u_{0j}$$

where $x_{p_{ij}}$ is the value of the i_{th} unit in the j_{th} location of the p_{th} level-1 predictor variables and z_{qj} is the value of the j_{th} location of the q_{th} level-2 predictor variables, β_{00} is the general intercept, β_{p0} is the regression coefficient for the p_{th} level-1 predictor variable and β_{0q} is the regression coefficient for the q_{th} level-2 predictor variable and u_{0j} is the random intercept for location j . We assume that the u_{0j} follow a Normal distribution with mean zero and variance σ_{u0}^2 . The link function used for π_{ij} is the logit transformation:

$$f(\pi_{ij}) = \log(\pi_{ij}/(1-\pi_{ij}))$$

The exponentiated coefficients can be interpreted as odds ratios. The observed binary responses are binomially distributed with conditional variance $\text{var}(y_{ij} | \pi_{ij}) = \pi_{ij}(1-\pi_{ij})$.

Significance tests for individual regression coefficients rely on t-tests, as likelihood ratio tests are unreliable for quasi-likelihood estimation (Guo, G. & Zhao, H., 2000). For discrete response data, quasi-likelihood estimation methods are implemented in MLwiN. These procedures use a linearisation method, based on a Taylor series expansion, which transforms a discrete response model into a continuous response model. After applying this linearisation, the model is estimated using iterative generalised least squares (IGLS). The estimation process involves two steps: the first uses marginal quasi-likelihood (MQL) estimation (including the first-order terms of the Taylor series expansion); the second relies on the more precise but computationally intensive second-order PQL algorithm (for details, see Guo, G. & Zhao, H., 2000).

The level-2 estimates can be divided into an overall estimate and a residual for each school or centre. Because we assume that these residuals are normally distributed (and that they are independent of the level-1 residuals), we can summarise their distribution using two parameters: a mean and a variance. To the extent that we include individual-level explanatory variables in the model, the level-2 residuals (“adjusted residuals”) refer to variations in outcomes between schools/centres, after controlling for the composition of these level-2 units.

5.2 Multi-Level Models of Substance Use

For each of the three dependent variables, we will report estimates from four different multi-level models: (1) the “variance components” model with no explanatory variables; (2) the “variance components” model with individual-level explanatory variables; (3) the “variance components” model with neighbourhood-level explanatory variables; and (4) the “variance components” model with both individual-level and neighbourhood-level explanatory variables.

A fifth set of models was estimated, including “random slopes” as well as “random intercepts”. In the context of multi-level models, these terms refer respectively to the variation in the relationship between the explanatory variables and the dependent variable (the “slope”), and the mean of the dependent variable when conditioned on the explanatory variables (the “intercept”). When testing these full, multi-level models, none of the explanatory variables were found to have significant slope variation. We have therefore concentrated on the four sets of models described above (which are described in Annex 3). *Tables 5.1 to 5.4* show the odds ratios for the factors that have a statistically significant effect on substance use among early school-leavers and school-attending students for at least one time horizon.

The final models presented below were developed in incremental fashion, as noted above, starting with the results of bivariate logistic regression models for each individual factor, and progressing to more complex models. The sensitivity of the results to the removal or inclusion of key variables was tested, with a view to identifying spurious results and obtaining a robust specification. By inspecting the results of separate models for each time horizon, we gradually developed a common structure for substance use over lifetime, past year and past month. Factors that did not give rise to statistically significant effects were excluded from the models, to facilitate interpretation, although the decision to include or exclude variables was subjected to repeated tests. The adequacy of each model was evaluated using diagnostic tests such as residual plots, by assessing changes in the variance of the residuals and by calculating classification tables with observed and predicted outcomes.

The tables in the remainder of this chapter show the influences of various risk and protective factors as they affect the likelihood of early school-leavers and school-attending students to use any of the four substance groups considered. The likelihood of each factor is expressed as an odds ratio and these odds ratios are shown for each of the three time horizons – lifetime, past year and past month. Effects that are statistically significant at the .05 level are indicated by an asterisk (*).

When discussing the relative strength of each factor, we will refer to the “odds ratios” that are provided by the statistical models. The odds ratio is the ratio of the odds of an event occurring in one group to the odds of it occurring in another. For example, if the odds ratio for a family member having smoked cigarettes during the past month is five, we conclude that the young person is five times more likely to smoke if another family member smoked during the past month compared to a situation where no family member smoked. Conversely, an odds ratio of 0.1 means that an event is 10 times *less* likely to occur. An odds ratio of “one” thus indicates that a factor has no influence; an odds of 10 or 0.1 indicates the same magnitude of effect, but of a positive or negative sign (the outcome being more likely, in the first case, and less likely, in the second). This explains why the scale in the figures that exhibit odds ratios is logarithmic, so that equivalent odds ratios above and below one are shown as bars of equal length.

5.3 Smoking Cigarettes

Table 5.1C: Odds Ratios for Smoking Cigarettes – Early School-Leavers

Variable	Lifetime	Past Year	Past Month
Self-concept	0.18	0.12	0.04*
Has a boyfriend or girlfriend	1.34	1.79*	1.92*
Has drunk alcohol in lifetime	9.17*	5.29*	4.51*
Family member – cigarettes in past month	2.87*	4.65*	5.02*
Number of extracurricular activities	1.04	1.30*	1.40*
Most or all friends smoke cigarettes	4.28*	4.71*	5.04*
Most or all friends use other drugs	5.90	5.19*	1.65
Best friends use other drugs	3.17*	1.83*	1.93*
Neighbourhood substance disapproval	1.14	0.17*	0.14*
Intercept	-2.85*	-3.35*	-3.69*
Observed	Percentage Correctly Predicted		
No	45.5%	51.6%	57.7%
Yes	96.4%	92.6%	91.2%
Total	87.1%	81.8%	80.8%

Table 5.1S: Odds Ratios for Smoking Cigarettes – School-Attending Students

Variable	Lifetime	Past Year	Past Month
Self-concept	0.06*	0.11	0.12
Aggressive 'acting-out' behaviour	1.31*	1.08	1.16
Has a boyfriend or girlfriend	1.54	1.75*	1.99*
Has drunk alcohol in lifetime	5.18*	9.12*	5.57*
Family member – cigarettes in past month	1.55*	2.18*	2.89*
Interruption in school attendance	2.64*	3.75*	1.67
Information sessions for parents	0.84	0.83	0.56*
Number of substance-use classes	0.99	0.89	0.83*
Most or all friends smoke cigarettes	2.61*	2.10*	4.60*
Most or all friends drink alcohol	1.60*	1.92*	1.27
Best friends use other drugs	1.98*	2.17*	2.08*
Intercept	-2.15*	-3.78*	-3.79*
Observed	Percentage Correctly Predicted		
No	68.7%	85.8%	93.7%
Yes	72.9%	61.2%	50.8%
Total	70.9%	76.8%	82.8%

Figure 5.1: Odds Ratios for Smoking Cigarettes

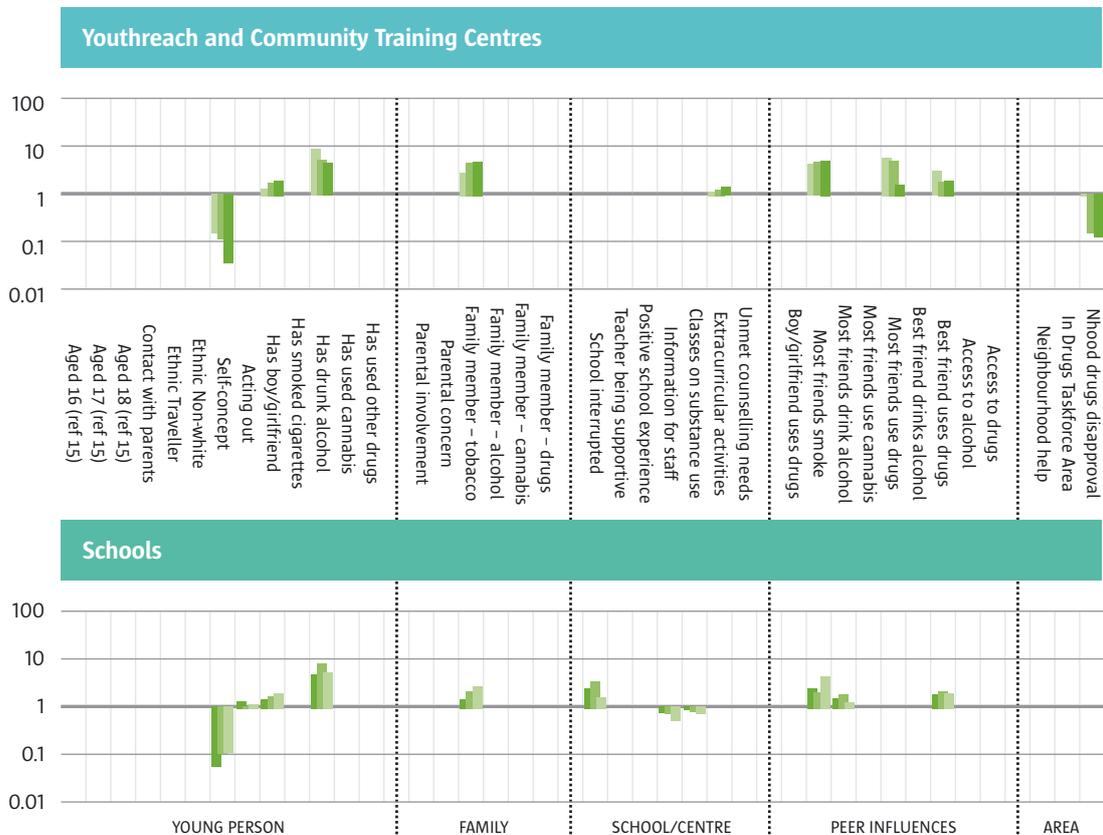


Figure 5.1 presents, in graphical form, the same data as shown in Tables 5.1C and 5.1S. A set of nine factors can be identified that influence the behaviour of early school-leavers, while 11 factors impact on the behaviour of school-attending students. We tested a large number of alternative factors across the three time horizons, and these factors were consistently found to have statistically significant effects on cigarette smoking. Considerable care was taken in the course of the analysis to ensure that none of the factors included in any of the models “capitalise on chance”. The results may therefore be considered highly robust and stable in terms of an explanatory account of this type of substance use.

Overall Strength of the Models

The overall strength of each model is assessed by its ability to correctly predict whether a young person has smoked cigarettes, relying on the risk and protective factors included in each particular model and the estimated coefficients. For early school-leavers, a model based on the nine factors shown in the figure can correctly identify 45.5% of those who have never smoked cigarettes, 51.6% of those who had not smoked over the past year and 57.7% of those who had not smoked in the past month. The model is much stronger in positively identifying those early school-leavers who had smoked, correctly identifying between 91.2% and 96.4% of cases. Taken together, these two sets of predictions result in an overall predictive power of the models which is equal to 80.8% for smoking cigarettes over the past month, 81.8% over the past year and 87.1% for ever having smoked.

The models for school-attending students are a little weaker, with between 70.9% and 82.8% of cases correctly predicted. All six models would be considered very strong models and are thus highly satisfactory.

To allow for a more structured discussion of the individual factors that influence substance use, we have grouped these into the same five domains presented earlier: (i) factors which relate to the young person; (ii) the young person's parents and home; (iii) the centre or school; (iv) the peer group; and (v) the neighbourhood in which the young person is living. This structure will be used when presenting results throughout the rest of this report.

Factors related to the Young Person

Three personal characteristics, in particular, affect the likelihood of smoking cigarettes. The first major protective factor is the strength of the young person's self-concept. Having a strong self-concept makes it 25 times (odds ratio of 0.04) less likely for early school-leavers to have smoked during the past month. The effect for the past year and over the lifetime are somewhat weaker (0.12 and 0.18 respectively) and are not statistically significant, but nevertheless support the validity and importance of the factor. Like all of the scales used in these models, self-concept is measured on a scale that ranges from 0 to 1. The odds ratios thus capture the conditional effect associated with the transition from the minimum value of the scale to the maximum. In other words, the maximum possible influence of self-concept, as we move from the weakest level to the highest possible level, is .04, expressed as an odds ratio.

With regard to school-attending students, self-concept is particularly pertinent with regard to experimentation with cigarettes over the lifetime (0.06), but weaker and statistically not significant for behaviour over the past year or month. Saying that a strong self-concept reduces the likelihood of smoking cigarettes implies that a lack of self-esteem makes it 10 to 20 times more likely for a young person to smoke, controlling for other factors. Thus, whether we conceptualise this – and other – influences as a risk or as a protective factor is a question of convention, as it depends on how we define the variable itself.

It is interesting to note that this factor applies to early school-leavers and school-attending students alike. The significantly higher level of smoking observed among early school-leavers, compared to school-attending students, is thus driven by the generally weaker self-concept (along with the other factors in the model) recorded among the former group, rather than being a result of early school-leaving or simply attending a Youthreach or Community Training Centre.

The second major personal factor is whether the young person has drunk alcohol during the past month. This makes it about 10 times (9.17) more likely for early school-leavers to have ever smoked and about five times (5.18) more likely for school-attending students to have tried smoking cigarettes. The odds ratios for early school-leavers in relation to the past year and month are 5.29 and 4.51 respectively, and for school-attending students 9.12 and 5.57. All values are statistically significant and thus point to the importance of the relationship between the consumption of alcohol and smoking.

The third personal factor is whether the young person has a boyfriend or girlfriend. This effect is not as strong as the first two concepts, but it is nevertheless up to two times more likely for the young person to smoke if they are in a relationship, and independently of whether or not that friend smokes. Again, the effect is similar for early school-leavers and school-attending students, and is statistically significant for two of the three time horizons.

For the remainder of this chapter, we will simply outline the different factors that are identified as significant in each of the models, without providing a detailed interpretation of each effect. A systematic discussion of each of the factors will be provided in the next chapter, which looks at each of the factors in the context of their effects on the four substance-use classes.

Factors related to the Young Person's Parents and Home

The main family-related risk factor for a young person to smoke cigarettes is whether another family member smokes. If either the parents or a sibling have smoked, it is between one-and-a-half and five times more likely that the young person has smoked. The effect is stronger among early school-leavers, who are three times more likely to have smoked in their lifetime and five times more likely to have smoked in the past month if a family member has also smoked cigarettes in the past month. In the latter case, school-attending students are between one-and-a-half (for lifetime) and just under three times more likely to have smoked in the past month.

Factors related to the Centre or School

Three key factors related to the school or school experience affect smoking among school-attending students, but only one is identified for early school-leavers. If a student had an interrupted school experience – defined as having missed more than 20 days – he or she is two to four times more likely to smoke cigarettes.

The analysis shows that the school can also generate protective factors, as information sessions for parents and classes on the use of substances have a statistically significant effect on smoking cigarettes (which falls below statistical significance over the longer time periods). Although the effect shown in the table and figure is small by comparison (reducing the likelihood by about 20%), it should be noted that it is measured as a unit effect for each session provided. The net effect of this variable is therefore likely to be more substantial in practice. Information sessions for parents or students have no effect among the early school-leavers, as far as smoking is concerned. It thus appears that these classes are most effective in influencing smoking behaviour if provided within this more mixed social setting.

Finally, it appears that extracurricular activities in centres for education and training are associated with an additional risk (about 30%-40%) of smoking cigarettes. This effect is statistically significant and probably indicates the additional opportunity – and related peer effects – provided by such situations, when compared with the classroom. While not a huge effect, this issue could be addressed by increasing awareness of the risk and ensuring that appropriate supervision is provided in these situations.

Factors related to the Young Person's Peers

The peer group clearly emerges as having the potential to generate the greatest risk factors for a young person in terms of smoking. Where most or all of a young person's friends smoke, it is between two and five times more likely that he or she will also smoke, again controlling for the other variables in the model. For early school-leavers, this effect is equally strong across the three time horizons, while for school-attending students the effect is strongest for the past month. It must, however, be kept in mind that the underlying causal relationships are less than clear and most likely reciprocal in nature; i.e. peers that smoke provide an incentive for the young person to smoke, but equally the young person may choose their friends from among those who have similar preferences, attitudes and behaviours.

As we have already seen with regard to the reinforcing relationship of alcohol consumption on smoking for the young person, the same holds for their peers. Where most or all friends drink alcohol, school-attending students are up to twice as likely to smoke cigarettes. Alcohol consumption by peers does not, however, have a significant effect among early school-leavers. Instead, if peers use other drugs, this is associated with a higher prevalence of smoking among early-school-leavers. Where most or all friends or best friends use other drugs, the young person is between two and six times more likely to smoke cigarettes. An almost identical relationship applies among school-attending students, where peers' use of other drugs increases the likelihood of smoking by a factor of two.

Factors related to the Neighbourhood

Local communities also appear to have quite a powerful effect on smoking. Where there is strong disapproval of young people using substances within the neighbourhood, it is about six to seven times less likely for early school-leavers to have smoked cigarettes during the past month or year. The lifetime effect is more limited and statistically not significant. Interestingly, no such effect can be detected with regard to smoking among school-attending students.

5.4 Drinking Alcohol

Tables 5.2C and 5.2S show the influences of various risk and protective factors as they affect the likelihood of early school-leavers and school-attending students to drink alcohol and/or take “party pills”.

Table 5.2C: Odds Ratios for Drinking Alcohol – Early School-Leavers

Variable	Lifetime	Past Year	Past Month
Ethnicity: Traveller	0.13*	0.36*	0.60
Ethnicity: Non-white	0.29	0.47	0.36
Aggressive ‘acting-out’ behaviour	1.43*	1.40*	1.23*
Has smoked cigarettes in lifetime	5.55*	2.34*	3.38*
Parental concern	0.01*	0.09*	0.06*
Unmet counselling needs at centre	3.58	2.36*	1.46
Most or all friends drink alcohol	12.22*	3.58*	2.09*
Best friends drink alcohol	3.23	2.22*	3.27*
Intercept	-0.72	-0.67	-2.25*

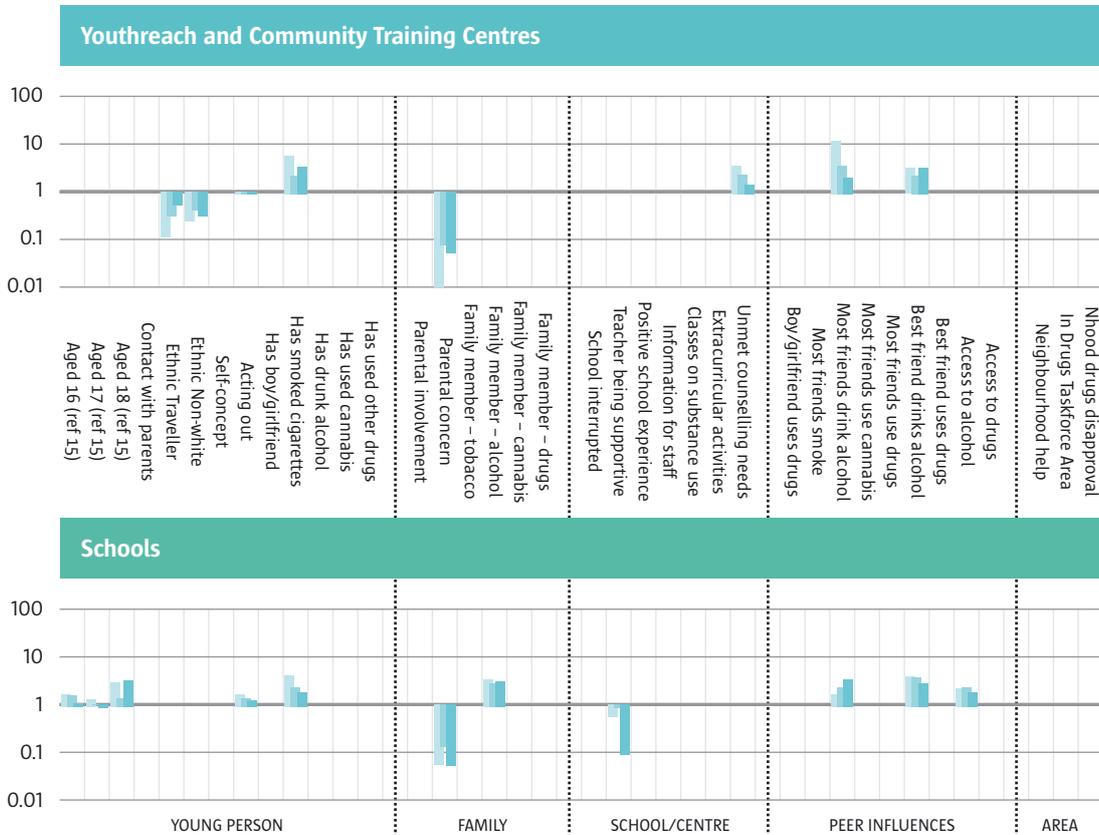
Observed	Percentage Correctly Predicted		
No	71.4%	46.7%	49.7%
Yes	99.1%	97.3%	91.7%
Total	96.2%	89.4%	77.2%

Table 5.2S: Odds Ratios for Drinking Alcohol – School-Attending Students

Variable	Lifetime	Past Year	Past Month
Age: 16 years (reference age: 15)	1.70	1.61	1.15
Age: 17 years (reference age: 15)	1.35	1.00	1.11
Age: 18 years (reference age: 15)	3.07	1.39	3.34*
Aggressive ‘acting-out’ behaviour	1.67	1.39*	1.29*
Has smoked cigarettes in lifetime	4.35*	2.35*	1.92*
Parental concern	0.06	0.15	0.06*
Family member drank alcohol in past month	3.51*	2.97*	3.22*
Positive relationship with teachers	0.64	1.12	0.10*
Most or all friends drink alcohol	1.74	2.40*	3.61*
Best friends drink alcohol	4.30*	3.93*	2.87*
Ease of access to alcohol	2.33	2.46*	1.92
Intercept	-0.96	-1.59*	-3.25*

Observed	Percentage Correctly Predicted		
No	51.6%	56.1%	75.5%
Yes	96.7%	94.4%	79.0%
Total	88.5%	84.0%	77.1%

Figure 5.2: Odds Ratios for Drinking Alcohol



Overall Strength of the Models

As in the case of smoking cigarettes, a robust set of risk and protective factors can be identified that allow us to make accurate predictions in relation to drinking alcohol. Eight factors suffice to predict alcohol consumption among early school-leavers, while 11 factors are included in the models for school-attending students. The models are least accurate in predicting behaviour over the past month, accounting for about 77% of cases in each of the two populations. However, the models become significantly more powerful when predicting alcohol consumption over the past year and lifetime. For early school-leavers, the models’ predictive capacity rises to 89.4% and 96.2% respectively, while for school-attending students the percentage of cases correctly predicted is 84.0% and 88.5%. These are again highly robust, strong models.

Factors related to the Young Person

In contrast to common perceptions, age is by and large not a significant factor in the consumption of alcohol within the age range considered in this study. Age was entered into the models in the form of three dummy variables that contrast the effect of being 16, 17 and 18 years of age, when compared with 15. The odds ratios for each of the variables thus express the likelihood of drinking alcohol relative to the reference age of 15 years. Among early school-leavers, age does not figure as a factor at all, while for school-attending students the oldest age category, 18 years, increases the likelihood of drinking alcohol over the past month by a factor of three. The models for early school-leavers reveal that drinking alcohol is considerably less common among Travellers and non-white ethnic population groups; both reducing the likelihood, all else being equal, by between three and eight-fold. No such relationship could be detected among school-attending students.

One factor that consistently emerges as a risk factor for drinking alcohol is whether a young person displays aggressive behaviour, indicating that drinking alcohol may either itself be an element in this pattern of “acting out”, that drinking alcohol facilitates aggressive “acting-out” behaviour by the young person, or that one of the motives for drinking involves this drive towards aggressive behaviour or sensation-seeking. While the odds ratios are moderate in size (less than two), they are nevertheless statistically significant and appear consistently with respect to each of the three time horizons, for both early school-leavers and school-attending students. Furthermore, in another set of models not shown in this report, which excluded the variables for multiple substance use, the odds ratios for aggressive “acting-out” behaviour were consistently and significantly larger, thus underlining the importance of this factor, which may be mediated by combined or sequential forms of substance use, in line with a modified version of the “gateway” hypothesis. “Acting out”, like self-concept, is measured as a scale, on a 0-1 scale.

The final risk factor related to the individual young person is whether he or she smokes cigarettes. In an analogous manner to the situation for drinking alcohol and smoking cigarettes, young people who smoke cigarettes are also more likely to drink alcohol. For school-attending students, the likelihood of drinking alcohol increases two-fold over the past month, rising to more than four-fold over lifetime. For early school-leavers, the range is from about two-fold over the past year to nearly six-fold over lifetime.

Factors related to the Young Person’s Parents and Home

By far the most important protective factor in relation to drinking alcohol is parental concern. For school-attending students, parental concern reduces the likelihood of having drunk alcohol over the past month by a factor of 15. The scale for parental concern ranges from 0 to 1, implying that the odds ratios capture the conditional effect associated with the transition from the minimum value of the scale to the maximum. The maximum possible influence of parental concern, as we move from the weakest level to the highest possible level, is 15, expressed as an odds ratio. The effect is similar for the other time horizons, but not statistically significant. For early school-leavers, the effect is statistically significant for all three time horizons and even stronger than for school-attending students, reaching a factor of around 100 over the lifetime.

The study thus clearly demonstrates that parental concern is of the utmost importance and has a great influence over young people’s drinking behaviour. One caveat must, however, be added: this measure is based on young people’s self-reports of their parents’ concern. In other words, we are not measuring whether the parents are actually concerned about their children, but how young people perceive their parents’ dispositions. The strength of the factor may partly reflect the young person’s receptiveness to their parents’ attention, which calls other personal characteristics into play.

While parental concern is clearly an important protective factor, parents must equally be aware that their behaviour is likely to influence their children's use of alcohol and can be a potential risk factor. If a family member has consumed alcohol, it is about three times more likely for a school-attending student to have drunk alcohol, an effect that applies equally to all three time horizons. Interestingly, alcohol consumption within the family does not appear to have the same effect on early school-leavers.

Factors related to the Centre or School

As was the case with regard to smoking cigarettes, having a poor school attendance record makes it three to four times more likely for the school-attending student to also drink alcohol. For early school-leavers, this effect is not observed, most likely due to the relative homogeneity of the sample in this respect. The model for early school-leavers reveals another statistically significant risk factor: the existence of unmet counselling needs at the Youthreach or Community Training Centre. This increases the odds of the young person drinking alcohol by between two and four times and thus points directly to a potential intervention to tackle early use of alcohol by addressing individual difficulties via the provision of counselling services at the level of the centre. This effect is not found for school-attending students.

In the school context, by contrast, an interesting and thought-provoking result is the finding that a positive relationship between young people and their teachers is important. Such a relationship represents a major protective factor, reducing the likelihood of drinking alcohol over the past month by a factor of 10. This is a scale that can vary continuously between 0 and 1. Again, we must be aware of the potentially complex nature of the relationship; students may be less prone to drinking alcohol if they have a good relationship with teachers; drinking alcohol could have negative effects on this relationship, and unmeasured personal attributes that influence both variables may also play a role.

Factors related to the Young Person's Peers

The peer group generates considerable risk factors for drinking alcohol among young people. Where most or all friends, or best friends, drink alcohol, this increases the likelihood of early school-leavers and school-attending students drinking alcohol by a factor that varies between two and four. It is somewhat unfortunate that peers are treated here exclusively as potential risk factors. This should not be interpreted as implying that friends can only exert a negative influence on young people. The reason for presenting the results in this way relates more to the nature of the survey instruments used; these inquire about substance use by friends, but not about their participation in sports, music, drama or other social and cultural activities, which may equally mobilise protective factors, just as friends' disapproval may discourage substance use.

Factors related to the Neighbourhood

The final risk factor that emerges from the analysis is the ease of access to alcohol in the local community. Ease of access increases the odds for school-going students by a factor of two, making this an important issue to address. Interestingly, ease of access makes no difference for early school-leavers. One must presume, therefore, that access is much more straightforward for the people in this group.

5.5 Using Cannabis

Tables 5.3C and 5.3S show the influence of various risk and protective factors as they affect the likelihood of early school-leavers and school-attending students using cannabis.

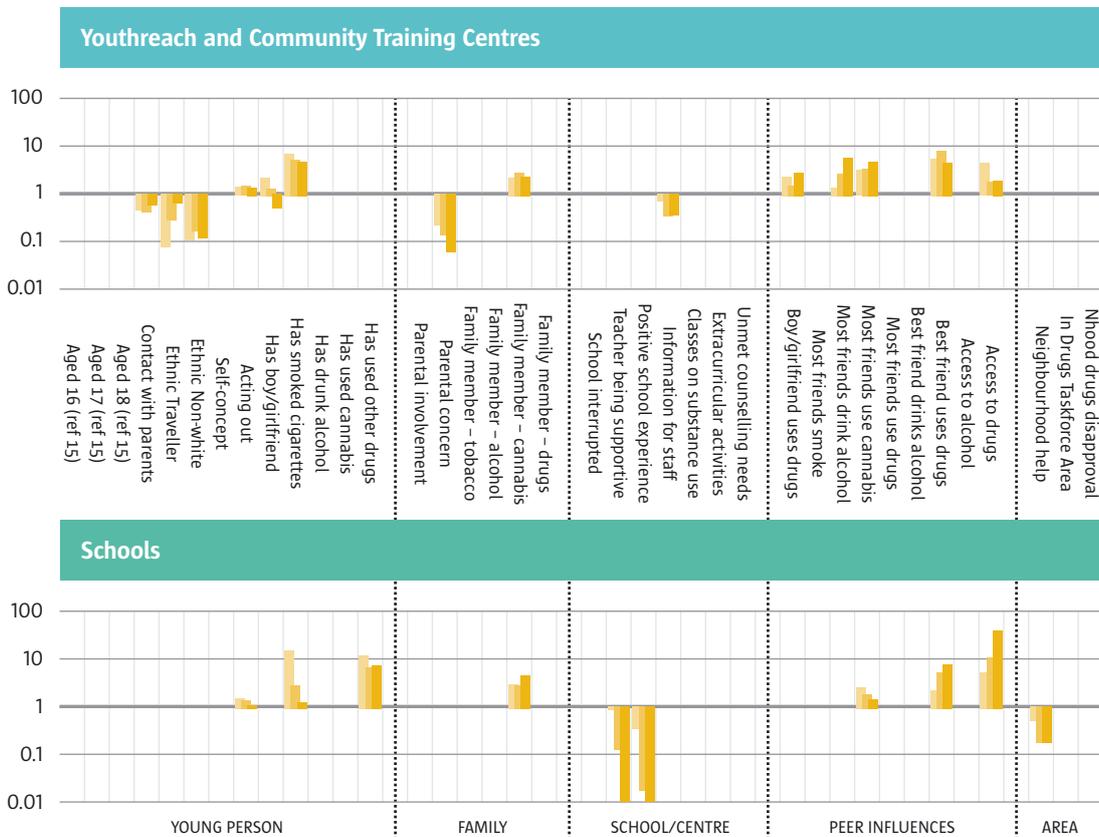
Table 5.3C: Odds Ratios for Using Cannabis – Early School-Leavers

Variable	Lifetime	Past Year	Past Month
Reg. contact with biological parents	0.53*	0.48*	0.64
Ethnicity: Traveller	0.09*	0.32	0.74
Ethnicity: Non-white	0.13*	0.19	0.14
Aggressive 'acting-out' behaviour	1.41*	1.46*	1.38*
Has a boyfriend or girlfriend	2.27*	1.34	0.58
Has smoked cigarettes in lifetime	6.69*	5.24*	4.74*
Parental concern	0.26	0.16	0.07*
Family member: cannabis past month	2.18*	2.75*	2.32*
Info. sessions for staff at centre	0.80	0.39*	0.40*
Boyfriend/girlfriend uses drugs	2.33	1.48	2.85*
Most or all friends drink alcohol	1.39	2.70	5.85*
Most or all friends use cannabis	3.22*	3.49*	4.84*
Best friends use drugs	5.60*	8.14*	4.45*
Ease of access to drugs	4.45*	1.79	1.90
Intercept	-2.83*	-3.96*	-5.26*
Observed	Percentage Correctly Predicted		
No	84.5%	87.2%	89.9%
Yes	87.2%	85.2%	78.3%
Total	86.0%	86.2%	86.0%

Table 5.3S: Odds Ratios for Using Cannabis – School-Attending Students

Variable	Lifetime	Past Year	Past Month
Aggressive 'acting-out' behaviour	1.60*	1.41*	1.15
Has smoked cigarettes	16.28*	2.99	1.27
Has used other drugs	12.78*	7.04*	7.78*
Family member used cannabis	3.10*	3.08*	4.84*
Positive relationship with teachers	1.18	0.15	0.01*
Positive experiences at school	0.39	0.02	0.01*
Most or all friends use cannabis	2.76	1.92	1.48
Best friends use drugs	2.32*	5.64*	7.95*
Ease of access to drugs	5.63*	11.26*	41.35
Help available in neighbourhood	0.60	0.20*	0.20*
Intercept	-4.23*	-4.28*	-7.14*
Observed	Percentage Correctly Predicted		
No	97.1%	98.3%	99.6%
Yes	61.5%	53.7%	60.0%
Total	90.4%	93.6%	97.7%

Figure 5.3: Odds Ratios for Using Cannabis



Overall Strength of the Models

The models that identify the risk and protective factors for using cannabis are particularly strong. For early school-leavers, we are able to accurately classify 86.0% of cases, while for school-attending students the percentage varies between 90.4% and 97.7%. The robustness of the models is confirmed by the fact that most of the factors identified by the statistical models have already been discussed in the previous two sections. Their accuracy is due, at least in part, to the large number of factors that have a statistically significant effect on cannabis use. The model for early school-leavers comprises no less than 14 risk and protective factors, while the model for school-attending students includes 10 factors.

Factors related to the Young Person

One of the factors associated with cannabis use among early school-leavers is their contact with their biological parents. Being in regular contact with one’s biological parents reduces the odds of using cannabis by about half. Conversely, not being in regular contact with one’s natural parents generates a two-fold increase in the odds of this type of substance use. The relationship is statistically significant for the past year and over the lifetime, but not for the past month. This risk factor relates to early school-leavers but is not significant for school-attending students.

As was the case with alcohol, being a Traveller or member of a non-white ethnic group is associated with a significantly lower risk of cannabis use among early school-leavers, again controlling for the other factors included in the statistical model. While not statistically significant for past month and year, the odds of lifetime use of cannabis are 10 times lower for these two ethnic groups. Ethnicity does not constitute a factor affecting the use of cannabis for school-attending students.

Aggressive "acting-out" behaviour is significantly associated with greater use of cannabis among both early school-leavers and school-attending students. Where young people exhibit aggressive behaviour of this type, they are about one-and-a-half times more likely to use cannabis. The odds ratio for this scale should, as noted above, be interpreted as expressing the risk associated with the difference between the minimum and maximum possible scores.

The odds of using cannabis are also greater – as much as twice as large for early school-leavers – if the young person has a boyfriend or girlfriend. As in the case of the other influences discussed here, we are discussing a conditional odds ratio, having controlled for all of the other variables included in the model. This influence exists quite apart from the question of whether the boyfriend or girlfriend uses cannabis (we will return to this below, in the section on peer effects), and should be interpreted as an indicator of the young person's stage of development.

Having smoked cigarettes is a particularly strong risk factor for cannabis use. Having smoked cigarettes makes it between five and seven times more likely for early school-leavers to use cannabis and up to 16 times more likely for school-attending students to do so. This relationship is only statistically significant for the lifetime, suggesting that the relationship between cigarette smoking and cannabis is not automatic; instead, the most likely scenario is that school-attending students who have smoked cigarettes are also highly likely to experiment, at some stage, with cannabis, and vice versa.

With regard to school-attending students, another powerful risk factor is having used other drugs. While the number of school-attending students that fall into this category is comparatively small (see *Table 4.2*), it is nevertheless evident that these individuals have much higher odds (between seven and 13 times) of also using cannabis. In other words, while not every student who uses cannabis will necessarily advance to other drugs, those who have tried other drugs are almost certain to have also used cannabis.

Factors related to the Young Person's Parents and Home

Parental concern, as before, functions as a key protective factor for early school-leavers. Where early school-leavers perceive this concern, their odds of using cannabis are up to 14 times lower (as a scale, this odds ratio expresses the effect of moving from the lowest to the highest value of the scale). This relationship is only statistically significant for the past month and is not observed among school-attending students.

By far the most significant family-related factor is the amplified risk for the young person to use cannabis if another family member has recently used this substance. Another family member using cannabis makes it two to three times more likely for an early school-leaver to use this substance and three to five times more likely for a school-attending student. As was the case with smoking cigarettes and drinking alcohol, what is most striking about this influence is the direct relationship between other family members' use of a *specific substance* and the greater risk that the young person will use that very substance. Use of any substance by a family member is clearly a major risk factor for the young person, both legitimising its use and presumably also facilitating access. This suggests quite a direct influence, rather than it being mediated by a reduction in the quality of family relationships or parenting skills as a result of using substances.

Factors related to the Centre or School

The likelihood of a school-attending student using cannabis is strongly influenced by the young person's school experience. Having a good relationship with teachers or having a positive school experience makes it up to 100 times less likely for the student to use cannabis. This effect of the

scale should be interpreted, as before, as expressing the difference associated with a transition from the lowest to the highest possible value, from the worst type of experience to the best. As suggested previously, the causal relationship may also be reciprocal, where a good relationship or experience makes cannabis use less likely and, conversely, cannabis use further undermines a good student-teacher relationship and leads to a deterioration in the school experience. This is a good example also of the type of cumulative causation discussed earlier, where the social conditions surrounding substance use influence the meaning and effects of that use, reinforcing the causal role of both.

Most interestingly, this relationship is not observed among early school-leavers, although it should be remembered that these questions relate to the experience of early school-leavers at the Youthreach or Community Training Centre that they are currently attending, rather than their prior experience of school. The significantly higher incidence of cannabis use among the early school-leavers is thus quite consistent with the possibility that negative school experiences were also a key factor in their decision to leave school, as well as influencing their substance-use behaviour.

One interesting policy-related finding is that staff information sessions have a statistically significant effect on the odds of cannabis use by early school-leavers. These sessions are found to reduce the odds of using cannabis by a factor of two, controlling for the other variables in the model. This type of intervention thus receives considerable support from the present research, although the possibility of confounding cannot be definitively excluded without additional information on the nature of the educational and training settings themselves.

Factors related to the Young Person's Peers

Peer effects, as they are measured in this study, have a powerful influence in relation to cannabis use. If a boyfriend or girlfriend uses drugs, this makes it up to three times more likely for early school-leavers to use cannabis. If most or all friends drink alcohol, the odds increase by a factor of six. If most or all friends use cannabis, there is a five-fold increase, and if best friends use drugs, the risk for using cannabis is up to eight times greater. As these risk factors may be concurrent, the additive effect can be extremely powerful, confirming the main findings of existing research, as outlined earlier.

Similar relationships exist with regard to school-attending students. If most or all friends use cannabis, the odds of this type of substance use increase three-fold, while if best friends use other drugs the risk of using cannabis rises by a factor of eight.

In overall terms, cannabis use is more strongly determined by the pattern of substance use among friends and peers than either smoking cigarettes or drinking alcohol. Its use is highly structured, and it would appear that young people both adapt to their friends' behaviour (in terms of substance use) as well as adapting their choice of friends to their own preferences. This confirms the remarks made earlier about the "social" nature of cannabis use and what may be described as its "constitutive" role in relation to specific peer group networks.

Factors related to the Neighbourhood

Ease of access to drugs is a significant factor in young people's decision to use cannabis. Ease of access makes it about four times more likely for early school-leavers to have used cannabis during their lifetime and up to 11 times more likely for school-attending students to have used it over the past year. Interestingly, the odds ratios for ease of access to drugs for school-attending students rise from 5.63 (lifetime) to 11.26 (past month). This may be indicative of how the less widespread nature of cannabis consumption among school-attending students makes access a key criterion in what is presumably a more secretive behaviour.

Finally, the likelihood of school-attending students using cannabis is significantly reduced (about five-fold) if they know somebody in their neighbourhood who could help with a substance-use problem, although this variable likely reflects more general attitudes within the community towards substance usage and the existence of neighbourhood support structures and social organisation (which were discussed in the literature review).

5.6 Using Other Drugs

Tables 5.4C and 5.4S show the influence of various risk and protective factors for early school-leavers and school-attending students in relation to drugs other than cannabis.

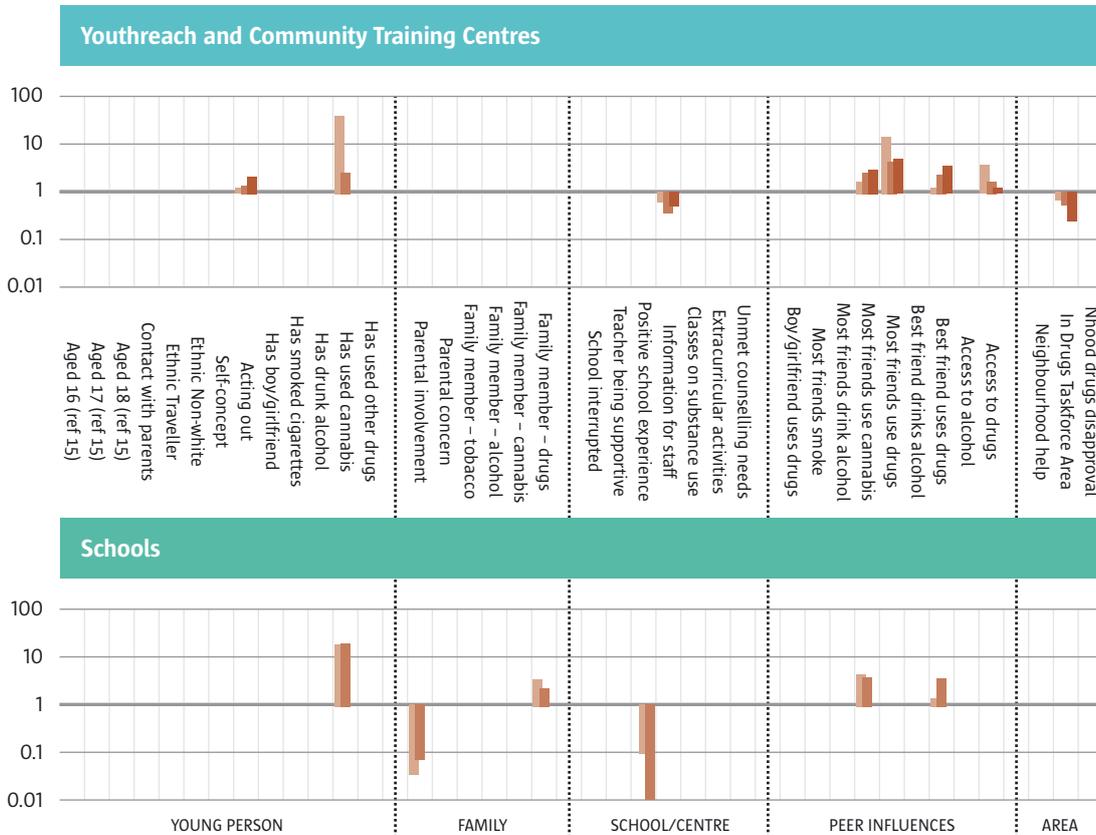
Table 5.4C: Odds Ratios for Using Other Drugs – Early School-Leavers

Variable	Lifetime	Past Year	Past Month
Aggressive ‘acting-out’ behaviour	1.24*	1.42*	2.16*
Has used cannabis	38.17*	2.59*	–
Info. sessions for staff at centre	0.72	0.43*	0.59
Most or all friends use cannabis	1.70	2.59*	2.92*
Most or all friends use other drugs	14.17*	4.30*	4.78*
Best friends use drugs	1.28	2.40*	3.47*
Ease of access to drugs	3.67*	1.68	1.25
Drugs Taskforce Area	0.78	0.60	0.29*
Intercept	-3.71*	-4.98*	-4.35*
Observed	Percentage Correctly Predicted		
No	84.5%	93.0%	96.9%
Yes	88.3%	70.2%	41.8%
Total	86.0%	87.1%	90.6%

Table 5.4S: Odds Ratios for Using Other Drugs – School-Attending Students

Variable	Lifetime	Past Year	–
Has used cannabis	18.88*	19.45*	
Parental involvement	0.04*	0.08	
Family member used other drug	3.55	2.32	
Positive experiences at school	0.11*	0.01*	
Most or all friends use cannabis	4.55*	3.94*	
Best friends use drugs	1.45	3.87*	
Intercept	-3.99*	-6.02*	
Observed	Percentage Correctly Predicted		–
No	98.3%	99.4%	
Yes	49.1%	52.0%	
Total	93.4%	97.1%	

Figure 5.4: Odds Ratios for Using Other Drugs



Overall Strength of the Models

The models for the use of other drugs among young people are again very strong. As the number of users becomes smaller, compared to the previous three substance classes, usage becomes more specific and is captured by a smaller number of risk and protective factors. Eight factors suffice to correctly predict between 86.0% and 90.6% of actual users among early school-leavers and six factors are identified that correctly classify between 93.4% and 97.1% of school-attending students' behaviour. There is no model for the use of other drugs by school-attending students over the past month, as the numbers are too small to construct a robust statistical model.

Factors related to the Young Person

Only two risk factors related to young people themselves can be linked to the use of other drugs among early school-leavers. The first is aggressive “acting-out” behaviour, which is associated with a significant increase in the likelihood of using other drugs, which rises by one-quarter over the lifetime and reaches a factor of two for the past month.

The second involves use of cannabis, a very important risk factor, as we suggested earlier. As in all other cases, this effect is calculated while controlling for the other factors included in the model. While there is no increase in the likelihood of using drugs over the past month, there is a three-fold increase for the past year (compared to non-users), which jumps to a nearly 40-fold increase for the entire lifetime. This provides strong evidence that using other drugs is almost always accompanied or preceded by the consumption of cannabis, confirming one of the most frequent findings of international research on this topic.

The same relationship is also found for school-attending students. Students who have used cannabis over the past month are about 20 times more likely to have used other drugs. As neither smoking cigarettes nor drinking alcohol are statistically significant direct risk factors, this points to the existence of a “chain” of substance use, although it is important to remember, as we stressed earlier, that this does not imply that other factors are not also important in relation to progression from one substance to another.

Factors related to the Young Person’s Parents and Home

Parental involvement or concern does not feature as a protective factor for early school-leavers but is a highly significant protective factor for school-attending students. It is important to interpret this finding correctly. If the factor measuring parental concern does not feature in the early school-leavers model, but is present in the model for school-attending students, this indicates that substance use is not associated with significant *variations* in parental concern. This does not mean that parental concern does not matter for both groups of young people. We saw earlier (in the bivariate analyses) that most users of other drugs have lower levels of parental concern and are frequently also early school-leavers. In other words, there is a strong selection process by which students, who are either not exposed to or not receptive to parental concern, are more likely to leave school early.

This makes it even more important to focus on the strong link between parental concern and the use of other drugs among school-attending students. For this group, parental concern reduces the odds of using other drugs by a factor of 10 for the past month and by a factor of 20 for lifetime, representing an extremely important protective factor. As before, we are dealing with a scale where the aforementioned effect expresses the difference, conditional on the other variables in the model, between the lowest and highest values.

As in previous models, the actual behaviour of other family members is of considerable importance. Where another family member has used other drugs in the past month, this increases the risk of the school-attending student taking drugs by a factor that ranges between two and four.

Factors related to the Centre or School

As already shown in relation to the use of cannabis, information sessions on substance use for staff in Youthreach and Community Training Centres have a positive effect, reducing the likelihood of early school-leavers using other drugs by a factor of two.

As far as school-attending students are concerned, we again find that having a positive school experience is crucial to the prevention of substance use. This factor, moving from the lowest to the highest values of the scale, makes it 10 times less likely for school-attending students to use drugs other than cannabis over their lifetime and 100 times less likely to have used other drugs over the past year.

Factors related to the Young Person’s Peers

The use of other drugs is strongly correlated with substance use among the young person’s peers. Where most or all friends use cannabis, use of other drugs by early school-leavers increases by a factor of about three. Where most or all friends use other drugs, the likelihood for the young person to also use these drugs increases four-fold or five-fold (past year and month), and 15-fold over lifetime. The high odds ratio for lifetime usage is best interpreted in terms of an experimentation process. Where best friends use drugs, this raises the likelihood of using these substances three-fold.

Almost identical effects are observed for school-attending students. Where most or all friends use cannabis, the young person is four to five times more likely to use other drugs and, where best friends use drugs, the odds increase four-fold.

Factors related to the Neighbourhood

Ease of access does not appear to be a significant factor for school-attending students. This is probably because the number of school-attending students in the sample who have used other drugs is small and the models could only be computed for the past year and lifetime, indicating at most, experimentation or occasional use.

However, access to drugs matters greatly for early school-leavers, where usage appears to be more common and regular. Ease of access increases the likelihood of drug use by a factor of four (for lifetime) and is thus an important issue to address in relation to this population.

It is also of considerable interest to note that the model identifies a rather surprising and statistically significant effect for the presence of a Drugs Task Force in the area. Where an area was designated, this reduced regular usage – measured as consumption over the past month – by a factor of more than three. As in the case of education and information sessions, which were found to be significant in earlier models, this is an encouraging finding, which deserves further attention and which has immediate and obvious policy implications.

Factors not included in the Models

In the preceding sections, we have discussed the risk and protective factors that are relevant to four different classes of substance use, across two populations of young people: early school-leavers and school-attending students. All the models are fully specified, with between 10 and 15 factors. While the discussion has focused mainly on the risk and protective factors identified by the analysis, it is also interesting to note that certain factors that might have been expected to play a role in explaining substance-use behaviour do not appear to influence young people's behaviour once other characteristics and contexts are accounted for.

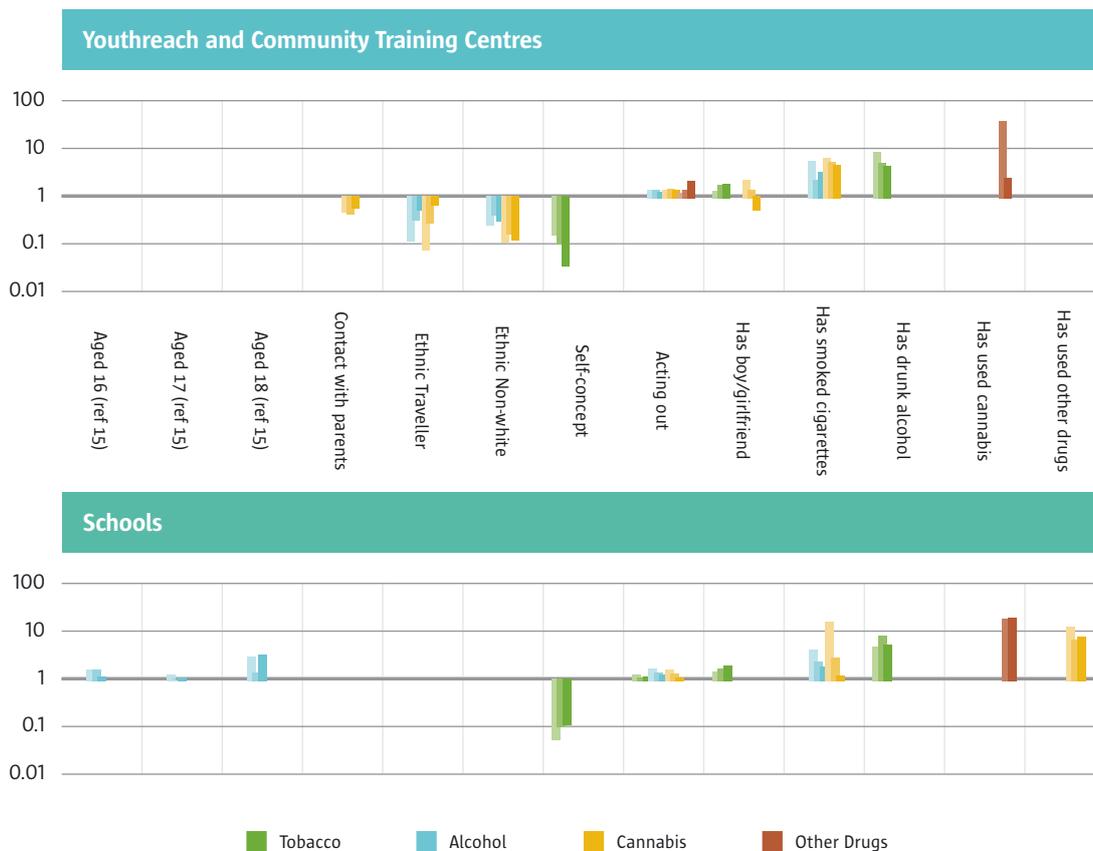
Figures 5.1 to 5.4 show the full list of 35 factors that played a role in at least one of the models presented. These 35 factors are themselves a subset of the original list of approximately 70 potential influences. Following the incremental and iterative process outlined earlier, we gradually reduced this list to the 35 factors presented in this report, which can be defended on both theoretical and empirical grounds. It is important to note that, in each of the models presented in the previous pages, all the potential factors were tested. If any of these factors is not included in the tables, this is because it was not found to exert a statistically significant influence in relation to substance use. The most striking result, in this respect, is the lack of any significant, specific, direct effect of gender on substance use, once we control, statistically, for other attributes and characteristics (such as “acting out”, the parent-teacher relationship, friends' behaviour, etc). As we noted earlier, this is in line with at least part of the international research literature, and suggests that the gender differences revealed by the bivariate analyses are largely mediated by other characteristics.

6 Key Risk and Protective Factors

In this chapter we will provide a more systematic discussion of the overall risk and protective factors that affect young people’s substance use.

6.1 Factors related to the Young Person

Figure 6.1: Odds Ratios for Personal Factors on Substance Use



Colour Scheme used for Type of Substance and Time Horizon

Before discussing the key risk and protective factors, the colour scheme used in this chapter should be explained. Following the scheme adopted in previous chapters, smoking cigarettes is presented in a green colour, drinking alcohol in blue, the use of cannabis in yellow and the use of other drugs in brown. Each of these colours is further graduated in three shades. The lightest gradation refers to the odds ratio for lifetime use, the medium gradation relates to the past year and the darkest gradation to the past month.

Gender of the Young Person

As noted earlier, and in line with other recent study findings for Ireland, gender was not found to have a statistically significant influence on uptake of any of the substances considered in this study.

Age of the Young Person

Looking at the influence of age on substance use across the four types considered in this study, it is evident that age plays very little role when the population of reference is limited to 15 to 18-year-olds. The only context where age matters is with respect to alcohol, where 18-year-old school-attending students have a higher risk of using this substance. This means that interventions should be designed in an age-appropriate but age-independent fashion. In other words, interventions are just as important for 15-year-olds as they are for 18-year-olds, and the mechanisms that they are called to address are essentially identical.

Contact with Biological Parents

The only type of substance where this factor was found to be relevant relates to the use of cannabis, with a relatively small increase in risk. We thus do not consider this to be a major risk factor for substance use.

Ethnicity

There is evidence from this study – albeit based on relatively small numbers of cases – that the consumption of alcohol and the use of cannabis is less prevalent among young people from a Traveller or non-white ethnic background. Being a first or second-generation immigrant, however, has no statistically significant effect.

Self-Concept

Weak self-concept is associated with a greater likelihood of smoking cigarettes, but does not feature in the multivariate models for the other three types of substance. Additional models, not presented in this report, indicate that the influence of self-concept is partially mediated by prior substance use, suggesting that this may be an important factor in early experimentation, and that the latter may mediate its continuing influence. This is of relevance to the debate about “progression”, and suggests that understanding the indirect effects of self-concept – and perhaps other personal attributes – may help to explain why certain individuals progress from precocious experimentation to more regular later use.

Aggressive “Acting-Out” Behaviour

Aggressive “acting-out” behaviour is consistently associated with an increased likelihood of drinking alcohol and using cannabis and other drugs. While the effects are modest in size, they nevertheless draw attention to the role of “rebellious”, externalising and attention-seeking behaviours in relation to substance use. As statistical models cannot, on their own, identify specific forms of causality, it is important to reflect on the precise nature of this relationship, including the possibility that substance use, and the kinds of social interactions that it involves, may reinforce aggressive “acting-out” behaviour.

Having a Boyfriend or Girlfriend

Having a boyfriend or girlfriend slightly increases the likelihood of smoking cigarettes and using cannabis. It is possible that having a boyfriend or girlfriend and using these substances may reflect the young person's adoption of what are perceived as "adult" behaviours, as well as their orientation towards their peers. This variable thus captures a personal characteristic of the young person; the influence of a substance-using boyfriend or girlfriend will be dealt with separately later.

Use of Other Substances

There are clear links between the use of different kinds of substances:

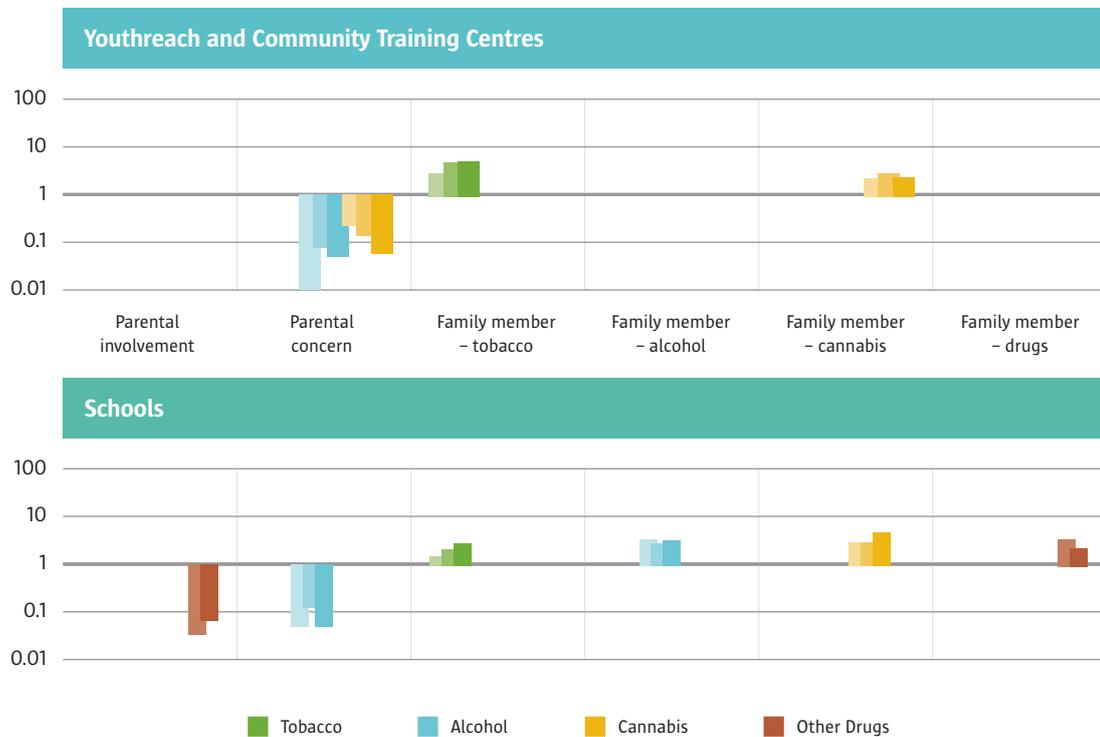
- Smoking cigarettes increases the likelihood of drinking alcohol and using cannabis
- Drinking alcohol is associated with a greater likelihood of smoking cigarettes
- Using cannabis has a strong effect on the odds of taking other drugs
- Using other drugs increases the likelihood of using cannabis

As we saw earlier, this issue has attracted considerable attention on the part of researchers and policy-makers, and has not yet been satisfactorily resolved in theoretical terms. Attempts to identify a single, key mechanism that can account for progression from one type of substance to another have proved largely unsatisfactory. Although the "gateway" hypothesis has directed attention at some of the key issues, it is more a "black box" than a substantive explanation of this phenomenon.

A consensus appears to be emerging in the scientific community that no single mechanism can account for the observed patterns, and that a number of quite distinct "pathways", involving strongly mediated influences and processes of selective reinforcement and reciprocal causation, are involved. We have sought to contribute to this discussion by testing some of these hypotheses and elaborating on the mechanisms involved; these frequently hinge on the social context of substance use, the nature of the social relationships that young people construct through their substance use, and the driving factors behind their initial experimentation with substances and potentially more regular substance use. As we have suggested, a behaviour that is determined by the same motives can acquire a radically different meaning among different groups of people, in accordance with the social context, just as different factors can, at times, give rise to apparently similar outcomes.

6.2 Factors related to the Young Person’s Parents and Home

Figure 6.2: Odds Ratios for Parental and Home Factors on Substance Use



Parental Involvement and Concern

Parental involvement and parental concern are correlated concepts (with a Pearson’s correlation coefficient of 0.41); since monitoring is correlated with involvement and concern, we will not discuss this factor separately. Parental concern has a very strong protective effect, reducing the likelihood of a young person drinking alcohol or using cannabis by a factor of around 10. An analogous effect is found for parental involvement in relation to other drug use among school-attending students.

This is a powerful reminder that parental concern and involvement (and monitoring) are highly effective in protecting young adults against substance use. As pointed out before, we have to consider that the constructs used in the survey do not measure parental concern in a direct way, but measure the young person’s perceptions of their parents’ concern for them, for what they are studying and for their future. Thus we do not know whether these evaluations would coincide with a more direct measure of parental concern.

This is important, as it suggests both a key to interpretation and a possible axis for intervention. We should start from the insight that both early school-leavers and early substance users tend to perceive their parents or guardians as being relatively unconcerned about what happens to them. This may be related to disruptions and difficulties in the home environment, but it may also reflect quite deep, selective processes of identity formation (including self-concept) during adolescence and young adulthood. Young people’s rejection – of the school environment, of the norms of the wider society, of their parents’ expectations – should be understood within this context. It may, for

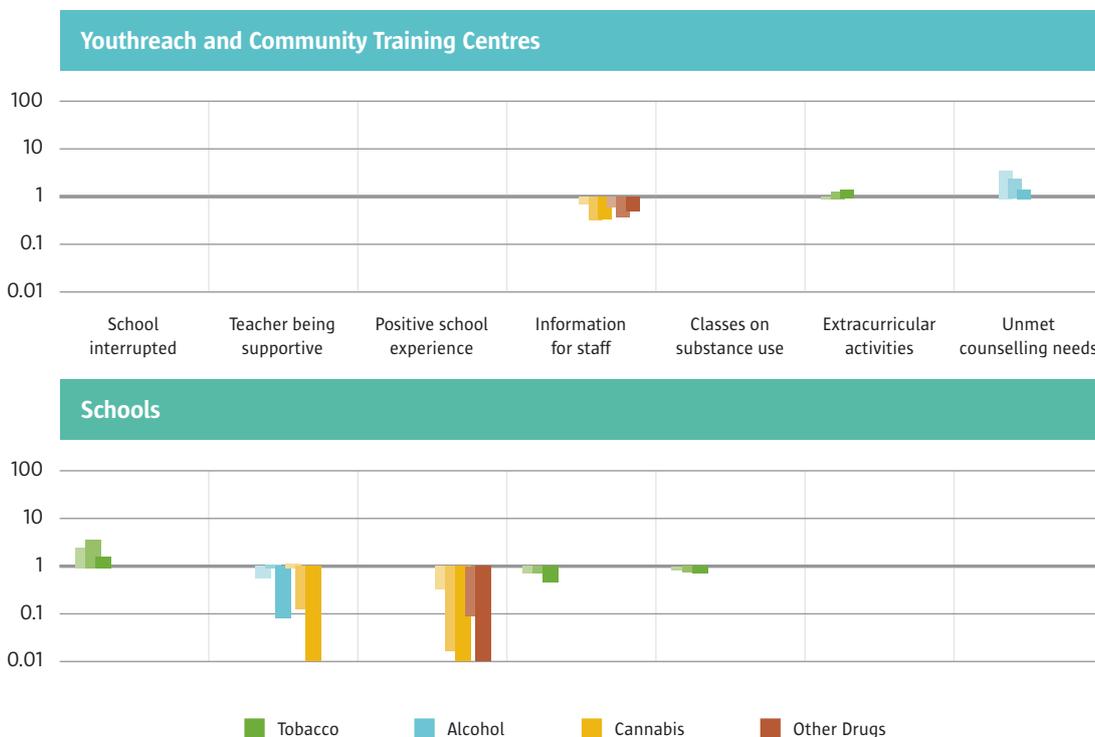
example, express a sense of failure and frustration, rather than a positive pursuit of new sensations or a predisposition to risk-taking. It may, together with a rebellious outlook, form a self-identity that is relatively resilient and defensive in relation to specific social situations. It may therefore be possible to work with parents and their children to enable each to achieve a fuller understanding of the needs and expectations of the other, and to achieve results by focusing on the more hidden, mediated causes of frustration and rejection among young people.

Use of Substances by other Family Members

Substance use by other family members clearly constitutes a significant risk factor for the young person. What is particularly pertinent in the findings of the survey is the directness of the link, the one-to-one relationship between the specific substance used by a family member and the increased risk of use of this substance by the young person. The possible reasons for a strong and direct relationship are many: the presence of a role model, access to the substance, a relaxation of disapproval, or, possibly, a reduction in parenting skills as a result of substance use. Given the high levels of cigarette smoking and drinking alcohol observed, and their far-reaching health and social consequences for young people, it is important for parents to be aware of their influence on their children’s behaviour, in relation to legally available substances as well as illicit drugs.

6.3 Factors related to the Centre or School

Figure 6.3: Odds Ratios for Centre and School Factors on Substance Use



Interruption of School Attendance

The interruption of school attendance has a small effect on substance use, increasing the likelihood that school-attending students will smoke cigarettes. However, care needs to be taken with respect to the correct interpretation of this potential risk factor for early school-leavers who, by definition, have interrupted their school careers. This means that there is little variation in relation to this measure for early school-leavers, not that this factor is unimportant in itself.

Positive Relationship with Teacher and/or Experience of School

By far the most important factor in this category, and possibly in the study as a whole, is the strong, protective influence of positive, supportive relationships with teachers and having a positive school experience. While having no effect on cigarette smoking, a positive school experience (including the support of a teacher) makes young people between 10 and 100 times less likely to drink alcohol and to use cannabis or other drugs. This relationship raises the important question of motivations and goals, and lies at the very centre of the study: to what extent do substance-use patterns and the underlying risk and protective factors differ between early school-leavers and school-attending students?

As *Figure 6.3* demonstrates, these two protective factors powerfully dominate the bottom graph, but are completely absent as a factor for early school-leavers. The reason for this is that these two factors play a key role in determining whether a young person leaves school in the first instance. Early school-leavers are, therefore, a comparatively homogeneous population with respect to their previous school experience, which is almost by definition a highly negative one. We cannot empirically demonstrate this relationship within the current study, due to its cross-sectional nature, and because the survey instruments did not include detailed questions about the early school-leavers' prior experience of school. Nevertheless, it is possible on *logical* grounds to hypothesise that the higher levels of substance use observed among early school-leavers are largely attributable to a selection effect, whereby those students who lacked a positive school experience were at higher risk of using substances and leaving school early, which explains their greater concentration in alternative learning centres.

Taking these observations together, we must conclude that the most effective way to reduce the risk of substance use among young people may be to ensure that they feel supported by a teacher and have a positive experience from the very beginning of their time at school. By concentrating resources in this area, it might be possible to reduce the likelihood of early school-leaving among the most vulnerable groups, while simultaneously, due to the direct and indirect effects of this intervention, substantially reducing the prevalence of substance use.

Having reached this conclusion, we should immediately add one caveat: we do not know from the present study how substance use itself affects relationships with teachers and the school experience. To unravel this complex, reciprocal relationship, a longitudinal study would be necessary, following a particular school cohort over time, and studying the factors associated with early school-leaving and substance use in an integrated manner.

Staff Training and Classes on Substance Use

With the exception of moderate effects on smoking cigarettes, staff training and specific classes on substance use have no statistically significant effects on substance use among school-attending students. However, providing information on substance use to staff in Youthreach and Community Training Centres does have a positive effect, reducing the likelihood for early school-leavers to use cannabis or other drugs. While the effects shown in *Figure 6.3* appear to be comparatively small, the coefficients represent the conditional effect *per class provided*, and can thus add up to a larger effect if greater emphasis is placed on this kind of intervention. It would thus appear that staff training and classes on substance use are a worthwhile and effective means by which to address more critical forms of substance use among early school-leavers.

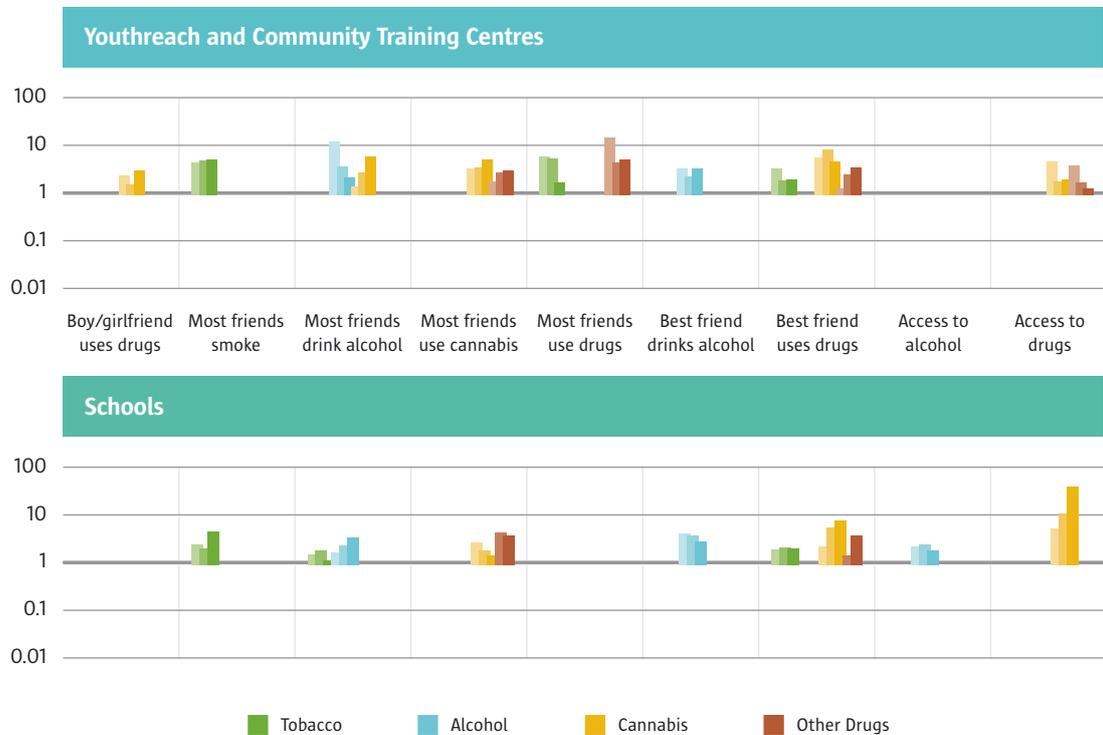
Other School-related Factors

There appears to be a minor effect of extracurricular activities, which increases the likelihood of smoking among early school-leavers by a small amount (compared with the other effects discussed here). However, if the interpretation is correct and supported by anecdotal evidence, it is possible to draw policy conclusions about the need for monitoring before, during, and after these extracurricular activities.

More interestingly, unmet counselling needs in centres that cater for early school-leavers are associated with a higher risk of drinking alcohol. Again, if supported by additional, empirical evidence, this would lead to a clear policy recommendation to provide adequate counselling, particularly in settings that cater for early school-leavers and are frequented by young people with a higher rate of substance use.

6.4 Factors related to the Peer Group

Figure 6.4: Odds Ratios for Peer Factors on Substance Use



Some Initial Observations on Peer Effects

Looking at *Figure 6.4*, it would be easy to reach the conclusion that friends have an exclusively negative influence on young people, at least as far as substance use is concerned. This is certainly not the case; forming friendships is crucial to young people’s development and essential in providing social support and opportunities for interaction. The survey instruments used in this study focus almost exclusively on risk factors associated with peers and pay little attention to their potential for generating protective effects. Participation in cultural, sporting and social activities often depends on belonging to a peer group, and involvement in such activities is important both in itself and as an alternative to substance use. We should therefore be aware that the risk factors included in the study can equally be conceptualised as protective factors, to the extent that friends do not use substances, and where disapproval within the peer group effectively discourages use.

Substance Use by Boyfriend or Girlfriend

Substance use by young people appears to be influenced less by what their boyfriend or girlfriend does than by the behaviour of their friends. The only effect identified with regard to boyfriends and girlfriends using drugs is an increase in the likelihood of using cannabis.

Substance Use by Most or All Friends

As in the case of family members, what is most striking about the influence of peers is not merely the strength of the influence associated with substance use by friends, but the specific nature of this influence. If most or all friends drink alcohol, for example, the young person is considerably more likely to drink alcohol and to use cannabis. The use of cannabis by most or all friends increases the likelihood of using cannabis as well as other drugs. If most or all friends use drugs, this boosts the odds that early school-leavers will also use drugs and smoke cigarettes.

Substance Use by Best Friends

A similar pattern is found with regard to best friends. If the young person's best friends drink alcohol, then the likelihood that he or she will also drink alcohol increases substantially. If his or her best friends use drugs, then he or she is more likely to do so, as well as being more likely to smoke cigarettes and cannabis.

Most of these peer-related effects are quite similar for early school-leavers and school-attending students; i.e. not only are the same statistically significant relationships observed, but the odds ratios are also similar. From this, we can deduct that peer influences on substance use by young people are well structured and deeply rooted, applying to both populations equally. This is consistent with the existence of "concentration effects" within the learning environment, as it suggests that peer groups tend to "amplify" or "propagate" substance use. Although these effects are measured in this study at the individual level, their contextual and social nature should not be overlooked. It is plausible that threshold effects are in operation in this context, leading to a more rapid diffusion of specific behaviours once a certain number of young people within a given context use substances.

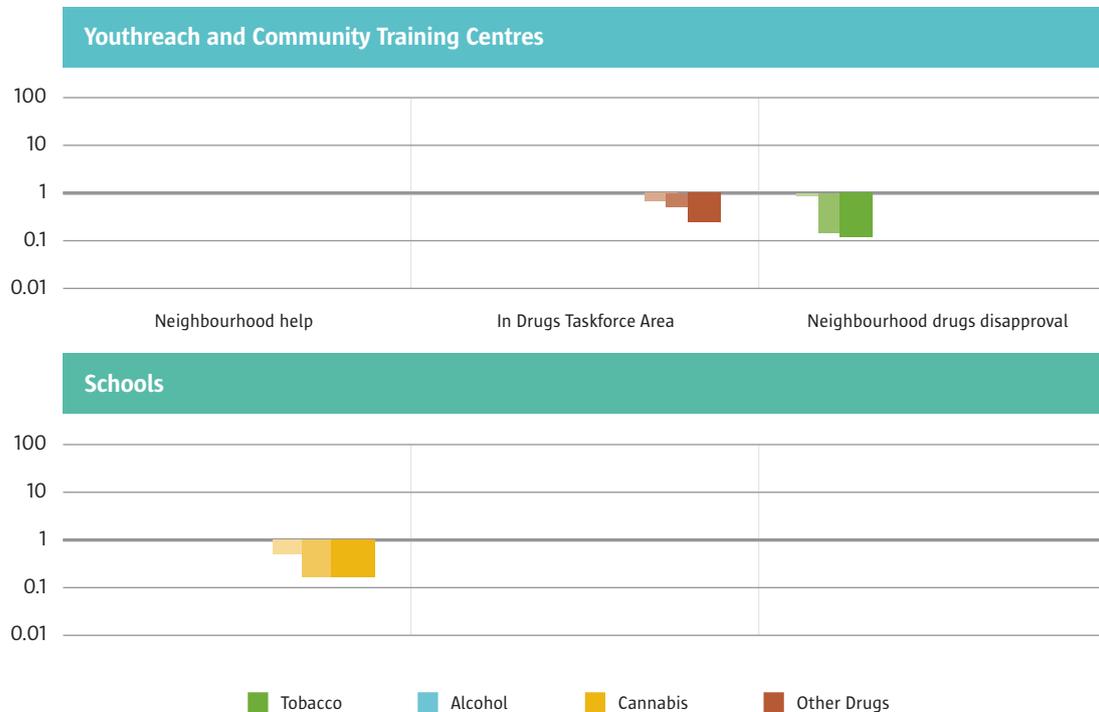
Ease of Access to Substances

Our final consideration in this section concerns the effect of access on young people's probability of using substances. Ease of access to alcohol has a moderate but significant effect on the likelihood of drinking alcohol by school-attending students, but this is not the case for early school-leavers. However, since early school-leavers have a somewhat greater propensity to drink alcohol (see *Table 4.2*), this suggests that access to alcohol is less problematic for this group as a whole. The second finding is that using cannabis and other drugs is strongly affected by access to these substances. For early school-leavers, the effect is of equal strength for both categories; for school-attending students, ease of access is of particular importance in relation to cannabis use, but not other drugs.

This finding clearly supports the policy stance of curbing access (supply) where possible, although this should not detract attention from the factors that deter young people from using substances even where they are easily available. It is interesting, in this context, to note that access to cigarettes was not measured in the survey. This may have resulted from the perception that access is straightforward, as other Irish studies appear to suggest. At this point, we can only repeat our earlier remarks regarding the importance of focusing attention on the alarming levels of cigarette smoking and alcohol consumption observed among young people in Ireland. These are the substances most commonly used in both of the populations in the study and, given the young age of those involved, the health and social implications are particularly serious. The damaging effects associated with more "visible" and perhaps socially alarming forms of illicit drug use by a minority of young people should not detract attention from the harmful effects associated with widespread use of other, more widely used substances.

6.5 Factors related to the Neighbourhood

Figure 6.5: Odds Ratios for Neighbourhood Factors on Substance Use



Neighbourhood Influences on Substance Use

One of the specific aims of this study was to use multi-level modelling techniques to shed light on possible neighbourhood and contextual effects. To this end, additional information was collected at schools and training centres, and was included in the statistical analysis. Further information on neighbourhoods was derived from the responses of the young interviewees by aggregation (taking the overall mean or percentage for each local sample). Using multi-level analysis techniques ensures that these effects are correctly specified, and that their potential influence on substance use can be estimated with the same robustness as the other risk and protective factors included in the survey.

As *Figure 6.5* shows, a limited number of contextual effects was identified, and we have already discussed most of these in some detail. Good neighbourhood support structures have a protective influence on the use of cannabis among school-attending students. The existence of a Drugs Task Force has a statistically significant impact, reducing the likelihood that early school-leavers use drugs. Although the effect is not very great, it is significant and points in the right direction. Finally, a sense of disapproval in the neighbourhood about young people using substances has a measurable and again significant effect on the likelihood of early school-leavers smoking cigarettes. Many of these contextual effects are defined in relation to continuous measures – either as a mean or percentage at the aggregate level – and thus have a different scale to the individual-level measures. This means that the odds ratios must be interpreted in terms of unit increases or decreases in the aggregate variables, rather than expressing the effect of an increase from the lowest possible to the highest possible value, as in the case of the scaled measures.

6.6 A Comparison of Risk and Protective Factors

Figure 6.6: Comparison of Odds Ratios for Substance Use

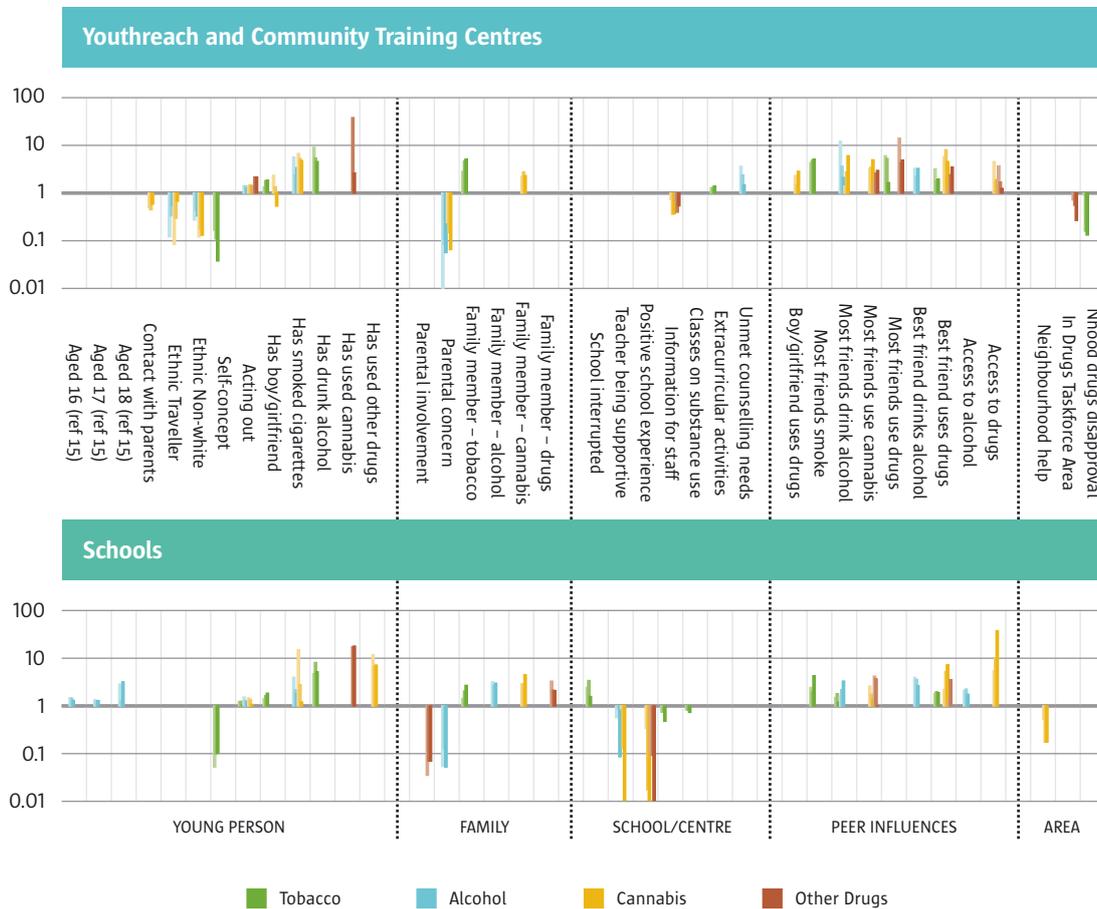


Figure 6.6 presents a synthesis of all the risk and protective factors identified in this study and their respective unit effects. The total of 228 measures is made up of 38 risk and protective factors for three timelines and two populations (early school-leavers and school-attending students). Although all the effects that make up this graph have been discussed already, the reason for including it here is to draw attention to the overall similarities between the pattern of effects for the two groups studied. The personal, family-related and peer influences are particularly similar and this supports the conclusion that the processes influencing substance use among young people may be quite similar, regardless of the context.

That said, one of the largest differences between the two sets of effects, as represented in Figure 6.6, relates to the school environment. This does not indicate that different processes or structures are at work, but arguably reflects the selection processes by which students with negative school experiences are “sorted out” of school and “sorted into” learning institutions targeted at early school-leavers. This generates powerful concentration effects and peer influences, associated with additional risks of using substances. As we have seen, there are also countervailing factors, which are often due to the approach that the centres, and their staff, adopt in an attempt to reduce the risk of substance use by participants.

6.7 Final Considerations on the Design of the Study

This study has given considerable attention to the hypothesis that, in addition to the effects associated with individual attributes, characteristics, and relationships, contextual effects in the school, training centre or neighbourhood influence substance use by young people. Considerable effort was dedicated to developing and implementing an appropriate study design and deploying sophisticated statistical techniques during the analysis. This involved the clustered sampling of students in schools and out-of-school education and training centres, and the application of dedicated multi-level analysis tools. As this is only the third published study of its kind to use Irish data, it is appropriate to reflect on the outcomes of the analysis and their pertinence to the original aims of the research.

The first observation that can be made is that the study design was, in a sense, imposed by the very nature of its object: students are clustered in schools and young people, particularly those from less affluent communities, share a common space which can be expected to influence their behaviour. Classical multivariate regression analysis assumes that observations are independent and does not take account of the ways in which the social world is socially and hierarchically structured. From this perspective, the choices made during the early stages of the design of the research are highly appropriate.

Secondly, it is also clear that the contextual effects identified in relation to the schools and out-of-school education and training centres are not the only, nor the most important influences on substance-use behaviour among young people. Although these contextual effects are highly interesting, and often of immediate policy relevance, the most powerful risk and protective factors that affect substance use are related to individual-level attributes, family characteristics and peer relationships that can be measured quite effectively at the individual level.

Thirdly, it is perhaps encouraging to realise that, despite the differences between schools and out-of-school education and training centres in terms of the prevalence of substance use, these differences are not *institutionalised* within these settings, nor do they depend on completely different underlying mechanisms. On the contrary, we have illustrated the great similarities between the estimates obtained from the statistical models for early school-leavers and school-attending students, and emphasised the primary importance of the selection processes that shape the composition of schools and out-of-school education and training centres. This is perhaps the single most important issue to place at the centre of the future research agenda: how students with different risk profiles are selected into different institutional environments, and how this process shapes differential educational outcomes, developmental pathways and patterns of substance use.

7 Main Study Findings and Policy Recommendations

In this chapter we will present the key findings of this study, paying particular attention to their policy implications. On this basis, we will develop some recommendations and suggestions in relation to the risk and protective factors that are most amenable to intervention.

7.1 Prevalence of Substance Use among Early School-Leavers

Finding: The overall incidence of substance use among young people in Ireland indicated by this study is far from surprising and confirms the findings of previous drug prevalence studies. However, the study also demonstrates that estimates based on school-attending students alone cannot be generalised to 15-18-year-olds. The Central Statistics Office estimates that, between 2002 and 2008, approximately 11-12% of each age cohort left school early. As this study demonstrates, substance use among early school-leavers is significantly higher than among school-attending students, implying that estimates based on school-attending students alone underestimate the overall prevalence rates for people in the 15-18 age group.

As we have seen, early school-leavers are between 1.5 and 2.5 times more likely to smoke cigarettes (over the course of their lives and during the past month, respectively), up to 1.2 times more likely to drink alcohol, between 2.4 and 4.4 times more likely to use cannabis, and between 3.7 and 14.4 times more likely to use other drugs.

Recommendation: An appropriate methodology needs to be developed to capture a more comprehensive sample of young people, including those who have left school early and are not covered by the European School Survey Project on Alcohol and Other Drugs (ESPAD).

7.2 Findings and Recommendations aimed at the Young Person

Gender and age do not have a large influence on substance use among young people, particularly once we control for other attributes. No significant effects may be associated with either first or second-generation immigrants, although use of alcohol and cannabis appears to be less common among Travellers who attend out-of-school education and training centres, and ethnic non-whites. The main factors of interest from a policy perspective are self-concept and aggressive “acting-out” behaviour, and the attributes and behaviours that favour progression up the “hierarchy” of legal and illegal substances. These three issues will be discussed in the following paragraphs.

Self-Concept

Finding: Weak self-concept is associated with a greater likelihood of smoking cigarettes, but does not feature in the multivariate statistical models for the other three types of substance. Additional models, not presented in this report, show that the influence of self-concept on other forms of substance use may be mediated by early smoking and experimentation with other substances. Self-concept therefore appears to be an important factor in early substance use, which in turn has an influence on progression towards more serious forms of use.

Recommendation: This set of associations reinforces the notion that education should aim at developing the young person's capacities and abilities in a holistic manner. Higher substance use among early school-leavers is at least partially due to their weaker self-concept and self-esteem, particularly with regard to education. Developing self-concept should be a central objective in schools, as should educational interventions aimed at early school-leavers, with a view to reducing their substance use.

Aggressive “Acting-Out” Behaviour

Finding: Aggressive “acting-out” behaviour is associated with an increased likelihood of drinking alcohol and using cannabis and other drugs. These effects are moderate in size and draw attention to the role of “rebellious”, externalising and attention-seeking behaviours in relation to substance use.

Recommendation: Aggressive “acting-out” behaviour should be interpreted by parents and educators as an indicator of a negative adaptation to feelings of frustration, failure, and rejection, which may lead to risk-taking, substance use and the formation of an oppositional identity that makes intervention increasingly difficult. Supporting families and children with difficulties at an early stage, and helping them to cope better with their stresses and challenges, may represent the most effective approach.

Early Substance Use as a Precursor to More Serious Forms of Use

Finding: There are clear links between the use of different kinds of substances: smoking cigarettes increases the likelihood of drinking alcohol and using cannabis; drinking alcohol is associated with a greater likelihood of smoking cigarettes; using cannabis has a strong effect on the odds of taking other drugs; and having used other drugs increases the likelihood of using cannabis.

Recommendation: Although the direct and indirect causal relationships involved in this patterning of substance use are not clear, it is apparent that early substance use – involving alcohol and cigarettes, in particular – signals a considerable additional risk of progressing later to “harder” drugs. The capacity of parents and staff to prevent or delay early substance use should thus be developed, focusing on (a) informing, supervising, and supporting young people; (b) ensuring that they have positive role models, experiences, and interactions; (c) demonstrating concern and involvement in their lives; (d) reducing their access to substances; and (e) concentrating on overcoming problems and difficulties in relation to the school setting.

7.3 Findings and Recommendations aimed at Parents and the Home Environment

The risk and protective factors that relate to the home can be grouped into two broad categories: parental concern and involvement, on the one hand, and the use of substances by other family members, on the other.

Parental Concern and Involvement

Finding: Parental concern, involvement and supervision are highly effective in protecting young adults against substance use, to the extent that young people perceive and internalise these attitudes.

Recommendation: It is important that parents be informed that their concern and involvement has a significant influence on their children's orientation towards substances. Where parents are actively involved in their children's lives – in their studies, goals, and hopes for the future as well as their behaviour in relation to substances – and where children recognise these parental concerns, they are considerably less likely to use substances. This implies a need to work on two distinct issues: parents' capacity to get involved in their children's lives and their ability to transmit this involvement to children in an effective way.

The Use of Substances by other Family Members

Finding: Substance use by other family members constitutes a significant risk factor for young people. What is particularly pertinent in the findings of the survey is the directness of the link: the almost one-to-one relationship between the specific substance used by a family member and the increased risk of use of this substance by the young person. This suggests that the underlying mechanism may involve emulation, normalisation of substance use within the home, greater access to substances, or the influence of elder siblings.

Recommendation: Parents and siblings cannot avoid becoming role models for young people. Parents should be aware that their own behaviour can have effects on their children, regardless of the messages that they explicitly transmit, and that their children may not necessarily recognise that certain behaviours, perhaps considered acceptable for adults, may be much more damaging for young people.

7.4 Findings and Recommendations aimed at Schools and Teachers

The effects of the school setting will be discussed in relation to the nature of the young person's experience of school and the influence of the school or training centre itself on substance use.

Having a Positive School Experience

Finding: A positive school experience (including good relationships with teachers) makes young people between 10 and 100 times less likely to drink alcohol and to use cannabis or other drugs. As the overall school experience is also a crucial factor in a young person's decision to leave school early, this indicates a substantial overlap between the factors that increase the risk of early school-leaving and those that encourage substance use among young people. This is possibly the most important finding of the study, and has a number of profound implications.

Although this was not directly studied in the present research, it may be argued that the higher levels of substance use observed among early school-leavers is largely attributable to selection effects, whereby students who did not have a positive experience at school, with a higher risk of using substances (and possibly behavioural or personal difficulties), tend to leave school early and cluster in alternative learning centres.

Recommendation: Ensuring that all students have the possibility to experience positive and satisfying relationships and challenges at school is the most important thing schools can aim to achieve. This will not only reduce the incidence of early school-leaving, but has the potential also to reduce levels of substance use among young people. The difficulties involved in achieving this aim are, obviously, very great, and effective interventions in this area are likely to require simultaneous interventions in other spheres, such as the family environment and the local neighbourhood.

The Influence of the Educational Institution

Finding: Providing information on substance use to staff members and parents, organising classes on substance use and providing counselling to young adults at risk can, according to this study, reduce the risk of substance use among early school-leavers. For school-attending students, these “institutional” influences appear to be mediated through the overall school experience.

Recommendation: Although these effects are only moderate in size, they are “unit effects” and can amount in practice to more substantial influences if numerous sessions or classes are provided or a combination of approaches is implemented. As the models only identify statistically significant effects for the sample of early school-leavers, it would appear to be most appropriate to provide such services in Youthreach and Community Training Centres.

7.5 Findings and Recommendations with regard to Friends and Peers

Peer influences were conceptualised in this study as the influence of three distinct groups: the wider circle of friends, best friends and, if applicable, boyfriends/girlfriends.

Finding: Friends have a strong effect on young people’s substance-use behaviour. If any of the three aforementioned peer groups uses substances, the young person is at a considerably greater risk of using the same substances. This association is likely to express a reciprocal relationship: young people tend to adapt to their friends’ behaviours, while simultaneously adapting their group of friends to their own lifestyle, preferences, personality, and behaviour.

If being surrounded by friends who use substances poses a risk, conversely, being surrounded by friends who *do not* use substances provides protection that is equal in strength to the risk. The survey on which this study is based did not include assessments of different social environments and their role in providing a “safe” developmental context for young people. It is, however, likely that involvement in many kinds of activities, if these are properly supervised, provides a healthy environment for young people.

Recommendation: Given the strong affects associated with friends’ substance-use behaviour, further research should explicitly address this issue, as well as studying how the physical and social context of young people’s extracurricular activities (sports centres, music centres, arts and drama clubs as well as informal contexts like parks, amusement arcades and so on) can influence their choice of peers, their behaviour, and their attitudes towards substance use.

7.6 Findings and Recommendations at Community Level

Finding: This study was designed to measure contextual effects by exploiting the power and sensitivity of multi-level modelling techniques. A number of contextual effects were identified, including those associated with the learning institutions discussed above, and neighbourhood factors such as disapproval of young people using substances and the designation of an area as a Drugs Task Force area. These effects were found to be statistically significant in a number of models, although they are clearly not the strongest determinants of substance use among young people. Other factors, measured at the individual level but related to the social context, were also found to have a significant influence on substance use, including the presence of somebody in the local area whom the young person could turn to for help with a substance-related problem.

Care needs to be taken when interpreting these results, as the statistical analysis presented here focused on schools and educational training centres as social contexts, not on the local communities where participants reside. In fact, neighbourhood characteristics were measured at either the individual level (support, access to drugs) or at the level of the school or out-of-school education or training centre (the average rating of community disapproval and so on). The neighbourhood-related factors mentioned above are thus primarily summary characteristics of people attending the same school or centre.

We already know from the scientific literature, as well as journalistic accounts and administrative data, that certain geographical areas and communities are characterised by higher levels of substance use than others. Just as the “clustering” of certain kinds of young people into alternative learning centres is associated with an amplification of their individual risk of using substances, the “sorting” of vulnerable families into disadvantaged areas also contributes to this risk. It is likely that the powerful influence of peer relations, which we measured as an individual attribute, also expresses one of the effects of these sorting and clustering processes, as they are played out in specific localities.

Recommendation: The study was not designed to detect risk or protective factors at community or neighbourhood level. Therefore, the finding that neighbourhood support structures, disapproval of substance use at the neighbourhood level and the work of the Drugs Task Forces have a positive influence on the behaviour of young people lends support to the conclusion that local development initiatives and spatially targeted interventions have a role to play in counteracting substance use among young people, and should be supported and, if possible, extended.

7.7 Recommendations on Current Education Initiatives

Preface: This study seeks to identify the underlying risk and protective factors that affect substance use among young people. An evaluation of education initiatives that aim to prevent early school-leaving or to counter substance use among young people would be beyond the scope of the study. Some of the issues relevant to this study have been raised in *School Matters*, the report of the Task Force on Student Behaviour in Second-Level Schools (2006), and the recommendations of that report are of unquestionable importance.

Nevertheless, it appears to be appropriate to make some comments about those education initiatives that directly address the issues identified in this report.

Finding: The most important school and community-based initiatives and programmes that aim to address a range of factors that influence early school-leaving are the School Completion Programme (SCP) and the Home School Community Liaison Scheme (HSCL). The school-based Social, Personal and Health Education Programme (SPHE) addresses substance-use education among young people in schools across the education system. *Inter alia*, these initiatives and programmes seek to strengthen self-concept among young people at risk of early school-leaving, to enable them to have a more positive school and teacher experience and to address issues of substance use and general well-being.

The most significant programme for out-of-school early school-leavers is the Youthreach programme (in VEC and Community Training Centres).

Recommendations: Notwithstanding the pressure to reduce public expenditure, it is important to exploit the potential of these initiatives to the full, while monitoring their effectiveness. Best practice from these initiatives needs to be further developed and embedded in the system. This approach also informs the National Drugs Strategy (2009-2016), which calls for:

- Maintaining the focus of existing programmes targeting early school-leaving and the retention of students in schools
- An improvement in the delivery of the Social, Personal and Health Education (SPHE) programme
- Development of a whole-school approach to substance-use education in the context of SPHE
- The implementation of SPHE in Youthreach and other education and training centres
- The development of a series of prevention measures that focus on the family

In addition, the study identifies that young people participating in the Youthreach programme in VEC centres for education and Community Training Centres may have unmet counselling needs and it is appropriate that provision for guidance, counselling, and psychological services to its participants be evaluated and reorganised to more effectively respond to the needs of programme participants.

The findings of this study fully support the recommendations of the National Drugs Strategy, while raising the question of whether enough is currently being done. Despite considerable progress having been achieved over the past decade, this study shows that we continue to observe a short-fall in relation to self-concept, positive school experience, parental/home influences, and negative peer behaviour, which is associated with a much higher risk of substance use among young people. It is therefore evident that, unless we assume that this situation is inevitable, the effort to identify, apply, and support effective policy responses must continue.

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Annex 1: List of Stakeholders Consulted in the Design of the Study

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Annex 2: Definition of Independent Variables

Background Variables

Level 1

Concept	Categories	Description	Variable Names
Identifier	numerical	level one identifier	<i>id_l1</i>
Gender	male; female	dummy variable – reference category is female	<i>sex_rc</i>
Age	15; 16; 17; 18	three dummy variables – reference category is 15	<i>age_d1</i> <i>age_d2</i> <i>age_d3</i>
Family type	two-parent family; one-parent family; “extended” family; one-person family; other	four dummy variables – reference category is two-parent family	<i>fam_typ_d1</i> <i>fam_typ_d2</i> <i>fam_typ_d3</i> <i>fam_typ_d4</i>
Siblings	numerical	number of brothers and sisters (truncated at 10)	<i>sibs_n</i>
One or more parent is deceased	no; yes	one dummy variable – reference category is no (both parents alive)	<i>par_dead</i>
First-generation immigrant	no; yes	first dummy variable – reference category is born in Ireland/UK	<i>imm_g1</i>
Second-generation immigrant	no; yes	second dummy variable, reference category is born in Ireland/UK	<i>imm_g2</i>
Traveller Community	no; yes	first dummy variable – reference category is white Irish non-Traveller	<i>eth_trav</i>
Non-white ethnicity (Black, Black Irish, Asian or Asian Irish)	no; yes	second dummy variable – reference category is white Irish non-Traveller	<i>eth_nw</i>
Contact with biological parents	no; yes	one dummy variable – reference category is regular contact with both parents (a couple of times a month or more often)	<i>fam_contact</i>
Boyfriend/Girlfriend	no; yes	one dummy variable – reference category is no boyfriend/girlfriend	<i>boygirlfriend</i>
Work situation	no; yes	one dummy variable – reference category is no paid job involving 11 or more hours per week	<i>job</i>

Level 2

Concept	Categories	Description	Variable Names
Identifier	number	level two identifier	<i>id_l2</i>
Location	text	name of centre or school	<i>location</i>
CLÁR area	no; yes	one dummy variable – reference category is centre or school not in an area covered by the CLÁR programme	<i>clar</i>
RAPID area	no; yes	one dummy variable – reference category is centre or school not in an area covered by the RAPID programme	<i>rapid</i>
Partnership area	no; yes	one dummy variable – reference category is centre or school not in an area covered by an Area Partnership	<i>apc</i>
Local Drugs Task Force area	no; yes	one dummy variable – reference category is centre or school not in an area covered by a Local Drugs Task Force	<i>drugtask</i>
Type of centre/school	Secondary; Vocational, Community College, Comprehensive; Youthreach, Community or FÁS centre	two dummy variables – reference category is Secondary School	<i>sch_voc</i> <i>sch_ycr</i>
Parents Association	no; yes	one dummy variable – reference category is centre or school does not have a parents association	<i>par_assoc</i>
Problem with student numbers	no; yes	one dummy variable – reference category is centre or school has not experienced problems with falling student numbers	<i>studn_prob</i>
Number of students	count	total number of students	<i>stud_n</i>
Student/teacher ratio	scale	total number of students divided by total number of teachers	<i>stud_teach</i>

Explanatory Variables (single items)

Level 1

Concept	Categories	Description	Variable Names
Continuity of school attendance	no; yes	one dummy variable – reference category is respondent has never stopped attending school for at least a week, excluding sickness, holidays or other legitimate reason	<i>sch_interr_d</i>
Help with substance-use problems	no; yes	one dummy variable – reference category is respondent would know where to go in own area for help with a drug-use problem	<i>neigh_help</i>
Boyfriend or girlfriend uses drugs	no; yes	one dummy variable – reference category is boyfriend or girlfriend does not use drugs (“nowadays”)	<i>boygirlfrnd_drg</i>
Most or all friends smoke	no; yes	one dummy variable – reference category is none or only some of respondent’s friends smoke cigarettes	<i>frnd_cig</i>
Most or all friends drink alcohol	no; yes	one dummy variable – reference category is none or only some of respondent’s friends drink alcohol	<i>frnd_alc</i>
Most or all friends take “party pills”	no; yes	one dummy variable – reference category is none or only some of respondent’s friends use “legal” party pills	<i>frnd_pps</i>
Most or all friends use cannabis	no; yes	one dummy variable – reference category is none or only some of respondent’s friends use cannabis	<i>frnd_can</i>
Most or all friends use other drugs	no; yes	one dummy variable – reference category is none or only some of respondent’s friends use other drugs	<i>frnd_drg</i>
Best friends drink alcohol	no; yes	one dummy variable – reference category is respondent’s best friends do not drink alcohol	<i>best_frnd_alc</i>
Best friends use drugs	no; yes	one dummy variable – reference category is respondent’s best friends do not use drugs	<i>best_frnd_drg</i>
Family member smoked cigarettes, drank alcohol or used “party pills”	no; yes	one dummy variable – reference category is no family member smoked cigarettes, drank alcohol or used legal “party pills” in past month	<i>family_alc</i>
Family member used cannabis	no; yes	one dummy variable – reference category is no family member used cannabis in past month	<i>family_can</i>
Family member used solvents, tranquillisers, sedatives, antidepressants or anabolic steroids	no; yes	one dummy variable – reference category is no family member used solvents, tranquillisers, sedatives, anti-depressants or anabolic steroids in past month	<i>family_solv</i>
Family member used another drug	no; yes	one dummy variable – reference category is no family member used crack, cocaine, amphetamines, LSD, magic mushrooms or ecstasy in past month	<i>family_drg</i>

Level 2

Concept	Categories	Description	Variable Names
Preventive education on effects of alcohol	no; yes	one dummy variable – reference category is centre or school does not teach about the effects of drinking alcohol. Information collected at individual level and aggregated to centres/schools as a percentage	<i>sch_prev_alc_pgt</i>
Preventive education on effects of drugs	no; yes	one dummy variable – reference category is centre or school does not teach about the effects of taking drugs. Information collected at individual level and aggregated to centres/schools as a percentage	<i>sch_prev_drg_pgt</i>
School provides SPHE classes	no; yes	one dummy variable – reference category is centre or school does not provide SPHE classes. Information collected at individual level and aggregated to centres/schools as a percentage	<i>sch_sphe_pgt</i>
Smoking at centre or school	no; yes	one dummy variable – reference category is centre or school does not allow students to smoke, even in a supervised, outdoor setting	<i>smoke_sch</i>
Counselling available	no; yes	one dummy variable – reference category is that counselling support is not available in school or centre	<i>couns</i>
Counselling provision	no; yes	one dummy variable – reference category is that representative of centre or school feels that the counselling support available is inadequate	<i>couns_eval</i>
Special education provision	no; yes	one dummy variable – reference category is that representative of centre or school feels that special education provision available is inadequate	<i>spc_ed_eval</i>
Psychological assessment available	no; yes	one dummy variable – reference category is that psychological assessment service is not available in centre or school	<i>psych</i>
Psychological assessment provision	no; yes	one dummy variable – reference category is that representative of centre or school feels that the psychological assessment service to which it has access is adequate	<i>psych_eval</i>
Substance-use policy	no; yes	one dummy variable – reference category is centre or school does not have a substance-use policy	<i>substance</i>
Focus on Self-Esteem	no; yes	one dummy variable – reference category is that representative of centre or school feels that their substance-use education does not place major emphasis on enhancing self-esteem	<i>educ_sest</i>
Focus on Resistance skills	no; yes	one dummy variable – reference category is that representative of centre or school feels that their substance-use education does not place major emphasis on resistance skills	<i>educ_res</i>
Focus on Effects	no; yes	one dummy variable – reference category is that representative of centre or school feels that their substance-use education does not place major emphasis on providing information about the emotional and mental effects of drugs	<i>educ_info</i>

Concept	Categories	Description	Variable Names
Staff Sessions on Drug Awareness	no; yes	one dummy variable – reference category is drug awareness and information sessions are not provided for all staff members	<i>staff_info</i>
Parent Sessions on Drug Awareness	no; yes	one dummy variable – reference category is drug awareness and information sessions are not provided for parents	<i>par_info</i>
Number of Classes on Substance Use	count	number of classes provided per year, on average, for students during the final three years	<i>educ_classes</i>
Extracurricular Activities Offered	count	number of extracurricular activities offered by the centre or school	<i>extracurr</i>

Multivariate Scales

Level 1

Concept	Categories	Description	Variable Names
Self-concept	scale	sum of 16 items from Q48 (all 14 items) and Q51 (items 5 and 6). The coding of items 3, 5, 7, 11, 12 and 14 from Q48 was reversed. The additive score was rescaled to a 0-1 interval. Factor analysis was used to develop a single-factor model with relatively high loadings and a KMO of .88. Coefficient alpha for the final scale is highly satisfactory at .81. Example item: “I have not much to be proud of” (4 point agreement scale).	<i>self-concept</i>
Depression	scale	sum of 4 items from Q49 (items 1, 2, 4, 5). The coding for all items was reversed. The additive score was rescaled to a 0-1 interval. Factor analysis guided item selection, producing a model with just one factor, high loadings and a KMO of .70. Coefficient alpha for the final scale is just satisfactory at .63. Example item: “During the last week, how often have you felt depressed?” (4 point frequency scale).	<i>depress</i>
“Acting out”	scale	sum of 5 items from Q50b (excluding the first item). The additive score was rescaled to a 0-1 interval. Due to the “skewed” distribution of this variable, with a number of extreme positive outliers, a natural logarithm transformation was applied. Factor analysis was used to develop a unidimensional measure, with high loadings and a KMO of .81. Coefficient alpha for the final scale is satisfactory at .76. Example item: “Roughly how many times in the last 6 months have you done something you knew was dangerous just for the fun?” (5 point frequency scale).	<i>act_out_l</i>
Supportiveness of Teachers	scale	sum of 10 items from Q13. The additive score was rescaled to a 0-1 interval. Factor analysis indicated a clean factor structure with just one factor, very high loadings and an excellent KMO of .92. Coefficient alpha for the final scale is impressive at .89. Example item: “Your teachers praise you when you work hard” (4 point agreement scale).	<i>pos_teach</i>

Concept	Categories	Description	Variable Names
Negative Experiences at Centre/School	scale	sum of 4 items from Q12 (items 4, 5, 6, 7). The additive score was rescaled to a 0-1 interval. Due to the “skewed” distribution of this variable, with a number of extreme positive outliers, a natural logarithm transformation was applied. Factor analysis was used to identify a single factor, which has high loadings and a KMO of .72. Coefficient alpha for the final scale is just satisfactory at .67. Example item: “In the past year in this centre/school, how often have you felt left out of things?” (4 point frequency scale).	<i>exp_neg_l</i>
Positive Experiences at Centre/School	scale	sum of 5 items from Q11, Q12 and Q13 (Q11, items 1, 2, 3 from Q12 and item 4 from Q13). The coding of items Q12.2 and Q13.4 was reversed. The additive score was rescaled to a 0-1 interval. Factor analysis was applied in order to develop a clean, unidimensional measure on the basis of the above items, and produced moderate to high loadings and a KMO of .66. Coefficient alpha for the final scale is somewhat low, .59. Example item: “In the past year in this centre/school, how often have you enjoyed being here?” (4 point frequency scale).	<i>exp_pos</i>
Parental Monitoring	Scale	sum of 5 items from Q16 and Q17 (items 2, 3, 4 and 5 from Q17). The coding of Q16 was reversed. The additive score was rescaled to a 0-1 interval. Factor analysis was used to develop a pure, unidimensional measure, and produced moderate to high loadings and a KMO of .80. Coefficient alpha for the final scale is satisfactory at .74. Example item: “How often do your parents know where you go in the evening?” (4 point frequency scale).	<i>par_mon</i>
Discussing Issues with Parents	count	count of up to 11 items selected from Q20a and up to 11 items not selected in Q20b. The resulting score was rescaled to a 0-1 interval. Example item: “Which of these do you discuss with your parents?”	<i>par_disc</i>
Parental Involvement	scale	sum of all 9 items from Q21. The coding of all items was reversed. The additive score was rescaled to a 0-1 interval. Factor analysis indicated that these items share a single factor, with high loadings and a KMO of .89. Coefficient alpha for the final scale is impressive at .90. Example item: “How much do you agree? Your parents explain to you the decisions they make for your family” (4 point agreement scale).	<i>par_inv</i>
Parental Communication about Substance Use	scale	sum of 4 items from Q22 (items 1, 4, 5 and 6). The additive score was rescaled to a 0-1 interval. Factor analysis indicated that these items form a separate dimension, high loadings and a KMO of .76. Coefficient alpha for the final scale is highly satisfactory at .81. Example item: “My parents talk to me about the danger of taking drugs/alcohol” (4 point scale, “not at all” to “very much”).	<i>par_comm</i>

Concept	Categories	Description	Variable Names
Parental Concern about Substance Use	scale	estimated factor score using: all seven items from Q18; items 1 and 4 from Q19; items 2, 7, 8 and 10 from Q22; all five items from Q23. The factor score was rescaled to a 0-1 metric. Factor analysis with score estimation was used due to the different scales of the items, relying on the first factor only, which had high loadings on all of the above items and a KMO of .85. Example item: “How much would your parents care if you got drunk?” (4 point scale, “would not care at all” to “would care a great deal”).	<i>par_conc3</i>
Access to Alcohol	scale	sum of items 1-4 from Q29. The coding of all items was reversed. The additive score was rescaled to a 0-1 interval. Factor analysis of the full set of 9 indicators suggested that a two-factor solution was most appropriate, grouping together the items relating to alcohol, on the one hand, and drugs, on the other. The separate factor analysis produced a KMO of .86 and very strong loadings. Coefficient alpha for the final scale is very impressive at .95. Example item: “If you wanted, how easy do you think it would be for you to get beer/cider?” (5 point scale, from “very easy” to “very difficult”).	<i>alc_access</i>
Access to Drugs	scale	sum of items 5-9 from Q29. The coding of all items was reversed. The additive score was rescaled to a 0-1 interval. Factor analysis of the full set of 9 indicators in this question suggested that a two-factor solution was most appropriate, grouping together the items relating to alcohol, on the one hand, and drugs, on the other. The separate factor analysis produced a KMO of .90 for the second set of items and extremely strong loadings. Coefficient alpha for the final scale is very impressive at .95. Example item: “If you wanted, how easy do you think it would be for you to get ecstasy?” (5 point scale, from “very easy” to “very difficult”).	<i>drg_access</i>
Expected Positive Effects of Alcohol	count	count of items selected from the first 5 in Q30. The resulting, simple measure (comprising 5 distinct values) was rescaled to a 0-1 metric. Example item: “If you drank alcohol what do you think would happen?” “I would feel relaxed”.	<i>alc_pos</i>
Expected Negative Effects of Alcohol	count	count of items selected from the last 6 in Q30. The resulting, simple measure (comprising 6 distinct values) was rescaled to a 0-1 metric. Example item: “If you drank alcohol what do you think would happen?” “I would have problems with my friends”.	<i>alc_neg</i>
Expected Positive Effects of Drugs	count	count of items selected from the first 5 in Q31. The resulting, simple measure (comprising 5 distinct values) was rescaled to a 0-1 metric. Example item: “If you took drugs what do you think would happen?” “I would feel relaxed”.	<i>drug_pos</i>
Expected Negative Effects of Drugs	count	count of items selected from the last 6 in Q31. The resulting, simple measure (comprising 6 distinct values) was rescaled to a 0-1 metric. Example item: “If you took drugs what do you think would happen?” “I would have problems with my friends”.	<i>drug_neg</i>

Level 2

Concept	Categories	Description	Variable Names
Resigned Attitude to Substance Use	scale	sum of 3 items from Q52 (the first, second and last) and the last 2 items from Q90. The coding of item 2 from Q90 was reversed. The additive score was rescaled to a 0-1 interval. Factor analysis produced a KMO of .66 and quite high loadings. Coefficient alpha for the final scale is .74. Example item: “...” (x point scale, from “very easy” to “very difficult”).	<i>sch_resig</i>
Approach to Bullying and Disruptive Behaviour	scale	sum of the first 6 items from Q54. The coding of all items was reversed. The additive score was rescaled to a 0-1 interval. Factor analysis produced a very good KMO of .79 and high loadings. Coefficient alpha for the final scale is very satisfactory at .78. Example item: “...” (x point scale, from “very easy” to “very difficult”).	<i>bully_att</i>
Approach to Tackling Substance Use	scale	sum of the first 5 items from Q64. The additive score was rescaled to a 0-1 interval. Factor analysis produced a KMO of .72, strong factor loadings. Coefficient alpha for the final scale is very satisfactory at .76. Example item: “...” (x point scale, from “very easy” to “very difficult”).	<i>subst_action</i>
Neighbourhood “Quality”	scale	sum of the first 4 items from Q24. The additive score was rescaled to a 0-1 interval. Information was collected at individual level and then aggregated to centres/schools as a mean. Factor analysis at individual level produced a KMO of .66; coefficient alpha for the final scale was .74.	<i>neigh_qual_mean</i>
Neighbourhood Relations	scale	sum of the last 5 items from Q24. The additive score was rescaled to a 0-1 interval. Information was collected at individual level and then aggregated to centres/schools as a mean. Factor analysis at individual level produced a KMO of .75; coefficient alpha for the final scale was .82.	<i>neigh_rels_mean</i>
Neighbourhood Disapproval of Drugs	scale	sum of all 6 items from Q26, items 1, 2, 3, 5 and 6 from Q27 and items 1, 2, 3, 5, 6, 7 and 8 from Q28. The additive score was rescaled to a 0-1 interval. Information was collected at individual level and then aggregated to centres/schools as a mean. Factor analysis at individual level produced a very high KMO of .91; coefficient alpha for the final scale was .90.	<i>neigh_disappr_mean</i>
Aggregate Consumption of Tobacco	scale	information collected at individual level and aggregated to centres/schools as a percentage (% of sample who have smoked cigarettes over past month)	<i>msubst02_pgt</i>
Aggregate Consumption of Alcohol and “Party Pills”	scale	Information collected at individual level and aggregated to centres/schools as a percentage (% of sample who have drunk alcohol or used “party pills” over past month)	<i>msubst03_pgt</i>
Aggregate Consumption of Cannabis	scale	information collected at individual level and aggregated to centres/schools as a percentage (% of sample who have used cannabis over past month)	<i>msubst04_pgt</i>
Aggregate Consumption of Other Drugs	scale	information collected at individual level and aggregated to centres/schools as a percentage (% of sample who have used other drugs over past month). Variable transformed using natural logarithm function.	<i>msubst05_pgt_l</i>

All continuous variables used in the models were “grand mean centred”, which means that the overall mean, across all schools or centres, was subtracted from the raw scores. This facilitates interpretation of the model results, as the estimate for the intercept, for example, is equal to the mean of the dependent variable for students in all centres/schools.

Annex 3: Multi-Level Model Results

Model: Cigarettes – Early School-Leavers – Past Month

Model:	Smoked cigarettes in past month				Population:		Centres	
logit coefficients								
	Model 1		Model 2		Model 3		Model 4	
<i>parameter</i>	<i>VCM</i>		<i>Random intercept + L1 variables</i>		<i>Random intercept + L2 variables</i>		<i>Random intercept + L1 + L2 variables</i>	
Level 1 effects	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
lsubst03			1.53	0.45			1.51	0.45
self_concept_c			-3.55	1.35			-3.27	1.34
boygirlfriend			0.54	0.27			0.65	0.27
family2_cig			1.57	0.33			1.61	0.33
frnd_cig			1.59	0.28			1.62	0.28
frnd_drg			0.50	0.40			0.50	0.40
best_frnd_drg			0.77	0.28			0.66	0.28
Level 2 effects	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
Intercept	0.88	0.14	-3.56	0.56	1.28	0.35	-3.69	0.66
educ_classes					-0.08	0.03		
extracurr					0.27	0.09	0.34	0.11
neigh_disappr_mean					-2.12	0.72	-1.96	0.82
Variances	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
Level 2 variance	0.43	0.19	0.35	0.22	0.21	0.15	0.21	0.19
Model assessment								
Deviance statistic								
Degrees of freedom	2		9		5		11	
N	479		479		479		479	
% reduction in Level 2 variance	0.00		19.30		50.23		52.33	

Note: The analysis did not yield any statistically significant random slopes in the full multi-level model (Model 5).

Model: Cigarettes – School-Attending Students – Past Month

Model:	Smoked cigarettes in past month				Population:		Schools	
logit coefficients								
	Model 1		Model 2		Model 3		Model 4	
<i>parameter</i>	VCM		<i>Random intercept + L1 variables</i>		<i>Random intercept + L2 variables</i>		<i>Random intercept + L1 + L2 variables</i>	
Level 1 effects	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
lsubst03			1.69	0.58			1.72	0.58
self_concept_c			-2.30	1.41			-2.14	1.39
act_out_Lc			0.14	0.12			0.15	0.12
boygirlfriend			0.69	0.26			0.69	0.26
family2_cig			1.05	0.32			1.06	0.31
sch_interr_d			0.53	0.41			0.52	0.40
frnd_cig			1.56	0.27			1.53	0.27
frnd_alc			0.25	0.35			0.24	0.35
best_frnd_drg			0.78	0.31			0.73	0.31
Level 2 effects	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
Intercept	-1.14	0.15	-4.64	0.65	1.69	0.71	-3.79	0.68
sch_sphe_pgt					-0.02	0.01		
par_info					-0.80	0.23	-0.58	0.27
educ_classes					-0.18	0.06	-0.19	0.06
Variiances	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
Level 2 residuals	0.33	0.17	0.19	0.17	0.02	0.09	0.00	0.00
Model assessment								
Deviance statistic								
Degrees of freedom	2		11		5		12	
N	512		512		512		512	
% variance explained (level 2)			42.90		93.66		100.00	

Note: The analysis did not yield any statistically significant random slopes in the full multi-level model (Model 5).

Model: Alcohol and Party Pills – Early School-Leavers – Past Month

Model:	Drank alcohol or used 'party pills' in past month				Population:		Centres	
logit coefficients								
	Model 1		Model 2		Model 3		Model 4	
<i>parameter</i>	VCM		<i>Random intercept + L1 variables</i>		<i>Random intercept + L2 variables</i>		<i>Random intercept + L1 + L2 variables</i>	
Level 1 effects	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
lsubst02			1.25	0.30			1.22	0.30
eth_trav			-0.52	0.50			-0.51	0.49
eth_nw			-1.05	0.77			-1.02	0.77
act_out_Lc			0.20	0.08			0.20	0.08
par_conc3_c			-2.74	0.73			-2.75	0.72
frnd_alc			0.71	0.30			0.74	0.30
best_frnd_alc			1.23	0.34			1.19	0.34
Level 2 effects	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
Intercept	0.70	0.12	-2.12	0.45	2.10	0.74	-2.25	0.70
couns_eval					0.52	0.22	0.38	0.24
subst_action					0.29	0.62		
drugtask					-0.50	0.21		
neigh_qual_mean					-2.78	1.04		
Variiances	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
Level 2 residuals	0.20	0.13	0.08	0.14	0.03	0.09	0.03	0.12
Model assessment								
Deviance statistic								
Degrees of freedom	2		8		6		10	
N	479		479		479		479	
% variance explained (level 2)			61.19		86.57		83.58	

Note: The analysis did not yield any statistically significant random slopes in the full multi-level model (Model 5).

Model: Alcohol and Party Pills – School-Attending Students – Past Month

Model:	Drank alcohol or used 'party pills' in past month				Population:		Schools	
logit coefficients								
	Model 1		Model 2		Model 3		Model 4	
<i>parameter</i>	VCM		<i>Random intercept + L1 variables</i>		<i>Random intercept + L2 variables</i>		<i>Random intercept + L1 + L2 variables</i>	
Level 1 effects	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
lsubst02			0.65	0.23			0.65	0.23
age_d1			0.14	0.30			0.14	0.30
age_d2			0.11	0.32			0.11	0.32
age_d3			1.21	0.49			1.21	0.49
act_out_L_c			0.25	0.11			0.25	0.11
par_conc3_c			-2.90	1.11			-2.90	1.11
family2_alc			1.17	0.49			1.17	0.49
teach_pos_c			-2.34	0.91			-2.34	0.91
frnd_alc			1.28	0.28			1.28	0.28
best_frnd_alc			1.05	0.35			1.05	0.35
alc_access_c			0.65	0.55			0.65	0.55
Level 2 effects	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
Intercept	-0.10	0.11	-3.25	0.63	2.28	0.70	-3.25	0.63
substance					-0.66	0.37		
bully_att					-2.39	0.83		
Variiances	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
Level 2 residuals	0.13	0.10	0.05	0.10	0.04	0.07	0.05	0.10
Model assessment								
Deviance statistic								
Degrees of freedom	2		13		4		13	
N	512		512		512		512	
% variance explained (level 2)			62.20		72.44		62.20	

Note: The analysis did not yield any statistically significant random slopes in the full multi-level model (Model 5).

Model: Cannabis – Early School-Leavers – Past Month

Model:	Used cannabis in past month				Population:		Centres	
logit coefficients								
	Model 1		Model 2		Model 3		Model 4	
<i>parameter</i>	VCM		<i>Random intercept + L1 variables</i>		<i>Random intercept + L2 variables</i>		<i>Random intercept + L1 + L2 variables</i>	
Level 1 effects	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
lsubst02			1.55	0.73			1.56	0.74
fam_contact			-0.39	0.32			-0.45	0.32
eth_trav			0.09	1.16			-0.30	1.23
eth_nw			-1.57	1.22			-1.95	1.27
act_out_lc			0.31	0.10			0.32	0.10
boyleftfriend			-0.52	0.36			-0.54	0.36
par_conc3_c			-2.79	0.93			-2.73	0.93
family2_can			0.87	0.32			0.84	0.31
boyleftfrnd_drg			1.09	0.50			1.05	0.50
frnd_alc			1.66	0.73			1.77	0.74
frnd_can			1.59	0.30			1.58	0.30
best_frnd_drg			1.52	0.36			1.49	0.36
drug_access_c			0.67	0.68			0.64	0.66
Level 2 effects	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
Intercept	-0.81	0.17	-5.85	1.08	0.88	0.41	-5.26	1.08
psych_eval					-0.92	0.30		
staff_info					-0.76	0.30	-0.91	0.31
neigh_disappr_mean					-2.41	0.90		
Variations	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
Level 2 residuals	0.81	0.28	0.14	0.22	0.41	0.19	0.00	0.00
Model assessment								
Deviance statistic								
Degrees of freedom	2		15		5		16	
N	479		479		479		479	
% variance explained (level 2)			83.35		49.69		100.00	

Note: The analysis did not yield any statistically significant random slopes in the full multi-level model (Model 5).

Model: Cannabis – School-Attending Students – Past Month

Model:	Used cannabis in past month		Population:		Schools			
logit coefficients								
	Model 1		Model 2		Model 3		Model 4	
<i>parameter</i>	<i>VCM</i>		<i>Random intercept + L1 variables</i>		<i>Random intercept + L2 variables</i>		<i>Random intercept + L1 + L2 variables</i>	
Level 1 effects	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
lsubst02			0.24	1.08			0.24	1.08
lsubst05			2.05	0.82			2.05	0.82
act_out_Lc			0.14	0.27			0.14	0.27
family2_can			1.58	0.81			1.58	0.81
teach_pos_c			-7.61	2.87			-7.61	2.87
exp_pos_c			-8.69	3.55			-8.69	3.55
frnd_can			0.39	0.87			0.39	0.87
best_frnd_drg			2.07	0.86			2.07	0.86
drug_access_c			3.72	1.92			3.72	1.92
neigh_help			-1.60	0.78			-1.60	0.78
Level 2 effects	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
Intercept	-3.04	0.26	-7.14	1.38	3.24	2.81	-7.14	1.38
neigh_rels_mean					-10.01	4.44		
Variiances	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
Level 2 residuals	0.62	0.50	1.26	1.08	0.48	0.51	1.26	1.08
Model assessment								
Deviance statistic								
Degrees of freedom	2		12		3		12	
N	512		512		512		512	
% variance explained (level 2)			-101.77		22.31		-101.77	

Note: The analysis did not yield any statistically significant random slopes in the full multi-level model (Model 5). The variable for non-white ethnic minority (*eth_nw*) has been omitted from the final model, due to the small numbers involved.

Model: Other Drugs – Early School-Leavers – Past Month

Model:	Used other drugs in past month				Population:		Centres	
logit coefficients								
	Model 1		Model 2		Model 3		Model 4	
<i>parameter</i>	VCM		<i>Random intercept + L1 variables</i>		<i>Random intercept + L2 variables</i>		<i>Random intercept + L1 + L2 variables</i>	
Level 1 effects	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
act_out_Lc			0.76	0.17			0.77	0.16
frnd_can			0.96	0.44			1.07	0.44
frnd_drg			1.63	0.39			1.56	0.39
best_frnd_drg			1.14	0.62			1.24	0.61
drug_access_c			0.29	0.98			0.23	0.96
Level 2 effects	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
Intercept	-2.13	0.17	-5.16	0.65	-1.25	0.24	-4.35	0.67
staff_info					-0.41	0.30	-0.52	0.38
drugtask					-1.15	0.31	-1.24	0.39
Variiances	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
Level 2 residuals	0.23	0.26	0.29	0.35	0.00	0.00	0.00	0.00
Model assessment								
Deviance statistic								
Degrees of freedom	2		7		4		9	
N	479		479		479		479	
% variance explained (level 2)			-25.86		100.00		100.00	

Note: The analysis did not yield any statistically significant random slopes in the full multi-level model (Model 5).

Model: Other Drugs – School-Attending Students – Past Month

The analysis did not yield any statistically significant results for any of the models, due to the small number of school-attending students having taken drugs during the past month.

Model: Cigarettes – Early School-Leavers – Past Year

Model:	Smoked cigarettes in past year				Population:		Centres	
logit coefficients								
	Model 1		Model 2		Model 3		Model 4	
<i>parameter</i>	<i>VCM</i>		<i>Random intercept + L1 variables</i>		<i>Random intercept + L2 variables</i>		<i>Random intercept + L1 + L2 variables</i>	
Level 1 effects	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
lsubst03			1.64	0.42			1.67	0.42
self_concept_c			-2.30	1.34			-2.10	1.35
boygirlfriend			0.45	0.28			0.58	0.28
family2_cig			1.48	0.33			1.54	0.33
frnd_cig			1.55	0.27			1.55	0.28
frnd_drg			1.63	0.63			1.65	0.63
best_frnd_drg			0.69	0.29			0.61	0.30
Level 2 effects	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
Intercept	1.09	0.13	-3.25	0.52	2.02	0.38	-3.35	0.61
educ_classes					-0.08	0.03		
extracurr					0.19	0.08	0.27	0.10
drugtask					-0.58	0.24		
neigh_disappr_mean					-1.97	0.65	-1.75	0.75
Variances	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
Level 2 residuals	0.29	0.17	0.00	0.00	0.05	0.12	0.00	0.00
Model assessment								
Deviance statistic								
Degrees of freedom	2		9		6		11	
N	479		479		479		479	
% variance explained (level 2)			100.00		84.25		100.00	

Note: The analysis did not yield any statistically significant random slopes in the full multi-level model (Model 5).

Model: Cigarettes – School-Attending Students – Past Year

Model:	Smoked cigarettes in past year				Population:		Schools	
logit coefficients								
	Model 1		Model 2		Model 3		Model 4	
<i>parameter</i>	VCM		<i>Random intercept + L1 variables</i>		<i>Random intercept + L2 variables</i>		<i>Random intercept + L1 + L2 variables</i>	
Level 1 effects	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
lsubst03			2.20	0.53			2.21	0.53
self_concept_c			-2.32	1.26			-2.23	1.26
act_out_L_c			0.08	0.11			0.08	0.11
boygirlfriend			0.58	0.24			0.56	0.24
family2_cig			0.78	0.25			0.78	0.25
sch_interr_d			1.31	0.44			1.32	0.44
frnd_cig			0.74	0.25			0.74	0.25
frnd_alc			0.65	0.29			0.65	0.29
best_frnd_drg			0.77	0.29			0.78	0.29
Level 2 effects	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
Intercept	-0.56	0.12	-4.19	0.59	1.72	0.70	-3.78	0.65
sch_sphe_pgt					-0.02	0.01		
par_info					-0.46	0.23	-0.19	0.30
educ_classes					-0.11	0.05	-0.12	0.07
Variiances	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
Level 2 residuals	0.18	0.11	0.22	0.15	0.05	0.08	0.17	0.14
Model assessment								
Deviance statistic								
Degrees of freedom	2		11		5		13	
N	512		512		512		512	
% variance explained (level 2)			-21.79		74.30		3.35	

Note: The analysis did not yield any statistically significant random slopes in the full multi-level model (Model 5).

Model: Alcohol and Party Pills – Early School-Leavers – Past Year

Model:	Drank alcohol or used 'party pills' in past year				Population:		Centres	
logit coefficients								
	Model 1		Model 2		Model 3		Model 4	
<i>parameter</i>	VCM		<i>Random intercept + L1 variables</i>		<i>Random intercept + L2 variables</i>		<i>Random intercept + L1 + L2 variables</i>	
Level 1 effects	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
lsubst_02			0.90	0.36			0.85	0.35
eth_trav			-1.02	0.50			-1.03	0.49
eth_nw			-0.78	0.90			-0.76	0.84
act_out_Lc			0.34	0.14			0.34	0.13
par_conc3_c			-2.32	1.09			-2.41	1.07
frnd_alc			1.24	0.35			1.28	0.35
best_frnd_alc			0.86	0.39			0.80	0.38
Level 2 effects	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
Intercept	1.90	0.18	-0.37	0.42	1.20	0.83	-0.67	0.43
couns_eval					0.93	0.34	0.86	0.34
extracurr					0.28	0.12		
Variiances	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
Level 2 residuals	0.58	0.30	0.16	0.25	0.27	0.22	0.00	0.00
Model assessment								
Deviance statistic								
Degrees of freedom	2		9		4		10	
N	479		479		479		479	
% variance explained (level 2)			72.59		54.31		100.00	

Note: The analysis did not yield any statistically significant random slopes in the full multi-level model (Model 5).

Model: Alcohol and Party Pills – School-Attending Students – Past Year

Model:	Drank alcohol or used 'party pills' in past year				Population:		Schools	
logit coefficients								
	Model 1		Model 2		Model 3		Model 4	
<i>parameter</i>	VCM		<i>Random intercept + L1 variables</i>		<i>Random intercept + L2 variables</i>		<i>Random intercept + L1 + L2 variables</i>	
Level 1 effects	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
lsubst02			0.85	0.27			0.85	0.27
age_d1			0.48	0.31			0.48	0.31
age_d2			0.00	0.35			0.00	0.35
age_d3			0.33	0.57			0.33	0.57
act_out_Lc			0.33	0.16			0.33	0.16
par_conc3_c			-1.90	1.31			-1.90	1.31
family2_alc			1.09	0.40			1.09	0.40
teach_pos_c			0.12	1.00			0.12	1.00
frnd_alc			0.88	0.27			0.88	0.27
best_frnd_alc			1.37	0.29			1.37	0.29
alc_access_c			1.24	0.52			1.24	0.52
Level 2 effects	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
Intercept	1.01	0.12	-1.59	0.54	3.12	0.63	-1.59	0.54
sch_resig					-2.90	0.84		
Variances	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
Level 2 residuals	0.09	0.10	0.03	0.12	0.00	0.00	0.03	0.12
Model assessment								
Deviance statistic								
Degrees of freedom	2		13		3		13	
N	512		512		512		512	
% variance explained (level 2)			60.47		100.00		60.47	

Note: The analysis did not yield any statistically significant random slopes in the full multi-level model (Model 5).

Model: Cannabis – Early School-Leavers – Past Year

Model:	Used cannabis in past year				Population:		Centres	
logit coefficients								
	Model 1		Model 2		Model 3		Model 4	
<i>parameter</i>	<i>VCM</i>		<i>Random intercept + L1 variables</i>		<i>Random intercept + L2 variables</i>		<i>Random intercept + L1 + L2 variables</i>	
Level 1 effects	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
lsubst02			1.66	0.59			1.66	0.61
fam_contact			-0.69	0.33			-0.74	0.33
eth_trav			-0.87	1.15			-1.15	1.28
eth_nw			-1.46	0.99			-1.64	1.06
act_out_L_c			0.37	0.10			0.38	0.10
boygirlfriend			0.30	0.34			0.29	0.34
par_conc3_c			-1.90	0.95			-1.80	0.97
family2_can			1.06	0.33			1.01	0.34
frnd_can			1.31	0.32			1.25	0.32
frnd_alc			0.88	0.58			0.99	0.59
boygirlfrnd_drg			0.39	0.53			0.39	0.54
best_frnd_drg			2.02	0.32			2.10	0.33
drug_access_c			0.57	0.62			0.59	0.62
Level 2 effects	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
Intercept	-0.32	0.15	-4.50	0.85			-3.96	0.88
psych_eval					-0.61	0.28		
staff_info					-0.76	0.28	-0.94	0.32
neigh_qual_mean					-3.08	1.32		
Variances	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
Level 2 residuals	0.66	0.24	0.00	0.00	0.37	0.17	0.00	0.00
Model assessment								
Deviance statistic								
Degrees of freedom	2		15		4		16	
N	479		479		479		479	
% variance explained (level 2)			100.00		44.86		100.00	

Note: The analysis did not yield any statistically significant random slopes in the full multi-level model (Model 5).

Model: Cannabis – School-Attending Students – Past Year

Model:	Used cannabis in past year				Population:		Schools	
logit coefficients								
	Model 1		Model 2		Model 3		Model 4	
<i>parameter</i>	VCM		Random intercept + L1 variables		Random intercept + L2 variables		Random intercept + L1 + L2 variables	
Level 1 effects	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
lsubst02			1.10	0.66			1.10	0.66
lsubst05			1.95	0.52			1.95	0.52
act_out_L_c			0.34	0.18			0.34	0.18
family2_can			1.13	0.59			1.13	0.59
teach_pos_c			-1.89	1.69			-1.89	1.69
exp_pos_c			-3.88	2.11			-3.88	2.11
frnd_can			0.65	0.64			0.65	0.64
best_frnd_drg			1.73	0.46			1.73	0.46
drug_access_c			2.42	0.96			2.42	0.96
neigh_help			-1.63	0.52			-1.63	0.52
Level 2 effects	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
Intercept	-2.18	0.17	-4.28	0.63	3.04	1.62	-4.28	0.63
subst_action					-1.52	0.62		
neigh_rels_mean					-6.15	2.39		
Variances	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
Level 2 residuals	0.16	0.21	0.00	0.00	0.00	0.00	0.00	0.00
Model assessment								
Deviance statistic								
Degrees of freedom	2		12		4		12	
N	512		512		512		512	
% variance explained (level 2)			100.00		100.00		100.00	

Note: The analysis did not yield any statistically significant random slopes in the full multi-level model (Model 5). The variable for non-white ethnic minority (*eth_nw*) has been omitted from the final model, due to the small numbers involved.

Model: Other Drugs – Early School-Leavers – Past Year

Model:	Used other drugs in past year				Population:		Centres	
logit coefficients								
	Model 1		Model 2		Model 3		Model 4	
<i>parameter</i>	<i>VCM</i>		<i>Random intercept + L1 variables</i>		<i>Random intercept + L2 variables</i>		<i>Random intercept + L1 + L2 variables</i>	
Level 1 effects	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
lsubst04			3.47	1.08			3.41	1.03
act_out_Lc			0.33	0.10			0.35	0.11
frnd_can			0.97	0.32			0.95	0.32
frnd_drg			1.53	0.34			1.46	0.34
best_frnd_drg			0.96	0.40			0.87	0.40
drug_access_c			0.45	0.74			0.52	0.74
Level 2 effects	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
Intercept	-1.14	0.14	-5.92	1.07	-0.19	0.21	-4.98	1.04
psych_eval					-0.52	0.25		
staff_info					-0.61	0.23	-0.85	0.31
drugtask					-0.55	0.24	-0.51	0.30
Variances	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
Level 2 residuals	0.38	0.19	0.21	0.23	0.05	0.12	0.00	0.00
Model assessment								
Deviance statistic								
Degrees of freedom	2		8		5		10	
N	479		479		479		479	
% variance explained (level 2)			45.33		87.73		100.00	

Note: The analysis did not yield any statistically significant random slopes in the full multi-level model (Model 5).

Model: Other Drugs – School-Attending Students – Past Year

Model:	Used other drugs in past year				Population:		Schools	
logit coefficients								
	Model 1		Model 2		Model 3		Model 4	
<i>parameter</i>	<i>VCM</i>		<i>Random intercept + L1 variables</i>		<i>Random intercept + L2 variables</i>		<i>Random intercept + L1 + L2 variables</i>	
Level 1 effects	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
lsubst04			2.97	0.87			2.97	0.87
par_inv_c			-2.57	1.63			-2.57	1.63
family2_drg			0.84	0.73			0.84	0.73
exp_pos_c			-5.93	2.64			-5.93	2.64
frnd_can			1.37	0.64			1.37	0.64
best_frnd_drg			1.35	0.66			1.35	0.66
Level 2 effects	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
Intercept	-3.14	0.28	-6.02	0.84	0.00	0.86	-6.02	0.84
sch_sphe_pgt					-0.04	0.01		
Variiances	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
Level 2 residuals	0.64	0.58	0.34	0.60	0.05	0.33	0.34	0.60
Model assessment								
Deviance statistic								
Degrees of freedom	2		8		3		8	
N	479		479		479		479	
% variance explained (level 2)			46.66		92.53		46.66	

Note: The analysis did not yield any statistically significant random slopes in the full multi-level model (Model 5).

Model: Cigarettes – Early School-Leavers – Lifetime

Model:	Smoked cigarettes in lifetime				Population:		Centres	
logit coefficients								
	Model 1		Model 2		Model 3		Model 4	
<i>parameter</i>	VCM		<i>Random intercept + L1 variables</i>		<i>Random intercept + L2 variables</i>		<i>Random intercept + L1 + L2 variables</i>	
Level 1 effects	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
lsubst03			2.23	0.42			2.22	0.42
self_concept_c			-1.63	1.50			-1.70	1.52
family2_cig			1.05	0.37			1.06	0.37
boygirlfriend			0.29	0.32			0.30	0.33
frnd_cig			1.44	0.31			1.45	0.31
frnd_drg			1.78	1.06			1.78	1.06
best_frnd_drg			1.16	0.39			1.16	0.39
Level 2 effects	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
Intercept	1.65	0.16	-2.71	0.52	1.57	0.43	-2.85	0.64
extracurr					0.12	0.12	0.04	0.11
neigh_disappr_mean					-0.58	0.91	0.13	0.87
Variances	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
Level 2 residuals	0.47	0.25	0.05	0.21	0.48	0.26	0.06	0.21
Model assessment								
Deviance statistic								
Degrees of freedom	2		9		4		11	
N	479		479		479		479	
% variance explained (level 2)			90.38		-2.35		86.54	

Note: The analysis did not yield any statistically significant random slopes in the full multi-level model (Model 5).

Model: Cigarettes – School-Attending Students – Lifetime

Model:	Smoked cigarettes in lifetime				Population:		Schools	
logit coefficients								
	Model 1		Model 2		Model 3		Model 4	
<i>parameter</i>	VCM		<i>Random intercept + L1 variables</i>		<i>Random intercept + L2 variables</i>		<i>Random intercept + L1 + L2 variables</i>	
Level 1 effects	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
lsubst03			1.66	0.34			1.65	0.35
self_concept_c			-2.89	1.18			-2.86	1.18
act_out_Lc			0.26	0.11			0.27	0.11
boygirlfriend			0.45	0.24			0.43	0.24
family2_cig			0.45	0.22			0.44	0.22
sch_interr_d			0.97	0.49			0.97	0.49
frnd_cig			0.97	0.26			0.96	0.26
frnd_alc			0.47	0.24			0.47	0.24
best_frnd_drg			0.68	0.32			0.68	0.32
Level 2 effects	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
Intercept	0.08	0.10	-2.33	0.38	0.46	0.21	-2.15	0.45
par_info					-0.45	0.20	-0.17	0.24
educ_classes					-0.03	0.05	-0.01	0.05
Variiances	coeff.	stand. error	Coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
Level 2 residuals	0.06	0.07	0.00	0.00	0.01	0.06	0.00	0.00
Model assessment								
Deviance statistic								
Degrees of freedom	2		11		4		13	
N	512		512		512		512	
% variance explained (level 2)			100.00		85.00		100.00	

Note: The analysis did not yield any statistically significant random slopes in the full multi-level model (Model 5).

Model: Alcohol and Party Pills – Early School-Leavers – Lifetime

Model:	Drank alcohol or used 'party pills' in lifetime				Population:		Centres	
logit coefficients								
	Model 1		Model 2		Model 3		Model 4	
<i>parameter</i>	VCM		<i>Random intercept + L1 variables</i>		<i>Random intercept + L2 variables</i>		<i>Random intercept + L1 + L2 variables</i>	
Level 1 effects	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
lsubst_02			1.79	0.58			1.71	0.56
eth_trav			-2.02	0.83			-2.08	0.81
eth_nw			-1.25	1.68			-1.23	1.51
act_out_Lc			0.37	0.31			0.36	0.30
par_conc3_c			-5.71	2.61			-5.81	2.48
frnd_alc			2.48	0.62			2.50	0.61
best_frnd_alc			1.18	0.64			1.17	0.63
Level 2 effects	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
Intercept	2.87	0.30	-0.23	0.69	2.46	0.34	-0.72	0.72
couns_eval					0.96	0.62	1.28	0.72
Variiances	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	Coeff.	stand. error
Level 2 residuals	0.58	0.30	0.16	0.25	0.27	0.22	0.00	0.00
Model assessment								
Deviance statistic								
Degrees of freedom	2		9		3		10	
N	479		479		479		479	
% variance explained (level 2)			19.38		16.98		43.32	

Note: The analysis did not yield any statistically significant random slopes in the full multi-level model (Model 5).

Model: Alcohol and Party Pills – School-Attending Students – Lifetime

Model:	Drank alcohol or used 'party pills' in lifetime				Population:		Schools	
logit coefficients								
	Model 1		Model 2		Model 3		Model 4	
<i>parameter</i>	VCM		<i>Random intercept + L1 variables</i>		<i>Random intercept + L2 variables</i>		<i>Random intercept + L1 + L2 variables</i>	
Level 1 effects	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
lsubst02			1.47	0.36			1.47	0.36
age_d1			0.53	0.36			0.53	0.36
age_d2			0.30	0.42			0.30	0.42
age_d3			1.12	0.82			1.12	0.82
act_out_L_c			0.51	0.27			0.51	0.27
par_conc3_c			-2.76	1.61			-2.76	1.61
family2_alc			1.26	0.41			1.26	0.41
teach_pos_c			-0.44	1.20			-0.44	1.20
frnd_alc			0.56	0.33			0.56	0.33
best_frnd_alc			1.46	0.32			1.46	0.32
alc_access_c			0.85	0.57			0.85	0.57
Level 2 effects	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
Intercept	1.60	0.15	-0.96	0.60	3.70	1.08	-0.96	0.60
substance					-2.23	1.09		
Variances	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
Level 2 residuals	0.25	0.17	0.13	0.19	0.15	0.14	0.13	0.19
Model assessment								
Deviance statistic								
Degrees of freedom	2		12		3		12	
N	512		512		512		512	
% variance explained (level 2)			47.35		39.18		47.35	

Note: The analysis did not yield any statistically significant random slopes in the full multi-level model (Model 5).

Model: Cannabis – Early School-Leavers – Lifetime

Model:	Used cannabis in lifetime				Population:		Centres	
logit coefficients								
	Model 1		Model 2		Model 3		Model 4	
<i>parameter</i>	<i>VCM</i>		<i>Random intercept + L1 variables</i>		<i>Random intercept + L2 variables</i>		<i>Random intercept + L1 + L2 variables</i>	
Level 1 effects	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
lsubst02			2.01	0.46			1.90	0.46
eth_trav			-2.54	1.13			-2.46	1.13
eth_nw			-1.81	1.02			-2.07	1.07
act_out_l			0.35	0.11			0.34	0.11
fam_contact			-0.66	0.33			-0.63	0.33
boygirlfriend			0.81	0.33			0.82	0.33
par_conc3_c			-1.42	1.01			-1.36	1.02
family2_can			0.86	0.37			0.78	0.37
frnd_alc			0.33	0.43			0.33	0.43
frnd_can			1.38	0.39			1.17	0.41
best_frnd_drg			1.71	0.33			1.72	0.34
boygirlfriend_drg			0.82	0.67			0.85	0.68
drug_access_c			1.52	0.55			1.49	0.55
Level 2 effects	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
Intercept	0.41	0.18	-3.03	0.65	3.30	0.85	-2.83	0.68
psych_eval					-0.82	0.29		
neigh_qual_mean					-4.08	1.42		
staff_info					-0.45	0.30	-0.22	0.32
Variances	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
Level 2 residuals	0.96	0.30	0.01	0.19	0.45	0.20	0.01	0.19
Model assessment								
Deviance statistic								
Degrees of freedom	2		15		5		16	
N	479		479		479		479	
% variance explained (level 2)			98.76		53.22		99.38	

Note: The analysis did not yield any statistically significant random slopes in the full multi-level model (Model 5).

Model: Cannabis – School-Attending Students – Lifetime

Model:	Used cannabis in lifetime		Population:		Schools			
logit coefficients								
	Model 1		Model 2		Model 3		Model 4	
<i>parameter</i>	VCM		<i>Random intercept + L1 variables</i>		<i>Random intercept + L2 variables</i>		<i>Random intercept + L1 + L2 variables</i>	
Level 1 effects	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
lsubst02			2.79	0.59			2.79	0.59
lsubst05			2.55	0.54			2.55	0.54
act_out_L_c			0.47	0.15			0.47	0.15
family2_can			1.13	0.53			1.13	0.53
teach_pos_c			0.16	1.40			0.16	1.40
exp_pos_c			-0.94	1.61			-0.94	1.61
frnd_can			1.02	0.72			1.02	0.72
best_frnd_drg			0.84	0.39			0.84	0.39
drug_access_c			1.73	0.64			1.73	0.64
neigh_help			-0.51	0.35			-0.51	0.35
Level 2 effects	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
Intercept	-1.48	0.12	-4.23	0.59	-0.79	0.44	-4.23	0.59
studn_prob					0.73	0.26		
subst_action					-1.45	0.54		
Variances	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
Level 2 residuals	0.04	0.11	0.00	0.00	0.00	0.00	0.00	0.00
Model assessment								
Deviance statistic								
Degrees of freedom	2		12		4		12	
N	512		512		512		512	
% variance explained (level 2)			100.00		100.00		100.00	

Note: The analysis did not yield any statistically significant random slopes in the full multi-level model (Model 5). The variable for non-white ethnic minority (*eth_nw*) has been omitted from the final model, due to the small numbers involved.

Model: Other Drugs – Early School-Leavers – Lifetime

Model:	Used other drugs in lifetime				Population:		Centres	
logit coefficients								
	Model 1		Model 2		Model 3		Model 4	
<i>parameter</i>	<i>VCM</i>		<i>Random intercept + L1 variables</i>		<i>Random intercept + L2 variables</i>		<i>Random intercept + L1 + L2 variables</i>	
Level 1 effects	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
lsubst04			3.67	0.55			3.64	0.54
act_out_Lc			0.21	0.10			0.22	0.10
frnd_can			0.58	0.33			0.53	0.33
frnd_drg			2.69	0.57			2.65	0.57
best_frnd_drg			0.27	0.35			0.25	0.35
drug_access_c			1.28	0.67			1.30	0.67
Level 2 effects	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
Intercept	-0.38	0.14	-4.11	0.52	0.12	0.25	-3.71	0.58
drugtask					-0.54	0.26	-0.25	0.34
staff_info					-0.30	0.27	-0.33	0.35
Variiances	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
Level 2 residuals	0.47	0.19	0.33	0.27	0.33	0.16	0.25	0.25
Model assessment								
Deviance statistic								
Degrees of freedom	2		8		4		10	
N	479		479		479		479	
% variance explained (level 2)			29.03		28.39		47.31	

Note: The analysis did not yield any statistically significant random slopes in the full multi-level model (Model 5).

Model: Other Drugs – School-Attending Students – Lifetime

Model:	Used other drugs in lifetime				Population:		Schools	
logit coefficients								
	Model 1		Model 2		Model 3		Model 4	
<i>parameter</i>	<i>VCM</i>		<i>Random intercept + L1 variables</i>		<i>Random intercept + L2 variables</i>		<i>Random intercept + L1 + L2 variables</i>	
Level 1 effects	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
lsubst04			2.94	0.45			2.94	0.45
par_inv_c			-3.28	1.36			-3.28	1.36
family2_drg			1.27	0.71			1.27	0.71
exp_pos_c			-2.22	1.90			-2.22	1.90
frnd_can			1.52	0.59			1.52	0.59
best_frnd_drg			0.37	0.45			0.37	0.45
Level 2 effects	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
Intercept	-2.24	0.19	-3.99	0.37	-2.90	0.35	-3.99	0.37
studn_prob					1.00	0.41		
Variiances	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error	coeff.	stand. error
Level 2 residuals	0.32	0.26	0.12	0.30	0.20	0.22	0.12	0.30
Model assessment								
Deviance statistic								
Degrees of freedom	2		8		3		8	
N	479		479		479		479	
% variance explained (level 2)			63.13		36.56		63.13	

Note: The analysis did not yield any statistically significant random slopes in the full multi-level model (Model 5).

Annex 4: Summary of Odds Ratios

Odds Ratios for Substance Use (Early School-Leavers)

	Domain <i>Variable</i>	Cigarettes			Alcohol/p. pills			Cannabis			Other Drugs		
		<i>LT</i>	<i>PY</i>	<i>PM</i>	<i>LT</i>	<i>PY</i>	<i>PM</i>	<i>LT</i>	<i>PY</i>	<i>PM</i>	<i>LT</i>	<i>PY</i>	<i>PM</i>
Individual attributes													
L1	Aged 16 (ref 15)												
L1	Aged 17 (ref 15)												
L1	Aged 18 (ref 15)												
L1	Contact with parents							0.53	0.48	0.64			
L1	Ethnic Traveller				0.13	0.36	0.60	0.09	0.32	0.74			
L1	Ethnic Non-white				0.29	0.47	0.36	0.13	0.19	0.14			
L1	Self-concept	0.18	0.12	0.04									
L1	Acting out				1.43	1.40	1.23	1.41	1.46	1.38	1.24	1.42	2.16
L1	Has boy/girlfriend	1.34	1.79	1.92				2.27	1.34	0.58			
L1	Has smoked cigarettes				5.55	2.34	3.38	6.69	5.24	4.74			
L1	Has drunk alcohol	9.17	5.29	4.51									
L1	Has used cannabis										38.17	30.14	-
L1	Has used other drugs												
Parental/Home factors													
L1	Parental involvement												
L1	Parental concern				0.01	0.09	0.06	0.26	0.16	0.07			
L1	Family member – cigarettes	2.87	4.65	5.02									
L1	Family member – alcohol												
L1	Family member – cannabis							2.18	2.75	2.32			
L1	Family member – drugs												
School-related factors													
L1	School interrupted in past												
L1	Teacher being supportive												
L1	Positive school experience												
L2	Information sessions – staff							0.80	0.39	0.40	0.72	0.43	0.59
L2	Info. sessions – parents												
L2	Classes on substance use												
L2	Extracurricular activities	1.04	1.30	1.40									
L2	Unmet counselling needs				3.58	2.36	1.46						
Peer-related factors													
L1	Boy/girlfriend uses drugs							2.33	1.48	2.85			
L1	Most friends smoke cigs	4.28	4.71	5.04									
L1	Most friends drink alcohol				12.22	3.58	2.09	-	2.70	5.85			
L1	Most friends use cannabis							3.22	3.49	4.84	1.70	2.59	2.92
L1	Most friends use drugs	5.90	5.19	1.65							14.17	4.30	4.78
L1	Best friends drink alcohol				3.23	2.22	3.27						
L1	Best friends use drugs	3.17	1.83	1.93				5.60	8.14	4.45	1.28	2.40	3.47
L1	Access to alcohol												
L1	Access to drugs							4.45	1.79	1.90	3.67	1.68	1.25
Neighbourhood factors													
L1	Neighbourhood help												
L2	In Drugs Taskforce Area										0.78	0.60	0.29
L2	Nhood drugs disapproval	1.14	0.17	0.14									

Odds Ratios for Substance Use (School-Attending Students)

	Domain	Cigarettes			Alcohol/p. pills			Cannabis			Other Drugs		
		LT	PY	PM	LT	PY	PM	LT	PY	PM	LT	PY	PM
Individual attributes													
L1	Aged 16 (ref 15)				1.70	1.61	1.15						
L1	Aged 17 (ref 15)				1.35	1.00	1.11						
L1	Aged 18 (ref 15)				3.07	1.39	3.34						
L1	Contact with parents												
L1	Ethnic Traveller												
L1	Ethnic Non-white												
L1	Self-concept	0.06	0.11	0.12									
L1	Acting out	1.31	1.08	1.16	1.67	1.39	1.29	1.60	1.41	1.15			
L1	Has boy/girlfriend	1.54	1.75	1.99									
L1	Has smoked cigarettes				4.35	2.35	1.92	16.28	2.99	1.27			
L1	Has drunk alcohol	5.18	9.12	5.57									
L1	Has used cannabis										18.88	19.45	-
L1	Has used other drugs							12.78	7.04	7.78			
Parental/Home factors													
L1	Parental involvement										0.04	0.08	-
L1	Parental concern				0.06	0.15	0.06						
L1	Family member – cigarettes	1.55	2.18	2.89									
L1	Family member – alcohol				3.51	2.97	3.22						
L1	Family member – cannabis							3.10	3.08	4.84			
L1	Family member – drugs										3.55	2.32	-
School-related factors													
L1	School interrupted in past	2.64	3.75	1.67									
L1	Teacher being supportive				0.64	1.12	0.10	1.18	0.15	0.01			
L1	Positive school experience							0.39	0.02	0.01	0.11	0.01	-
L2	Information sessions – staff												
L2	Info. sessions – parents	0.84	0.83	0.56									
L2	Classes on substance use	0.99	0.89	0.83									
L2	Extracurricular activities												
L2	Unmet counselling needs												
Peer-related factors													
L1	Boy/girlfriend uses drugs												
L1	Most friends smoke cigs	2.61	2.10	4.60									
L1	Most friends drink alcohol	1.60	1.92	1.27	1.74	2.40	3.61						
L1	Most friends use cannabis							2.76	1.92	1.48	4.55	3.94	-
L1	Most friends use drugs												
L1	Best friends drink alcohol				4.30	3.93	2.87						
L1	Best friends use drugs	1.98	2.17	2.08				2.32	5.64	7.95	1.45	3.87	-
L1	Access to alcohol				2.33	3.46	1.92						
L1	Access to drugs							5.63	11.26	41.35			
Neighbourhood factors													
L1	Neighbourhood help							0.60	0.20	0.20			
L2	In Drugs Taskforce Area												
L2	Nhood drugs disapproval												





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