The Voice-DISC:  
A method for ascertaining psychiatric diagnoses in young people in the community

Patrick West
Helen Sweeting
Geoff Der

MRC Social & Public Health Sciences Unit
Occasional Paper No 4
December 2000
Acknowledgements

The Voice-DISC project comprises a large collaborative team. Apart from ourselves (Patrick West and Helen Sweeting, principal researchers on the West of Scotland 11 to 16 Study, and Geoff Der, Unit statistician) it includes: Joanne Barton and Marjorie Gillies, local collaborators based at the Department of Child and Adolescent Psychiatry, Glasgow University; Chris Lucas at Columbia University, New York, and Prudence Fisher at New York State Psychiatric Institute, two of a team who developed (and are continuing to develop) the Voice DISC; and Richie Poulton, Avshalom Caspi and Temi Moffitt who have made major contributions to adolescent psychiatric epidemiology principally via the Dunedin cohort in New Zealand, using similar (though not computerised) methods. In particular, the authors would like to thank Richie Poulton for his role in stimulating the Voice-DISC project when one of us (PW) was on sabbatical in 1997 in Dunedin.

We would also like to thank the teams who accompanied us to the schools. They included James Clark and Stephen Maver who provided computer support, and Anne Conlon, Sandra Gallacher, Jacqueline Harley, James McNamara, Laleeta Seebaluck, Suzanne Somerville and Teresa Ward, all Registered Mental Health Nurses, who were responsible for assessing and intervening in the cases of young people judged as ‘at risk’. A special acknowledgement goes to Helen Bush, who took responsibility for conducting a number of the fieldwork sessions.

Several members of staff from the MRC Social and Public Health Sciences Unit have been involved in the study. Thanks especially to Barbara Jamieson and Elaine Hindle (our survey managers), for their organisational skills, Guy Muhleman, computer manager, for his technical advice, and both Jacki Gordon and Robert Young for comments on an earlier draft of this occasional paper.

Finally, and perhaps most importantly we would like to thank the young people who took part, and the heads, assistant heads and all other teachers who agreed to the study and helped with its organisation in the 42 secondary schools (which, for reasons of confidentiality we cannot list by name) involved in the Voice-DISC project.
# Table of Contents

<table>
<thead>
<tr>
<th>Acknowledgements</th>
<th>i</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table of Contents</td>
<td>ii</td>
</tr>
<tr>
<td>1. Introduction</td>
<td>1</td>
</tr>
<tr>
<td>2. Rationale for a Psychiatric Interview</td>
<td>2</td>
</tr>
<tr>
<td>2.1: Prevalence of mental health problems and psychiatric disorders</td>
<td>2</td>
</tr>
<tr>
<td>2.2: Social correlates: disorder specific or general to disorders?</td>
<td>4</td>
</tr>
<tr>
<td>2.3: Contrasting explanations for disorders</td>
<td>5</td>
</tr>
<tr>
<td>3. Choosing an Instrument</td>
<td>6</td>
</tr>
<tr>
<td>4. The Diagnostic Interview Schedule for Children: From Disc to Voice-DISC</td>
<td>10</td>
</tr>
<tr>
<td>4.1 Development</td>
<td>10</td>
</tr>
<tr>
<td>4.2 Structure of the Voice-DISC</td>
<td>11</td>
</tr>
<tr>
<td>4.3 Diagnostic criteria</td>
<td>13</td>
</tr>
<tr>
<td>4.4 Diagnostic algorithms</td>
<td>14</td>
</tr>
<tr>
<td>4.5: Impairment and impairment algorithms</td>
<td>17</td>
</tr>
<tr>
<td>5. The Voice Disc in the 11 to 16 Study</td>
<td>19</td>
</tr>
<tr>
<td>5.1: Background</td>
<td>19</td>
</tr>
<tr>
<td>5.2: In the field</td>
<td>20</td>
</tr>
<tr>
<td>5.2a: Equipment, personnel and costs</td>
<td>21</td>
</tr>
<tr>
<td>5.2b: Ethics</td>
<td>21</td>
</tr>
<tr>
<td>5.3: Permissions and Presentation</td>
<td>22</td>
</tr>
<tr>
<td>5.4: The Pilot - testing and timing</td>
<td>22</td>
</tr>
<tr>
<td>5.5: Main Fieldwork</td>
<td>24</td>
</tr>
<tr>
<td>5.5a: Detailed plans for the session</td>
<td>24</td>
</tr>
<tr>
<td>5.5b: Assembling and briefing teams</td>
<td>25</td>
</tr>
<tr>
<td>5.5c: Getting to schools and setting-up</td>
<td>25</td>
</tr>
<tr>
<td>5.5d: Administering the session</td>
<td>26</td>
</tr>
<tr>
<td>5.5e: Terminating the session</td>
<td>29</td>
</tr>
<tr>
<td>5.5f: Intervention</td>
<td>29</td>
</tr>
<tr>
<td>6. Conclusion</td>
<td>31</td>
</tr>
<tr>
<td>References</td>
<td>33</td>
</tr>
</tbody>
</table>

**Appendix A:** ‘Essential Features’ of Diagnoses Included in 11 to 16 Voice-DISC Survey: 38

**Appendix B:** Structure within Sections Included in 11 to 16 Voice-DISC Survey: 40

**Appendix C:** Initial Letter to Schools: 43

**Appendix D:** Procedural Letter to Schools: 45

**Appendix E:** General 11 to 16 Study Information for Schools: 47

**Appendix F:** Voice-DISC Information for Schools: 49
1. Introduction

This occasional paper describes an innovative method used to ascertain psychiatric disorders in a large sample of 15 year-olds attending mainstream secondary schools in the West of Scotland in 1999. The method in question is a self-administered computer interview (the Voice DISC) which was added to Phase III of the longitudinal West of Scotland 11 to 16 Study: Teenage Health (hereafter termed 11 to 16 - West & Sweeting, 1996).

The paper begins by outlining the reasons why a psychiatric interview was incorporated into 11 to 16. This is followed in Section 3 by a review of some of the major methodological issues in psychiatric epidemiology and an outline of the rationale for selecting the Diagnostic Interview Schedule for Children (DISC) as the most appropriate instrument for the project. Section 4 examines the DISC in more detail, describing its historical development, the structure and operation of the interview, and the process by which diagnostic information is obtained. Lastly, in Section 5, we describe the procedures involved in actually administering the Voice DISC to young people in the school setting.

It should be noted that since the focus of the paper is methodological, no results are presented. At the time of writing, these are anyway provisional and await final decisions about impairment algorithms from our collaborators in the NIMH DISC Group at Columbia University, New York. It is also important to acknowledge that while the DISC is a widely used, and well validated instrument (Shaffer et al., 2000), both the psychometric properties of the Voice-DISC, and the extent to which the computer diagnoses so generated correspond to those of clinicians, are not at the present time well known. The Voice-DISC interview, used in conjunction with 11 to 16, is therefore not only an innovative epidemiological method for ascertaining psychiatric disorder, but also innovative in the sense that it will provide data on the psychometric properties of the instrument, thereby contributing to its further development.
2. Rationale for a Psychiatric Interview

A standard psychiatric interview was included in 11 to 16 in order to extend the study’s focus on mental health by providing detailed information on psychiatric symptoms and enabling the identification of specific disorders among 15 year-olds according to internationally agreed (DSM-IV) diagnostic criteria (American Psychiatric Association, 1994). The (Voice DISC) project has three main purposes: firstly to contribute to the increasing literature on the prevalence of psychiatric disorder among young people; secondly, in combination with social and behavioural data collected in three phases of 11 to 16 (age 11, 13 and 15), to examine the extent to which the social correlates of psychiatric diagnoses are disorder specific or general across disorders; and thirdly to provide the basis for a comparison of different (psychiatric and sociological) explanations for the genesis and correlates of particular disorders such as conduct disorder.

2.1: Prevalence of mental health problems and psychiatric disorders

Mental health, and particularly the mental health of young people, is a British Government priority (Department of Health, 1998). Although this has a somewhat longer history in England and Wales than in Scotland, it is now also firmly on the Scottish health and policy agenda (Scottish Office, 1999; Scottish Executive, 2000), reflecting growing concerns about levels of mental health problems among young people, and the possibility that they may have increased over the recent past (Rutter and Smith, 1995; Fombonne, 1998). In terms of public perceptions, and as reflected in media headlines such as ‘Being a teenager is bad for health, says study’ (The Herald, 13.9.99 – based on results from an earlier phase of 11 to 16 itself), it has all the ingredients of a moral panic. There is, therefore, a clear need for information about mental health in youth, and the type of problems experienced, so that proper needs assessments can be made and used as a basis to inform decisions regarding the nature and level of appropriate services for young people.

However, despite the high profile accorded to the mental health of young people, until very recently there has been remarkably little good information about both the size and nature of the problem in the UK child and adolescent population as a whole. While several psychiatric epidemiological studies have been conducted over the past two decades in a number of countries, notably the US (for a review see Roberts, Attkisson & Rosenblatt, 1998), no major study had been conducted in the UK since Rutter’s seminal studies in the mid-to-late 60s of 10-11 (1965) and 14-15 year-olds (1968-9) on the Isle of Wight, together with the related study of 10-11 year-olds in Inner London (1970) (Rutter et al., 1976; Maughan, 1989). Accordingly, in recognition of the need for up-to-date and accurate information, in the mid 90s the Department of Health (and related Scottish and Welsh Offices) commissioned the Office of National Statistics (ONS) to plan and conduct the first national (UK) survey of the mental health of children and adolescents, the results of which have just been published (Yamey, 1999: Meltzer, Gatward, Goodman & Ford, 2000). The fieldwork for this study overlapped with that for the Voice-DISC project, and together they provide contemporary evidence about the prevalence of specific psychiatric disorders among young people in the population.

The extent to which such information is needed is illustrated by the quite diverse prevalence estimates derived from different sources and/or using different measures of mental health. Some of these suggest that a significant minority of children and adolescents experience mental health problems. For example, the figure of 1 in 5 is often quoted with some authority (NHS Health Advisory Service, 1995; Mental Health Foundation, 1999), a figure which appears to reflect the prevalence of psychiatric problems found among the Isle of Wight 14-15 year-olds (21%) over 30 years ago.
(Graham & Rutter, 1973). Even higher rates have been suggested by community studies using various screening instruments such as the General Health Questionnaire (GHQ) (Goldberg & Williams, 1988) or Child Behaviour Checklist (Achenbach & Edelbrook, 1983). With respect to the GHQ, for example, in the youngest cohort of the West of Scotland Twenty-07 Study (Macintyre, Annandale & Ecob et al, 1989) 1 in 3 males and 2 in 5 females at age 18 were found to score in a range indicative of ‘caseness’; that is, a level of symptoms of potential clinical significance (West & Sweeting, 1996). These figures (now reproduced in several Scottish Needs Assessment documents to indicate the size of the mental health problem [SNAP, 2000]), however, stand in marked contrast to the much lower estimates derived either from hospital statistics or general practice. With respect to the latter, one estimate based on mental health entries recorded in GP case-notes suggested a prevalence of mental health problems of about 2% (RCGP, 1996). There are many reasons why this figure might be low, including the unwillingness of young people to utilise and/or report mental health problems to their GP and the inability of the GP to identify such problems (Bennett, 1985; Kramer & Garralda, 1998; Bryce & Gordon, 2000), but they testify to the magnitude of the discrepancy between often cited community based prevalence estimates and those based on contact with services.

It is against such a background that the need for better, more precise, estimates of mental health problems and psychiatric disorder is required. In large part, the discrepancies arise from different concepts of mental health, particularly the tendency to conflate (any) mental health problems with mental or psychiatric disorder, and the different criteria used to identify ‘caseness’ which range from simple symptom counts to complex groups of symptoms of specified severity which accord with internationally agreed diagnostic criteria. Thus, the high rate of GHQ caseness, sometimes termed ‘psychological distress’ (West & Sweeting, 1996) among 18 year-olds in the West of Scotland Twenty-07 Study is high precisely because, as a screening instrument for psychiatric disorder, it picks up a wide range of minor as well as some major psychological morbidity which meet the criteria for disorder (see pages 13-14). High rates of psychiatric disorder (as compared with distress) are also found if disorder is defined solely in terms of symptoms. For example, in Bird et al.’s (1988) study of Puerto Rican 4-16 year-olds, some 50% met the criteria for at least one DSM-III diagnosis, a level of psychopathology subsequently regarded as implausible and substantiating the need to include impairment in diagnostic criteria (Meltzer et al., 2000). When impairment criteria (e.g., in respect of the performance of roles) are introduced, the effect on prevalence estimates is dramatic, in the Virginia Twin Study (Simonoff et al., 2000), for example, reducing the rate of psychiatric disorder among 8-16 year-olds from 41%, when based on symptoms alone, to 14% when impairment is involved. However, even when similar methods of case identification are used, with identical taxonomies of classification, there remains significant variation in prevalence estimates between studies, particularly in respect of specific diagnoses (Costello, 1989; Roberts, Attkisson & Rosenblatt, 1998). The ONS study (Meltzer et al., 2000), which incorporates impairment and distress into its definition of ‘mental disorder’, estimated the prevalence of any disorder (mood, conduct or hyperkinetic) to be 10% among British 5-15 year-olds.

In their excellent review, Roberts et al (1998) identify four main problems that continue to impede progress in the field. The first concerns sampling issues, many studies (particularly those with a two-stage design) having small samples and/or being quite unrepresentative of the child or adolescent population, one consequence of which is the difficulty of ascertaining variations in prevalence by parameters such as age or social class. The second refers to differences in methods of case-ascertainment, studies either adopting a one-stage (total sample) or two-stage design (screening instrument followed by psychiatric interview of potential cases together with a sub-sample of ‘normal’ children to check for false negatives). The former, associated with more structured interviews
(e.g. the DISC), tends to produce higher prevalence estimates than the latter, probably because the interview used in the two-stage design (more semi-structured) involves clinical judgement and concomitant stricter diagnostic thresholds. A related issue concerns the use of single (e.g. child only) or multiple informants (e.g. child, parents, teachers), most recent studies basing prevalence rates on multiple sources (most often on the either/or principle) (Bird, Gould & Staghezza, 1992) but with the consequence that important differences (in rates) between informants are lost. A third problem concerns the question of case definition, only a minority of studies incorporating severity or impairment into their diagnostic criteria. Reflecting the view that prevalence estimates based solely on symptoms are implausibly high, the prevailing consensus is that diagnostic criteria should include impairment (Meltzer et al., 2000). Finally, studies vary in respect of whether their prevalence estimates are point (current) or period estimates, the time-frame for the latter varying between 1 month, 6 months, 1 year or a lifetime. Each of these issues is relevant to the Voice-DISC project, providing parameters for judging both the strengths and weaknesses of the method chosen, and ultimately the validity of the results obtained.

2.2: Social correlates: disorder specific or general to disorders?

The second reason for including a psychiatric interview in 11 to 16 refers to the fact that moving beyond general measures of mental health (e.g. the GHQ) to incorporate specific psychiatric disorders facilitates an examination of the extent to which social correlates and processes are similarly patterned across disorders (a general mental health phenomenon) or disorder specific. This is not an issue that has received much attention in the literature (Roberts et al., 1998), but both from a theoretical perspective (Aneshensel, Rutter & Lachenbruch, 1991) and from available empirical evidence about the social correlates of specific disorders, it seems a fruitful avenue of inquiry. For example, the relationship between depressive disorder and social class in adolescence is much less clear than it is with respect to conduct disorder which, on all available evidence is more prevalent among lower class children and adolescents (Maughan & Lindelow, 1997).

The potential of this line of inquiry has been recently demonstrated by Miech, Moffitt and Caspi (1999) in relation to the genesis of health inequalities in early adulthood. Using longitudinal data from the (New Zealand) Dunedin cohort (born in 1971-2), these investigators found that different disorders exhibited different patterns of association between social class of background and class of destination, using educational attainment as a proxy for the latter. Thus, Depressive Disorder was not associated with class of background nor was it selective for future class position. Anxiety Disorder was, however, associated with class of background, being higher in lower class respondents, but was not selective for future class position. Conduct Disorder (CD), by contrast, though showing some association with lower class background, was strongly associated with class of destination, the presence of CD in adolescence considerably reducing educational attainment, and hence adult class position.

The point illuminated by this analysis is that, in the absence of detailed information about the type of disorder, it might be concluded that any observed social correlates of a more general measure of mental health, or psychiatric disorder as a whole, applied uniformly to different dimensions of mental health or different disorders. Some of our own previous findings from the West of Scotland Twenty-07 Study, showing no relationship between GHQ at age 15 and social class of background (West, Macintyre & Annandale et al., 1990), for example, might suggest that the pattern was similar for anxiety and depression. As the study by Miech et al. (1999) illustrates, this may not be the case. The inclusion of a psychiatric interview at Phase III of 11 to 16, together with more general measures of mental health such as the GHQ (also included at age 15), therefore
enables several tests of the hypothesis that social correlates are disorder specific or
generalisable across measures or disorders. The existence of a wide range of social
and behavioural data obtained in 11 to 16 prior to age 15 (at 11 and 13 respectively),
together with a follow-up planned for age 18, also means that it is possible to examine
both antecedents and consequences of specific disorders, thereby replicating the
analysis conducted on the New Zealand cohort.

2.3: Contrasting explanations for disorders

A third, and related reason for including a psychiatric interview is that the identification of
disorders by reference to recognised psychiatric criteria introduces the possibility of
being able to contrast explanations based on psychiatric or medical models with those
employing alternative models, notably that of interactionist sociology (Goffman, 1970;
Denzin, 1971), a perspective focussing on the meaning of phenomena (e.g. an
individual’s attributes or behaviour) and the consequences of those meanings for social
interaction.

This contrast re-opens the old debate between sociology and psychiatry relating to
definitions of normality (e.g. Szasz, 1971), especially in relation to deviant behaviour
such as that incurring the diagnosis of conduct disorder. The key question here is
whether such behaviour is either an expression of underlying psychopathology, or (at
least in some instances) an expression of a particular (for example, criminal) sub-culture
and/or a rational adaptation to abnormal circumstances (Taylor et al., 1973). In relation
to health inequalities for example, Miech, Moffitt & Caspi’s (1999) finding that conduct
disorder in adolescence is related to health inequalities in adulthood (i.e. it predicts future
poor health and low class position) is open to quite different interpretations. Thus, within
a medico-psychiatric perspective these associations might be interpreted as representing
different expressions (and consequences) of the same underlying pathology, while within
a sociological perspective they might be viewed as resulting from the social connections
between a particular adolescent context or lifestyle (of which the behaviour is a part) and
labour market trajectories and associated health risks which in turn impact on class
position in adulthood. However, it is impossible to consider the validity of such
contrasting explanations for a disorder such as CD unless it is defined precisely in
accordance with officially recognised psychiatric criteria, since failure to do so could be
deemed to invalidate the comparison.

In order to fully address the question of contrasting explanations, it will be necessary to
collect additional data to that already available in 11 to 16. This is because, from a
sociological perspective, the very definition of ‘disorder’ is problematic and potentially
subject to different meanings and interpretations by the ‘disordered’. It is currently
envisioned, therefore, to develop an add-on (predominantly qualitative) project, in
association with a planned 11 to 16 follow-up at age 18, which would collect data from
young people with particular DSM-IV diagnoses. The focus of this project will be on
conduct disorder.
3. Choosing an Instrument

There are two distinct approaches to psychiatric epidemiology (both adult and child), each of which is associated with different methods of information gathering for diagnostic purposes. The first employs a two-stage design, combining a screening instrument with subsequent psychiatric interview of screen positives together with a sample of screen negatives. This method, pioneered in the Isle of Wight studies, continues to be the preferred method in several major studies of children and adolescents world-wide, including the Zuid-Holland study in the Netherlands (Verhulst et al., 1985), the Chartres study in France (Fombonne, 1994) and the Great Smoky Mountains Study in the US (Costello et al., 1996). The second employs a one-stage design in which all eligible sample members are targeted for psychiatric interview, using interview methods which are usually either highly structured or, at least, semi-structured. This blanket approach has also been used in a number of major studies, including the Dunedin (Anderson et al., 1987; McGee et al., 1992) and Christchurch (Ferguson, Horwood & Lynskey, 1993) studies in New Zealand, and the New York State (Velez et al 1989) and NIMH Methods for the Epidemiology of Child and Adolescent Disorders (MECA) (Shaffer et al., 1996) studies in the US. For a number of reasons, notably the need to have detailed diagnostic information on all children and adolescents, it was also the preferred method in the ONS study, involving interviews with parents and children (aged 11-15) in a sample of over 10,000 (Meltzer et al, 2000).

With respect to case ascertainment, the principle difference between the two approaches concerns the extent to which clinical involvement is required to conduct the interview and/or make diagnostic assessments. Studies using a two-stage design typically owe more to the clinical tradition, and therefore involve greater clinical input either in the form of a psychiatric review of all available evidence (as in the Isle of Wight study) or in the administration of an interview by a skilled clinician (or highly trained interviewer) with psychiatric knowledge (as in the Great Smoky Mountain Study). Such interviews have been described as interviewer-directed rather than respondent-directed in that their aim is to elicit information via questions, often of an open-ended type, which are both directed by and evaluated within the knowledge base of psychiatry (Angold et al., 1995). By contrast, studies using a one-stage design have typically utilised more structured, respondent-directed, interviews, one of which (the DISC) requires interviewers to stick to the exact wording of the interview schedule, precisely because this reduces error associated with known clinician variability (Costello, 1996). In this approach, clinical judgement is also removed from the process of diagnosis which is made either by reference to precise written criteria or, increasingly, computer algorithms which utilise standard classificatory schemes (e.g. DSM-IV diagnostic criteria) to categorise responses obtained at interview. Choosing between these approaches is not just a matter of clinical preference, of judgements about the superiority of one method vis-à-vis another, but also of practical considerations concerning the availability of clinical input, costs, ease of administration etc. It is clearly the case that the smaller numbers generated in the two-stage design studies are more amenable to clinical review or interview than are the larger numbers generated by a single-stage design, though the ONS study, which combined a structured interview with a clinical review of all cases, is a notable exception.

Among a range of available interview schedules for child and adolescent psychiatric epidemiology (see McLellan & Scott, 2000 for a review), there are six which have been most widely used, the central characteristics of which are summarised in Table 1 (overleaf). Following Costello (1996), the instruments are organised according to the degree to which they are structured, with the most structured (the DISC) at the top, the least structured (K-SADS) at the bottom. In addition, because of the particular overlap
(time and space) between the Voice-DISC project and the ONS study, the major features of the latter are also shown.

Table 1: Characteristics of psychiatric interviews used in epidemiological studies.

<table>
<thead>
<tr>
<th></th>
<th>Age</th>
<th>Informants</th>
<th>Time-frame</th>
<th>Structure</th>
<th>Output</th>
<th>Method</th>
<th>Administration</th>
<th>Computer version</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISC</td>
<td>6 – 17+</td>
<td>Child</td>
<td>12 months</td>
<td>Modular-exact wording &amp; skip instructions</td>
<td>Symptoms Diagnoses (ICD, DSM) Impairment</td>
<td>Computer algorithms</td>
<td>Trained (2-3 days) lay interviewers</td>
<td>CAPI (Parent child) VOICE (child PS)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Parent</td>
<td>1 month (PS)</td>
<td>Whole-life</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Teacher</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DICA</td>
<td>6 – 17</td>
<td>Child</td>
<td>Lifetime</td>
<td>Syndrome-root qs. with semi-structured probes</td>
<td>Symptoms Diagnoses (ICD, DSM) Impairment</td>
<td>Ratings and review by &quot;editors&quot;</td>
<td>Trained (2-4 weeks) lay interviewers</td>
<td>Self-administered screener</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Parent</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAS</td>
<td>7 - 16</td>
<td>Child</td>
<td>6 months</td>
<td>Semi-structured by topic guide</td>
<td>Diagnoses</td>
<td>Ratings</td>
<td>Trained interviewers</td>
<td>Nil</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Parent</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAPA</td>
<td>8 – 17</td>
<td>Child</td>
<td>3 months</td>
<td>Modular - obligatory &amp; discretionary probes and observations</td>
<td>Symptoms Diagnoses (ICD, DSM Incapacity)</td>
<td>Interviewer ratings and review</td>
<td>Experienced trained (4+ weeks) interviewers</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Parent</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISCA</td>
<td>8 – 17</td>
<td>Parent (1)</td>
<td>6 months</td>
<td>Semi-structured around 43 symptoms + observations</td>
<td>Diagnoses (principally mood disorders)</td>
<td>Clinical ratings</td>
<td>Experienced clinicians</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Child (2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K-SADS</td>
<td>6 – 18</td>
<td>Parent (1)</td>
<td>12 months</td>
<td>Clinical format + observations</td>
<td>Diagnoses (principally affective disorders)</td>
<td>Clinical ratings (familiarity with DSM)</td>
<td>Experienced clinicians</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Child (2)</td>
<td>1 week</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ONS</td>
<td>5 – 15</td>
<td>Parent</td>
<td>Varies by disorder</td>
<td>Modular-exact wording with open-ended questions</td>
<td>Symptoms Diagnoses (ICD, DSM) Impairment</td>
<td>Computer algorithms + clinical reviews</td>
<td>Trained lay interviewers</td>
<td>Self administered section for child</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Child</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

All six instruments target a similar age range, with minor variations in both the lower and upper limits. In its most recent version, K-SADS (Ambrosini, 2000) explicitly extends to age 18 and a version of the DISC (young adult) is reported as being developed for the age group 18-24 (Shaffer et al., 2000). Reflecting the principle of multiple informants (Brandenburg, Friedman & Starr, 1990), all have parent and child versions, the DISC (Costello et al., 1984) also having a shortened version for teachers. In two of the
instruments - K-SADS (Orvaschel et al, 1982) and ISCA (Kovacs, 1985; Sherill & Kovacs, 2000), there is also a requirement that the parental version is administered first (Parent [1] on table) so that it may inform the subsequent interview with the child (Child [2] on table). Timeframes for any interview schedule have changed over the years; currently there is considerable variation between schedules, from 3 months for CAPA (Angold et al., 1995) to lifetime for DICA (Herjanic & Reich, 1982), the latter reflecting a particular interest in genetic studies (Reich, 2000). The DISC has 2 versions, a generic (12 month) and present-state (PS - 1 month) version together with a whole-life module. Although all six schedules are regarded as either structured or semi-structured (Costello, 1996), there is in fact considerable variation in the extent to which their format is structured, CAS (Hodges et al, 1982), ISCA and K-SADS representing the least structured of the instruments with concomitant greatest clinical input both in terms of administration (including clinical observations of the child during the interview in ISCA and K-SADS) and diagnostic assessment. CAPA represents a mix of both a structured (obligatory probes) and semi-structured (discretionary probes) approach but also includes observations, and requires a clinical review of diagnostic ratings. DICA utilises a modular structure with root questions, but is increasingly regarded by its proponents as semi-structured (Reich, 2000). Only the DISC meets the criteria for being a completely structured instrument, with its requirement for exact wording and skip instructions, and only the DISC requires no input at all from clinicians or clinical 'editors'. Among the instruments that can be administered by non-clinicians, the training period varies from 4+ weeks (CAPA) to 2-3 days (DISC). In addition to paper versions for use in face-to-face interview, both the DICA (self administered screen version for adolescents) and DISC (computer assisted interview by lay interviewers and Voice version) have computerised versions, the latter only in a present-state version.

In considering the options on design (one- or two-stage) and instruments which would best meet the aims of collecting psychiatric data in Phase III of 11 to 16, a number of issues were addressed. First, although the size of the sample (2000+) would have certainly justified a two-stage design, and would have provided a basis for prevalence estimates, as in the ONS study the desirability of obtaining psychiatric data (symptoms as well as diagnoses) on all young people made a one-stage design much more appropriate. This maximises the potential of linking psychiatric data with an existing, and extensive, longitudinal dataset, and is of particular relevance for the analysis of social correlates, antecedents and consequences. Second, and related, a two-stage design requires considerable clinical input, both in respect of interviewing and diagnostic review, a level of input that was simply unavailable. In these circumstances, it was apparent that the objectives of the project could only be met via the use of a structured psychiatric interview. Third, in reviewing available instruments, it became clear (as indicated above) that several of them were ruled out either because of the level of clinical input required or (as in the case of CAPA) the extensive training period required for interviewers, a level of resources not available to the project. In addition, one (K-SADS) was excluded because of the requirement to conduct a parental interview. The desirability of using multiple informants, including parents, is (and was) acknowledged, but both the school-based design of 11 to 16 (see page 19) and the resources required to undertake a parental interview were beyond the scope of the project. Of the two remaining possible candidates (DISC and DICA), the DISC was preferred, initially because of all the instruments it had been identified as the most structured and could be administered by trained lay interviewers (with modest training input) either via the traditional face-to-face (paper) method (as used in the Dunedin study) or a computer assisted (CAPI) version (as used in the MECA study) Shaffer et al., 1996). The subsequent discovery of a self-administered computer version of the DISC (the Voice-DISC) further justified the decision to use this instrument. A fourth reason for choosing the DISC was that, of all available instruments, it has been most widely used in studies world-wide, including the Puerto Rico (Bird et al., 1989), New York State (Velez et al., 1989), Dunedin (McGee et al.,
1992) and MECA (Shaffer et al., 2000) studies, which provide a basis for comparison. It was not, however, used in the ONS study though along with other instruments it contributed to the development of the interview schedule used for that study. Finally, the psychometric properties of the DISC are also well documented (Shaffer et al., 2000), though not yet for the Voice version.
4. The Diagnostic Interview Schedule for Children: From Disc to Voice-Disc

4.1 Development

As with many of the psychiatric interview schedules (e.g. K-SADS) for children and adolescents, the (Voice) DISC originates from an interview schedule designed for use in adult psychiatric epidemiology, in this case the Diagnostic Interview Schedule (DIS). The DIS was developed at the US National Institute for Mental Health in the late 1970's (Robins et al., 1981) and had as its avowed aim the conversion of ‘the methodology of clinical assessment to that of field surveys’ (Eaton et al., 1981, p 100). Its development as a highly structured instrument occurred in tandem with revisions in diagnostic classification, published as the ‘Third Edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-III)’ (American Psychiatric Association, 1980). This classificatory scheme reflected a radical shift from an aetiological to a descriptive perspective in psychiatry, and for the first time specified particular criteria required for diagnosis: (a) a minimum number and representative range of symptoms in a diagnostic group; (b) a minimum standard of severity; and (c) that symptoms were not explained by a physical illness or (trumped) by another diagnosis. Thus, with the existence of a standard taxonomy together with a standard method of recording symptoms, psychiatric epidemiology entered a new phase. Field trials for the Epidemiological Catchment Area Programme (ECA) revealed that with some exceptions (e.g. panic disorder and alcohol abuse) the validity of diagnoses obtained by trained lay interviewers using the DIS was high (Eaton et al., 1981). The DIS has continued to be used in adult studies with various changes incorporated to complement revisions in the DSM taxonomy, notably in 1987 (DSM-III-R) when impairment criteria were incorporated in diagnostic classification (American Psychiatric Association, 1987) and again in 1994 (DSM-IV) when further revisions were made (American Psychiatric Association, 1994).

The development of a version of the DIS for children and young people (the DISC, for ages 9-17 years), commenced with field trials in 1983 (Costello et al., 1984), and followed a similar course, each version reflecting changes in DSM criteria. Additional developments included a Parent version (DISC-P) for use with children aged 6-17 years, and a shortened version for teachers (DISC-T), each of which can be administered separately, or in combination. Administration of the DISC-P is recommended for younger children. Until recently, and including the important studies conducted in New Zealand, Puerto Rico and the US (Costello, 1989), the method used to interview children (and parents) was a face-to-face interview either with a clinician or a trained lay interviewer. Negotiating the complex routing in the interview was made easier by the development of a computer assisted (CAPI) version during the course of the MECA study which allowed interviewers to administer the interview via computer, entering data at the same time. A sub-sample of respondents later interviewed by a psychiatrist showed excellent inter-rater reliability (Shaffer et al., 1996).

The latest development is a computer administered version of the DISC that uses a voice to read out the questions to a respondent who self administers the interview by typing answers on a keyboard which are then recorded on the computer. To date, a voice version is only available for children or adolescents, rather than their parents or teachers. However, the ‘Voice-DISC’ is claimed by the US researchers to obtain a ‘more accurate evaluation of socially embarrassing or forbidden behaviours including conduct and substance abuse disorders’ (Shaffer et al., 1996, p.876). It is possible therefore that this self-administered version may overcome one of the problems widely referred to in the literature, namely that reliance on the child or adolescent as sole informants leads to an under-estimation of the prevalence of externalising disorders such as CD which are more
reliably reported by parents (Costello, 1996; Meltzer et al., 2000). Finally, at the time of the fieldwork for our Voice-DISC project, a voice version was only available for the Present State (previous 4 weeks), plus a ‘Whole Life’ section, but not for the ‘Generic’ version of the DISC covering the previous 12 months.

Although the development of a self-administered (voice) version of DISC has many advantages for psychiatric epidemiology, it is possible that its use may be limited for particular diagnoses. For example, in the case of schizophrenia, clinical judgement may be needed to distinguish symptoms that are normal (satisfactorily explained by reference to a particular religious or cultural group) from those that are unequivocally indicative of individual pathology (not shared by others). Similarly, although some authorities regard behavioural disorders such as conduct disorder as disorders irrespective of context (e.g. Rutter & Smith, 1995), another view is that a diagnosis of CD should be excluded when the behaviour is normative in a particular social group (e.g. a criminal sub-culture) or social circumstance (e.g. a war situation). This view appears to be endorsed by the American Psychiatric Association in the DSM-IV criteria for CD diagnosis which should only be applied ‘when the behaviour in question is symptomatic of an underlying dysfunction within the individual and not simply a reaction to the immediate social context’ (American Psychiatric Association, 1994, p88). Clearly, the distinction between normative and pathological behaviour is not one that can be addressed directly via any version of the DISC or any other structured psychiatric interview in which judgement about its meaning is excluded. It is precisely because of this that one of the purposes of the Voice-DISC project is to collect psychiatric data which, in conjunction with other data, can be used to contrast psychiatric and sociological explanations for disorders like CD (see section 1.3 above). This does not invalidate the diagnosis of CD generated by the Voice-DISC (see section 3.3 for diagnostic algorithms), it merely lays it open to possible alternative interpretations.

4.2 Structure of the Voice-DISC

The structure of the Voice-DISC interview exactly mirrors that of the (present-state) paper version for children administered either by clinical or lay interviewers, except that routing is automated and so avoids the tally sheets of symptoms used for routing in the paper and pencil version.

The interview begins with an introduction in which an (American female) voice:

a) explains the purpose of the interview and the kind of questions and answers required (the majority are yes/no, answered either by typing 1 for ‘yes’ and 2 for ‘no’ or by highlighting and clicking the ‘mouse’; some are longer lists, for example possible resident parent figures, similarly indicated by typing or highlighting the appropriate number[s] or letter[s]; a few are open-ended, for example the content of worrying thoughts, and thus require typing);

b) obtains basic socio-demographic details (age, whether at school [and grade] or work and main carer[s] [needed principally for Separation Anxiety Disorder]);

c) identifies a timeline of one year and asks respondents to recall (and in Voice-DISC type in) an event which happened 1 year ago, 6 months, 3 months and 4 weeks ago (these then functioning as reminders in subsequent questions about either the length of time a symptom lasted or when it stopped and started);

d) recapitulates on the type of answers required.

Thereafter, the interview proceeds to the first of 6 broad modules (each containing sections for specific diagnoses – see Table 2 overleaf) which follow a sequence of
Anxiety Disorders, Miscellaneous Disorders, Mood Disorders, Schizophrenia, Disruptive Behaviour Disorders and Alcohol/Substance Abuse and Dependence. Within each of these modules, and for each section, a similar pattern of questions is asked about the presence of symptoms over a specified time-period relevant to present-state diagnosis (this varies according to the diagnosis in question), the interview ending with a ‘Whole-Life’ module. The latter contains questions about symptoms since age five, organised within each of the diagnostic sections except Conduct Disorder and Alcohol/Substance, and which can be administered to children either with no current symptoms (any diagnosis) or with symptoms which are sub-threshold for any present-state diagnosis. It is possible to select any combination of modules and of specific disorders within each module, those selected for 11 to 16 being emboldened in Table 2.

Descriptions of the ‘essential’ features of each of the selected DSM-IV diagnoses can be found in Appendix A. The decision to focus on these particular disorders was made in the light of their public health significance and predicted higher prevalence compared with some other disorders (e.g. PTSD). The Schizophrenia module was excluded for this reason, and also because of the particular diagnostic problems posed by the absence of clinical judgement. The substance module was retained because of an interest in comorbidity with other disorders and because of the opportunity for comparing computer-based (Voice-DISC) reports with those given in a self-complete questionnaire administered in Phase III of 11 to 16. It should be noted, however, that the particular prominence accorded to marijuana in the DISC (one section) compared with all other illegal drugs (combined in one section) may underestimate the importance of the latter in contexts where drug patterns differ from those observed in the US (e.g. Ecstasy in the UK). In considering all these issues, practical concerns about interview length (in particular, those imposed by a 55 minute school period) were also of major importance (see section 5.4 on the pilot study).

Table 2: Voice-DISC modules and diagnoses – (those included in 11 to 16 emboldened)

<table>
<thead>
<tr>
<th>Module</th>
<th>Diagnoses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety Disorders</td>
<td>Social Phobia (SoPH)</td>
</tr>
<tr>
<td></td>
<td>Separation Anxiety Disorder</td>
</tr>
<tr>
<td></td>
<td>Specific Phobia</td>
</tr>
<tr>
<td></td>
<td>Panic (PAN)</td>
</tr>
<tr>
<td></td>
<td>Agoraphobia</td>
</tr>
<tr>
<td></td>
<td>Generalised Anxiety Disorder (GAD)</td>
</tr>
<tr>
<td></td>
<td>Selective Mutism</td>
</tr>
<tr>
<td></td>
<td>Obsessive Compulsive Disorder (OCD)</td>
</tr>
<tr>
<td></td>
<td>Post-Traumatic Stress Disorder</td>
</tr>
<tr>
<td>Miscellaneous Disorders</td>
<td>Eating Disorders (EAT)</td>
</tr>
<tr>
<td></td>
<td>Elimination Disorders</td>
</tr>
<tr>
<td></td>
<td>Tic Disorders</td>
</tr>
<tr>
<td></td>
<td>Pica</td>
</tr>
<tr>
<td></td>
<td>Trichotillomania</td>
</tr>
<tr>
<td>Mood Disorders</td>
<td>Major Depression/Dysthymic Disorder (MDD/DD)</td>
</tr>
<tr>
<td></td>
<td>Mania/Hypomania</td>
</tr>
<tr>
<td>Schizophrenia</td>
<td></td>
</tr>
<tr>
<td>Disruptive Behaviour Disorders</td>
<td>Attention Deficit/Hyperactivity Disorder (ADHD)</td>
</tr>
<tr>
<td></td>
<td>Oppositional Defiant Disorder (ODD)</td>
</tr>
<tr>
<td></td>
<td>Conduct Disorder (CD)</td>
</tr>
<tr>
<td>Alcohol/Substance Use</td>
<td>Alcohol Abuse/Dependence (ALC)</td>
</tr>
<tr>
<td></td>
<td>Tobacco (TOB)</td>
</tr>
<tr>
<td></td>
<td>Marijuana Abuse/Dependence (MARJ)</td>
</tr>
<tr>
<td></td>
<td>Other Substances Abuse/Dependence</td>
</tr>
<tr>
<td>Whole Life</td>
<td>As above except for conduct disorder and alcohol/substance use</td>
</tr>
</tbody>
</table>
4.3 Diagnostic criteria

Although the precise diagnostic criteria specified in the DSM-IV manual (American Psychiatric Association, 1994) vary, each follows the same basic principles. A diagnosis is made if criteria relating to symptoms, persistence, severity and (lack of) exclusion criteria are satisfied. Thus:

(a) **symptoms** - a minimum number of defined symptoms must be present (typically defined as a specific number in a range);

(b) **persistence** - the syndrome of symptoms is persistent, occurring over a minimum period of time (for the Present State version typically being present in the last 4 weeks);

(c) **severity** - the symptoms are severe (typically defined by reference to the frequency of occurrence or duration, i.e. the number of times they occur in a specified period - e.g. for 2 weeks);

(d) **exclusion criteria** - a diagnosis is excluded if symptoms are associated with a medical condition and/or result from medication or substance use.

In addition to these criteria, each diagnosis has a consistent set of **impairment criteria** relating to:

(a) reactions of family members or others such as teachers or bosses (e.g. ‘annoyed or upset’);

(b) restrictions on activities with family members;

(c) restrictions on activities with peers;

(d) impairment of school or work roles.

As previously indicated, these impairment criteria have a substantial effect on whether or not a diagnosis is made, resulting in progressively reduced prevalence rates of specific disorders depending on the stringency of the impairment criteria applied (see section 4.5).

To illustrate more fully the criteria needed to make a diagnosis, the case of Major Depressive Disorder (MDD) will serve as an example. In the light of the considerable difference in prevalence estimates in studies using screening instruments as compared with psychiatric interviews, it is also useful to contrast these criteria with those for the 12-item GHQ used in 11 to 16 to identify ‘caseness’ for psychological distress, and which may also screen for possible depressive disorder (Goldberg, 1985; Williams, 1987; Gureje, 1991), in order to illustrate just how different they are.

**GHQ caseness** - with a cut-off of 3 or above, GHQ-12 ‘caseness’ is established if a respondent reports experiencing any combination of 3 or more symptoms from the following list, either rather or much more (or less, as applicable) than usual ‘over the past few weeks’: been able to concentrate on whatever you're doing; lost much sleep over worry; felt you were playing a useful part in things; felt capable of making decisions about things; felt constantly under strain; felt you couldn’t overcome your difficulties; been able to enjoy your normal day-to-day activities; been able to face up to your problems; been feeling unhappy or depressed; been losing confidence in yourself; been thinking of
yourself as a worthless person; been feeling reasonably happy, all things considered (Goldberg & Williams, 1988).

**MDD diagnosis** - the criteria specified by DSM-IV for the diagnosis of a single MDD episode (American Psychiatric Association, 1994, p.327 & p.344) are:

1. The presence of 5 or more symptoms (which must include at least 1 of ‘depressed mood’ and ‘loss of interest or pleasure’) from a list of 21, which should have been present during the same 2-week period and represent a change from previous functioning. The symptoms include: **depressed mood** most of the day, nearly every day, as indicated by either subjective report (e.g. feels sad or empty) or observation made by others (e.g. appears tearful); **markedly diminished interest or pleasure** in all, or almost all, activities most of the day, nearly every day (as indicated by either subjective account or observation made by others); **significant weight loss** when not dieting or **weight gain** (e.g. a change of more than 5% of body weight in a month), or **decrease or increase in appetite** nearly every day; **insomnia or hypersomnia** nearly every day; **psychomotor agitation or retardation** nearly every day (observable by others, not merely subjective feelings of restlessness or being slowed down); **fatigue or loss of energy** nearly every day; **feelings of worthlessness or excessive or inappropriate guilt** (which may be delusional) nearly every day (not merely self-reproach or guilt about being sick); **diminished ability to think or concentrate, or indecisiveness**, nearly every day (either by subjective account or as observed by others); **recurrent thoughts of death** (not just fear of dying), **recurrent suicidal ideation** without a specific plan, or a **suicide attempt or a specific plan for committing suicide**.

2. The symptoms cause clinically significant distress or impairment in social, occupational, or other important areas of functioning.

3. They are not due to the direct physiological effects of a substance or a general medical condition.

4. They are not better accounted for by bereavement or another diagnosis such as Schizophrenia or Delusional Disorder.

5. There has never been a Manic, Mixed or Hypomanic Episode.

This comparison illustrates the extent to which the criteria involved for a DSM-IV MDD diagnosis (and other diagnoses) differs from those used to ascertain caseness in a screening instrument like the GHQ, and how the much greater stringency for diagnosis results in lower prevalence estimates. With the addition of impairment criteria, prevalence rates are lower still. The diagnostic criteria for each section included in the 11 to 16 Voice-DISC project are shown in Appendix B.

### 4.4 Diagnostic algorithms

In order to translate interview responses into diagnoses, the Voice-DISC includes separate items covering all the possible components of the DSM-IV criteria (inclusion, exclusion and impairment) for each specific diagnosis. Thus, unlike screening questionnaires such as the GHQ, ‘diagnosis’ does not depend on a simple summation of responses, but instead a diagnostic algorithm is applied to the items to determine whether the necessary and sufficient conditions for a diagnosis are met. The boxes below detail this process, taking the example of CD.

The first box (overleaf) identifies (examples of) the 15 positive DSM-IV criteria for diagnosis derived from 29 separate interview questions in the Voice-DISC (note that the
ONS study operates with a reduced list of 15 questions corresponding to these criteria [Meltzer et al., 2000]). The next two boxes show how these criteria are operationalised via computer algorithms (Box 3) to classify interview responses to two questions, bullying (Q 25) and threatening (Q 26) behaviour (Box 2) which together refer to positive criterion 1 (often bullies, threatens or intimates others). Box 3 also shows the criteria required for a diagnosis of CD in the past year and past 6 months.

**BOX 1 - DSM-IV CRITERIA FOR CONDUCT DISORDER DIAGNOSIS**

(American Psychiatric Association, 1994, p90-91)

A. The positive criteria for a diagnosis of Conduct Disorder include the presence of 'three (or more) of the following criteria in the past 12 months, with at least one criterion present in the past 6 months'

Aggression to people and animals
(1) often bullies, threatens or intimidates others
to
(7) has forced someone into sexual activity

Destruction of property
(8) has deliberately engaged in fire setting with the intention of causing serious damage
(9) has deliberately destroyed others' property (other than by fire setting)

Deceitfulness or theft
(10) has broken into someone else's house, building or car
(11) has stolen items of nontrivial value without confronting a victim (e.g. shoplifting, but without breaking and entering; forgery)

Serious violations of rules
(12) to often stays out at night despite parental prohibitions, beginning before age 13 years
(15) is often truant from school, beginning before age 13 years.

B. The impairment criterion is that 'the disturbance in behaviour causes clinically significant impairment in social, academic, or occupational functioning.'

C. The Exclusion criterion is that 'if the individual is age 18 years or older, criteria are not met for Antisocial Personality Disorder.'
BOX 2 - CONDUCT DISORDER IN THE VOICE-DISC INTERVIEW

Two questions (Qs. 25 & 26) within the CD section of the Voice-DISC interview represent ‘often bullies, threatens or intimidates others’ (positive criterion 1):

Question 25
Now I want to ask you about bullying - you know, hitting or threatening or scaring someone who is younger or smaller than you or somebody who won’t fight back.

Have you ever bullied someone in this way?
If no, go to Q.26, if yes:
A. Was this only with your brother or sister?
If yes:
B. Have you bullied other people besides your brother or sister?
If no, go to Q.26, if yes:
C. Have you bullied someone like this in the last year?
If yes:
D. Have you bullied someone more than once in the last year?
If yes:
E. Did you do this more than five times in the last year?
If yes:
F. Did you bully someone more than ten times in the last year?
G. Have you bullied someone in the last six months (that is, since (NAME OF EVENT SPECIFIED BY RESPONDENT ON TIME LINE / MONTH)?
If yes
H. Have you done this in the last four weeks (NAME OF EVENT)?
I. How old were you the first time you bullied someone?

Question 26
Have you ever threatened or frightened someone on purpose?
If yes:
A. Have you threatened or frightened someone on purpose in the last year?
If yes:
B. Have you threatened or frightened someone on purpose more than once in the last year?
If yes:
C. Did you do this more than five times in the last year?
If yes:
D. Did you threaten or frighten someone on purpose more than ten times in the last year?
E. Have you threatened or frightened someone on purpose in the last six months (that is, since (NAME OF EVENT SPECIFIED BY RESPONDENT ON TIME LINE / MONTH)?
If yes
F. Have you done this in the last four weeks (that is, since (NAME EVENT))
G. How old were you the first time you threatened or frightened someone on purpose?
Using responses to these questions, the algorithms create variables that contribute towards the diagnosis of CD.

**Variable ycda1y = ‘past year: bullies, threatens others’** is defined by ‘yes’ responses to Q.25E (did you bully someone – other than siblings – more than five times in the last year?) or Q.26C (did you threaten or frighten someone on purpose more than five times in the last year?).

**Variable ycdm = ‘past 6 months: bullies, threatens others’** is defined by ‘yes’ responses to Q.25E (as above) and Q.25G (have you bullied someone in the last six months?), or to Q.26C (as above) and Q.26E (have you threatened or frightened someone on purpose in the last six months?).

**Variable ycdy = ‘past year: criterion for conduct disorder’** is defined by a score of 3 or more for the sum of the 15 variables ycda1y to ycda15y, similarly, variable ycdm = ‘past 6 months: criterion for conduct disorder’ is defined by a score of 1 or more for the sum of the 15 variables ycd1m to ycd15m.

Finally, a diagnosis of Conduct Disorder is made if both the past year and past 6 months criteria are satisfied.

---

**4.5: Impairment and impairment algorithms**

As noted earlier, in addition to specifying conditions necessary for diagnoses, DSM-IV also includes a criterion of impairment for each diagnosis, relating to the perceived reactions of others or impact on activities or roles. These impairment criteria are also included in the Voice-DISC, but at the time of writing the final algorithms for 3 levels of impairment have not yet been finalised. However, the examples below (Boxes 4-6 relating to CD and following on from above) indicate the underlying principles involved.

**BOX 4 - DSM-IV CRITERIA FOR CONDUCT DISORDER IMPAIRMENT**

(American Psychiatric Association, 1994, 91)

The impairment criterion for Conduct Disorder is defined within DSM-IV as ‘the disturbance in behaviour causes clinically significant impairment in social, academic, or occupational functioning.’

In the DSM-IV manual severity levels are described as:

- **Mild:** few if any conduct problems in excess of those required to make the diagnosis and conduct problems cause only minor harm to others.

- **Moderate:** number of conduct problems and effect on others intermediate between “mild” and “severe”.

- **Severe:** many conduct problems in excess of those required to make the diagnosis or conduct problems cause considerable harm to others.
BOX 5 - CONDUCT DISORDER IN THE VOICE-DISC INTERVIEW

If the positive criteria for CD diagnosis are fulfilled, responses to questions 30-35 (within the CD module of the Voice-DISC) are used to determine impairment. As examples they include the following:

**Question 30**
You said that in the last year you (NAME SYMPTOMS). Now I’d like you to think back to the time in the last year when doing these things caused the most problems.

Now I’d like to ask you about problems this might have caused you in the last four weeks. In the last four weeks, have your (NAME CARETAKERS) seemed annoyed or upset with you because you do these things?

How often do your (CARETAKERS) seem annoyed or upset with you because you do things like this?

Would you say: a lot of the time, some of the time or hardly ever?

**Question 34**
In the last four weeks, has (NAME SYMPTOMS) made it difficult for you to do your schoolwork or caused problems with your grades?

*If yes:*
How bad were the problems you’ve had with your schoolwork because you did these things?
Would you say very bad, bad, or not too bad?

BOX 6 - DIAGNOSTIC ALGORITHMS FOR CONDUCT DISORDER DIAGNOSIS

The algorithms create 3 variables which reflect increasing levels (A, B or C) of impairment or distress as indicated by responses to questions 30-35.

**Variable ycdima** = ‘one intermediate rating of impairment or distress’ is defined by one or more mild or intermediate response (e.g. some of the time/hardly ever; bad/not too bad) to Qs.30-35.

**Variable ycdimb** = ‘two intermediate ratings of impairment or distress’ is defined by two or more mild or intermediate responses to Qs.30-35.

**Variable ycdimc** = ‘one severe rating of impairment or distress’ is defined by one or more severe responses (e.g. a lot of the time; very bad) to Qs.30-35.

These are then combined with the results of the basic diagnostic algorithms such that if ycdm ('past 6 months: diagnosis for conduct disorder') is satisfied, plus an impairment variable, a diagnosis at that level of impairment is produced.
5. The Voice Disc in the 11 to 16 Study

As often happens in research, the design and methods used in this study were a compromise between theoretical and pragmatic issues, together with an element of serendipity. In this section we describe the background to the use of the Voice-DISC in 11 to 16, followed by the procedures involved and its performance in the field.

5.1: Background

The 11 to 16 study (West & Sweeting, 1996) is a longitudinal, school-based, study of a cohort of 2,500 young people in the Central Clydeside Conurbation, an area centred around Glasgow city. They were first surveyed aged 11 in their final year of primary school (1994/5) and subsequently followed up at age 13 in Year 2 of secondary school (1996) and most recently aged 15/16 in their final year of statutory education (January-March 1999).

The study has 6 main aims, these being to document:

- the size and nature of health problems over these teenage years;
- the social class patterning, and changes in pattern, of health between age 11 and 15;
- the gender patterning of health, and changes in pattern, between these ages;
- the development of health behaviours between age 11 and 15;
- the impact of perceptions of the future on current health and lifestyles, and
- school effects on health (and health behaviours).

In addition, the completion of the most recent phase of the study facilitates a comparison between the 15 year olds of 1999 with an earlier cohort of 15 year olds (the Twenty-07 study) (Macintyre, Annandale & Ecob et al., 1989), first surveyed 12 years earlier in 1987 in exactly the same geographical area.

11 to 16 has collected a wide range of information both from cohort members themselves, via self-complete questionnaires in the school setting at each phase, and in addition at age 11 via questionnaires completed by parents and class teachers. The response rate throughout has been good, with 93% of target children (and 86% of their parents) completing questionnaires at age 11 (Sweeting & West, 1998), 85% at age 13 (Speed, West & Sweeting, 1998), and 79% at age 15 (Young, Sweeting & West, 2000).

Throughout the course of the study, the issue of mental health has been a key consideration with various instruments including Kandel & Davies’ (1982) 6 item Depression Inventory, a shortened version of the Spielberger State Anxiety scale (1970), a self-esteem scale based on that of Rosenberg (1965), and symptom checklists being included. At age 11, class teachers and parents completed a brief (9 and 6 items respectively) behavioural checklist developed by Kysel et al 1983) for the Inner London Education Authority (ILEA) from scales used in the Isle of Wight study (Rutter, Tizard & Whitmore, 1970). At age 15, principally for comparative purposes with the earlier Twenty-07 study, the 12 item version of the GHQ was included, which at younger ages is not considered reliable. All of these instruments, however, as already indicated are either very general measures (symptom checklists) or, like the GHQ, are screening instruments. The addition of the Voice-DISC, therefore, complements the aims of 11 to 16 but considerably extends the suite of mental health measures available.
As outlined earlier, the choice of method and instrument in psychiatric epidemiology is typically guided as much by practical as theoretical considerations. In the case of 11 to 16, aside from the problem of limited resources (which ruled out methods requiring clinical input), a major consideration involved finding a method that could be bolted onto an existing study with a school-based design. Thus, questions about the location of interviews and how the (new) project could be ‘sold’ to parents and schools, as well as respondents themselves, together with the possible negative consequences of being interviewed, had to be addressed. With the discovery of a computerised voice version of the DISC (initiated via contact with the Dunedin Multidisciplinary Health & Development Study), which was being developed by the NIMH Group at Columbia University, New York, and which happened to coincide with plans for Phase III of 11 to 16, these tasks were made immeasurably easier. In particular, and in contrast to the face-to-face method, the Voice-DISC offered the possibility of administering the interview to individuals in groups, thereby substantially reducing costs, and in settings like the school, which exactly fitted our requirements. Accordingly, following contact with the NIMH Group, a collaboration was established in which permission to use the Voice-DISC (without cost) was granted in exchange for access to the final dataset. The collaboration has proceeded successfully in spite of discontinuities in the timetables of the respective groups which stem from the fact that the requirements of 11 to 16 (to be in the field by January 1999) were always ahead of developments in the Voice-DISC by the Columbia Group. For example, at the first meeting (in July 98), the available version of the computerised DISC did not have a Voice; for the pilot (in November 98) a voice version arrived only the day before and was missing for certain modules; for the main study, a Voice was available but lacking customisation for a Scottish context (e.g. the word ‘grade’ is used rather than ‘school-year’). Similarly, it was not possible to customise the interview to take account of local patterns of drug use. At the time of writing, final algorithms for diagnostic impairment criteria are still awaited.

Apart from field tests in New York, 11 to 16 is the first study to use this method to identify psychiatric disorder among young people in the community. While the paper and pencil version of the DISC, administered by lay interviewers, has been subject to tests of reliability and validity (Shaffer et al., 1996; 2000), there is as yet no equivalent information on the psychometric properties of the Voice-DISC, and in particular no validation by reference both to interviews conducted by psychiatrists or lay interviewers. However, there is a strong body of opinion that it is not only a valid instrument, but the way forward in obtaining information on the many sensitive topics enquired of respondents in the interview (Shaffer et al., 2000).

5.2: In the field

In the course of administering Phase III fieldwork, a total of 1956 Voice-DISC interviews were conducted, of which 1860 involved 11 to 16 sample members. The discrepancy arises because at Phase I of the study a number of additional respondents were surveyed at the request of teachers. These ‘extras’ have continued to take part in subsequent phases, hence the 96 extra Voice-DISC interviews. The sections on the main study which follow, including information on costs (5.2a), timings (5.5d) and intervention (5.5f) refer to all 1956 respondents who completed a Voice-DISC interview.
5.2a: Equipment, personnel and costs
Although the Voice-DISC, as any self-administered computerised version of an interview, offers significant savings over a face-to-face interview, there are important costs to consider. In our case, these fell into three major categories, a fourth, the Voice-DISC software, being provided free by our collaborators at Columbia (a saving in the license fee of £10,000):

- **laptop computers** - the Voice-DISC was administered via individual laptop computers with headphones, 40 of which were purchased at a cost of £1,200 each (total £48,000). Although these costs are not attributable solely to the Voice-DISC project (the laptops are available as a Unit resource for other studies), some part of the total should be costed to the project.

- **computer support staff** - in order to test the hardware and software, to set-up in schools, and respond to any problems experienced with laptops in the school setting, 2 graduates with computer expertise were recruited to the team for a period of 3 months (cost £8,500).

- **mental health trained nurses** - fieldwork for 11 to 16 has from the start been conducted by teams comprising a researcher (PW or HS) plus nurses whose principal job has been to take physical measures. With the addition of the Voice-DISC at Phase III, a second team of nurses with mental health training was required whose principal job was to respond to individuals whom the interview identified as having a potentially serious problem (see sections 5.2b and 5.5f). To do this, 7 nurses were employed for the duration of the fieldwork (cost £7,500).

The maximum total (theoretical) cost of the project, including 100% costs for laptops together with a £10,000 software license fee, amounted to £74,000, or, given that the interview was completed by 1956 young people, £38 per respondent. The real costs, excluding the software license fee but including a 25% contribution towards the cost of the laptops, was £28,000, or £14 per respondent. This compares with an estimated cost of £44 per respondent for lay interviewers completing the paper and pencil version, including commercial data entry costs.

5.2b: Ethics
In addition to usual ethical considerations, the Voice-DISC presented a new set of problems relating to both consent and intervention if and when a serious problem was identified.

- **Consent** - The high response rates achieved in 11 to 16 are principally attributable to the fact that the consent procedures used throughout have been parental opt-out rather than opt-in. The introduction of the Voice-DISC challenged this position since the (Glasgow) University Ethics Committee was initially unprepared to sanction it, principally because the procedure's emphasis on parental consent (obligatory from the school's point of view) ignored the rights of children. Following negotiation, a compromise solution was reached which involved a two-stage consent process; the first addressed to parents who received the usual opt-out consent form via a letter explaining Phase III of the study, the second involving an opt-in for Voice-DISC by 15 year-olds themselves, a procedure administered in school at the first (questionnaire) session of Phase III, thus avoiding withdrawal prior to that time.

- **Intervention** – In contrast to the general position adopted in 11 to 16 (non-intervention except when sexual abuse revealed), obtaining information about potential self-harm imposes a new set of responsibilities towards respondents. After
considerable debate about the criteria for intervention, how individuals meeting the criteria would be identified, and what procedures should be adopted for treatment or referral, we agreed (with clinical colleagues): (i) to intervene only in the case of identification of recent suicidal ideation (within the last 4 weeks) or a lifetime suicide attempt; (ii) the computer could be programmed to alert us to individuals with such a history; (iii) this would be checked at the end of the interview, in the classroom situation, by one of the nurses on the team; (iv) the nurse would assess the risk of self-harm and recommend either no action or referral (this procedure is further detailed in Sections 5.5d-f). All Adolescent Psychiatric Services in the districts serving the study area were alerted to the possibility of referrals arising in the course of the survey.

5.3: Permissions and Presentation
The incorporation of the Voice-DISC into 11 to 16 necessitated a new approach to schools and parents seeking permission for Phase III of the study.

- For schools, this involved an initial letter (Appendix C) to schools stating the case for an additional mental health component (presented as ‘emotional wellbeing’) and asking for support for this specific part of the study. Once secured, this was then followed by a second letter (Appendix D) outlining administrative procedures together with a general 11 to 16 information sheet (Appendix E) and an information sheet for teachers explaining the Voice-DISC project (Appendix F).

- For parents, this involved a letter that made reference to the additional ‘emotional wellbeing’ component, but sought permission (via opt-out) for Phase III as a whole (Appendix G). The letter acknowledged the possibility of intervention by indicating that there were trained people on the team to whom young people could talk, and that ‘in the unlikely event of discovering a serious problem’ parents would be informed. An information sheet (Appendix H) and consent form (Appendix I) were also enclosed.

Of 43 schools in the study (including 4 added following closures of other schools) only one refused to take part in the Voice-DISC project, stating explicitly that this was because of the sensitive nature of the topic. To our knowledge, among the very few parents who withheld permission for Phase III of 11 to 16, none did so specifically because of Voice-DISC.

Finally, at the classroom-based questionnaire sessions (by now familiar to 11 to 16 participants), the Voice-DISC interview was described in general terms (as about feelings or emotions and conducted via individual interactive computer-based interviews). It was explained that since this was a new component of the study, and because they were now old enough to decide for themselves, we were seeking their own permission to participate, in addition to that provided by their parents. Respondents were given an information sheet about the study, which also contained a list of help-line numbers (Appendix J), and completed an opt-in consent form (Appendix K).

5.4: The Pilot - testing and timing
A pilot of the Voice-DISC was conducted on a group of 15 year-olds in their fourth year (S4) in one secondary school associated with a primary school that had been part of the pilot for Phase I of 11 to 16. While teachers were aware this was a pilot exercise, pupils and parents were not. It involved 18 pupils whose parents were approached via a letter
similar to that used for the main study (Appendix L). No young person was withdrawn from the pilot study.

These pupils completed the full Voice-DISC, apart from the Schizophrenia and Whole-Life modules, on laptops placed on desks in the school library. Since the Voice-DISC does not ask for names, and it is our practice never to link names with personal data, each individual was linked to a numbered laptop, one of the researchers recording this once the session was underway. With a team of 6 (three researchers, a psychiatrist, computer manager and a helper), no problems were identified in setting up and dismantling the equipment. An introduction to the session made reference to the novel nature of the task (a ‘world first’), explained that they would hear an American voice (some US terms needing ‘translating’), and how to start the interview. Once started, with headphones on, the pupils were observed to be focussed and apparently interested. This perception was confirmed by pupils in conversation with team members after completion of the interview; most had found it interesting and several commented that it had been an opportunity they didn’t normally get to express feelings and disclose personal matters.

As shown in Table 3, on average the interview lasted 63 minutes though in one case the interview had to be suspended at the CD module after nearly 90 minutes. (The table also shows that owing to a programming error one respondent completed both the Schizophrenia and Whole Life modules). The timings for the modules finally selected for the main study (bold typescript) are also shown, the average time for these being 50 minutes.

Table 3: Timings for the pilot study (minutes and seconds)

<table>
<thead>
<tr>
<th>Section</th>
<th>Mean</th>
<th>Min-Max</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>12:08</td>
<td>7:32 – 18:46</td>
<td>18</td>
</tr>
<tr>
<td>Social phobia</td>
<td>2:48</td>
<td>0:35 – 8:09</td>
<td>18</td>
</tr>
<tr>
<td>Separation anxiety disorder</td>
<td>2:32</td>
<td>1:42 – 6:02</td>
<td>18</td>
</tr>
<tr>
<td>Specific phobia</td>
<td>1:47</td>
<td>0:28 – 5:09</td>
<td>18</td>
</tr>
<tr>
<td>Panic</td>
<td>1:15</td>
<td>0:28 – 8:31</td>
<td>18</td>
</tr>
<tr>
<td>Agoraphobia</td>
<td>0:31</td>
<td>0:13 – 2:30</td>
<td>18</td>
</tr>
<tr>
<td>Generalised anxiety disorder</td>
<td>2:04</td>
<td>1:17 – 3:27</td>
<td>18</td>
</tr>
<tr>
<td>Autism</td>
<td>0:17</td>
<td>0:09 – 1:28</td>
<td>18</td>
</tr>
<tr>
<td>Obsessive compulsive disorder</td>
<td>2:47</td>
<td>1:25 – 7:03</td>
<td>18</td>
</tr>
<tr>
<td>Post traumatic stress disorder</td>
<td>2:17</td>
<td>0:44 – 5:46</td>
<td>18</td>
</tr>
<tr>
<td>Eating disorders</td>
<td>3:00</td>
<td>1:12 – 5:33</td>
<td>18</td>
</tr>
<tr>
<td>Elimination</td>
<td>0:43</td>
<td>0:25 – 1:49</td>
<td>18</td>
</tr>
<tr>
<td>Tics</td>
<td>1:31</td>
<td>0:37 – 3:54</td>
<td>18</td>
</tr>
<tr>
<td>Pica</td>
<td>0:33</td>
<td>0:18 – 1:30</td>
<td>18</td>
</tr>
<tr>
<td>Trichotillomania</td>
<td>0:16</td>
<td>0:04 – 0:32</td>
<td>18</td>
</tr>
<tr>
<td>Major depressive disorder</td>
<td>3:55</td>
<td>2:22 – 11:07</td>
<td>18</td>
</tr>
<tr>
<td>Mania</td>
<td>3:44</td>
<td>1:40 – 13:33</td>
<td>18</td>
</tr>
<tr>
<td>Schizophrenia</td>
<td>3:53</td>
<td>3:53 – 3:53</td>
<td>1</td>
</tr>
<tr>
<td>Attention deficit/hyperactivity</td>
<td>5:11</td>
<td>3:03 – 12:15</td>
<td>18</td>
</tr>
<tr>
<td>Oppositional defiant disorder</td>
<td>2:35</td>
<td>1:27 – 5:27</td>
<td>18</td>
</tr>
<tr>
<td>Conduct disorder</td>
<td>4:55</td>
<td>2:29 – 10:05</td>
<td>17</td>
</tr>
<tr>
<td>Alcohol</td>
<td>3:13</td>
<td>0:25 – 8:03</td>
<td>17</td>
</tr>
<tr>
<td>Tobacco</td>
<td>0:59</td>
<td>0:06 – 4:12</td>
<td>17</td>
</tr>
<tr>
<td>Marijuana</td>
<td>1:16</td>
<td>0:03 – 5:56</td>
<td>17</td>
</tr>
<tr>
<td>Other substance</td>
<td>2:55</td>
<td>0:14 – 10:23</td>
<td>17</td>
</tr>
<tr>
<td>Whole life</td>
<td>6:13</td>
<td>6:13 – 6:13</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total Time</strong></td>
<td>63:03</td>
<td>47:51 – 87:40</td>
<td>18</td>
</tr>
</tbody>
</table>
Despite the overall positive evaluation of the pilot, 3 lessons were learned.

• First, the time taken for the whole Present State version of Voice-DISC was too long to fit into an average 55 minutes of a school period. This consideration, along with the scientific reasons outlined earlier (public health significance and prevalence), affected the decision as to which modules were finally included in the main study.

• Second, the (inefficient) method of linking individuals to laptops was changed from a manual mechanism to one in which the school details and names of individual pupils were loaded onto each laptop. Not only did this obviate the need for a team member to have to ask each individual’s name, and link it to a numbered laptop in order to attach their study ID number to the data, but it had the distinct advantage of personalising the interview. The method allowed an individual to identify his/her name on a list of all 11 to 16 study members within his/her school displayed on the laptop screen before initiating the interview. Their ID (but not name) was then automatically linked to their Voice-DISC data.

• Third, respondents are required to enter their height and weight for the Eating Disorders section. That they often did not know this (or did not know it in the units required – centimetres or feet & inches and kilos or pounds) was evident when several of them signalled for help on this matter, sometimes being aided by team members who estimated it (usually by getting them to stand up and best guessing). In the main study, this problem was overcome because height and weight were measured in the questionnaire component of the fieldwork. It did, however, lead the team to prepare individual height and weight feedback and conversion charts to be given to respondents after they were measured at the questionnaire session (Appendix M), together with a height and weight conversion chart which was placed at the front of the room in which the Voice-DISC session was held.

5.5: Main Fieldwork
Phase III fieldwork for 11 to 16 was scheduled for January-March, 1999, only a few months prior to Standard Grade examinations for S4 pupils in May. In order to minimise disruption to the school timetable, and ameliorate any remaining apprehension about Voice-DISC, fieldwork for the main study had to be planned and conducted with maximum efficiency. Our preferred plan of administration was to schedule the Voice-DISC as the second session with pupils, about a week or so after the first questionnaire session, which was the point at which we could outline the project and obtain consent from the young people involved. In the event, following an initial phone-call to contact-teachers, during which all 11 to 16 procedures were discussed, this plan was adopted in all but 3 schools, these schools preferring to complete all fieldwork in a single day. Once agreed, administration of fieldwork proceeded as follows.

5.5a: Detailed plans for the session
In addition to any further explanation about the Voice-DISC interview, final discussions with contact-teachers principally involved decisions about the number of groups of pupils (determined by the finite number of laptop computers available), and hence the number of sessions required to survey all potential participants, together with the identification of a suitable location for the administration of the interview. Our preference, achieved in most of the schools, was for a hall, dining area or classroom with desks rather than a lecture theatre, in order to maximise privacy, access to pupils and ease of cabling the laptops. Normally, the researchers were able to check the room in advance for possible problems, but when this was not achieved they would at least ascertain whether or not
there was adequate electricity supply to power the laptops. The availability of another room that could be used by nurses to talk to any pupils identified with a ‘serious problem’ was also enquired about although in practice this was usually arranged on the day.

5.5b: Assembling and briefing teams
Teams were assembled on the basis that there should be one mental health trained nurse for every eight pupils, and with a few exceptions this ratio was obtained. The two computer support staff were briefed about whether or not the laptops could be powered by mains (the preferred option) or would need to run on battery (the latter necessitating subsequent changing or re-charging of batteries). A time was set for assembly, departure and arrival at the school that ideally allowed a minimum time of 20 minutes to set-up.

5.5c: Getting to schools and setting-up
11 to 16 schools are located up to 20 miles from the Unit. With many sessions scheduled for a 9.00 am start, this necessitated teams meeting as early as 7.30 to be sure of having adequate time to get to a school and set up.

Once at the school, all team members (computer support staff, nurses and researchers) were involved in unloading equipment and setting up in the agreed room or rooms (see Appendix N for the ‘Protocol for running the Voice-DISC interview’, which includes the computer set-up, procedures for terminating and checking the interview, and solutions to the most likely problems). In a typical situation, the computer staff assessed how laptops were to be powered (assuming power was available) and set up the cabling, taking particular care to ensure cables were taped to the floor using hazard warning tape.

Other team members connected headphones, loaded the Voice-DISC programme and ‘the school’ (names and ID numbers of 11 to 16 members plus some ‘spare slots’ for use when pupils unexpectedly appeared, having, for example, transferred from another school also involved in the study). The set-up was complete when all laptop screens displayed the names of all 11 to 16 pupils in that school. The total time taken was normally about 20 minutes, and in almost all cases this was achieved before pupils entered the room.
5.5d: Administering the session

Typically, pupils arrived for the Voice-DISC session singly or in small groups, generally allowing the researcher to take a register as they came in, thereby preventing interlopers from gaining access (in practice a handful succeeded, one of whom was later discovered to have completed the interview using the name of another pupil, the remainder insisting they were study members and using the ‘spare’ name slots correctly). As they entered the room, they were asked to sit down at any desk and not touch the computer, an instruction sheet to that effect having been placed across each keyboard (this sheet also contained practical tips for completing the interview - see Appendix O). Very few did touch the laptops, and if necessary were discouraged from doing so by one of the team monitoring the situation.

When all were assembled, the session typically began with the researcher introducing it as follows:

- a welcome back to the second part of this year’s 11 to 16 study (a ‘world first’);
- an outline of the reason for the interview and the kind of questions involved (feelings and emotions);
- a briefing that the Voice they would hear was American, and that because it had been developed in the States, there were several terms that didn’t apply to the West of Scotland, for example the word ‘grade’ meaning school year and the use of dollars;
- a reference to the fact that although 11 to 16 has a strict confidentiality rule, they would understand that in the event of us discovering a ‘serious problem’, we would ask them to talk to one of the nurses who, in any case, would be talking to some of them afterwards to find out how it had gone, and who in addition would be happy to talk to anyone requesting information or help;
- an indication that if they had a problem with the laptop they should let the team know so that it could be promptly sorted out.

Following this introduction, all respondents initiated the interview together, first finding their name on the list on the laptop, highlighting it, putting their headphones on and starting the interview by pressing a particular key. Thereafter, the pupils interacted with the Voice, the main job of the team being to fix any loss of sound and respond to any problems. In the main, these were very few but still included queries about height and weight, most having forgotten to bring the feedback sheet given to them during the questionnaire session. In addition, several pupils complained that ‘she’ (the interviewer) implied they had a drinking problem they didn’t think they had. These complaints were deflected by indicating that the word ‘problem’ (used in the last section of the Alcohol module) referred to the different age at which young people could legally consume alcohol in the US.
As in the pilot, the overall impression was of sustained concentration and interest, with very little evidence of pupils misbehaving or chatting to each other. One advantage over a self-complete or paper interview is that respondents did not know exactly how long it would take, nor what proportion of the interview they had completed at any point in time, thus reducing motivational problems. However, one disadvantage of administering the Voice-DISC in groups is that respondents, seeing other classmates complete the interview, can become aware that their own is taking an (unreasonable) length of time. These pupils, who were generally those whose problems were such as to lead to extensive questioning in one or more modules, together with a few who were just slow, required encouragement and feedback to complete the interview.

Table 4 shows the numbers of respondents completing each of the sections in Voice-DISC. Apart from one respondent who left the session after only one section, all the rest completed every one up to MDD when four others failed to complete. Thereafter, the numbers not completing increased but it was only at and beyond ODD that failure to complete rose above 1% of the sample. Of 1956 respondents, 1891 (97%) returned fully completed interviews. The majority of the 65 with incomplete data were cases where interviews were terminated at the request of teachers due to time-tabling problems.

Table 4: Numbers completing each Voice-DISC section

<table>
<thead>
<tr>
<th>Section</th>
<th>Completed</th>
<th>Not completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>1956</td>
<td>0</td>
</tr>
<tr>
<td>Social phobia</td>
<td>1956</td>
<td>0</td>
</tr>
<tr>
<td>Panic</td>
<td>1955</td>
<td>1</td>
</tr>
<tr>
<td>Generalised anxiety disorder</td>
<td>1955</td>
<td>1</td>
</tr>
<tr>
<td>Obsessive compulsive disorder</td>
<td>1955</td>
<td>1</td>
</tr>
<tr>
<td>Eating disorders</td>
<td>1955</td>
<td>1</td>
</tr>
<tr>
<td>Major depressive disorder</td>
<td>1951</td>
<td>5</td>
</tr>
<tr>
<td>Attention deficit/hyperactivity</td>
<td>1942</td>
<td>14</td>
</tr>
<tr>
<td>Oppositional defiant disorder</td>
<td>1934</td>
<td>22</td>
</tr>
<tr>
<td>Conduct disorder</td>
<td>1918</td>
<td>38</td>
</tr>
<tr>
<td>Alcohol</td>
<td>1905</td>
<td>51</td>
</tr>
<tr>
<td>Tobacco</td>
<td>1897</td>
<td>59</td>
</tr>
<tr>
<td>Marijuana</td>
<td>1894</td>
<td>62</td>
</tr>
<tr>
<td>Other substance</td>
<td>1891</td>
<td>65</td>
</tr>
</tbody>
</table>

Table 5 shows the average length of time for the interview together with timings for each section. Also shown are standard deviations, median, minimum and maximum times, together with the times taken by the shortest and longest 5%. The table shows that the average interview took 45 minutes, but that there was (as expected) considerable variation in times taken, with a minimum of 13 minutes and maximum of 105 minutes recorded. By far the largest component of the interview is the introduction (about a
quarter of the total interview length) with the disruptive behaviour module (ADHD, ODD and CD) also taking a similar amount of time in total. While the timings for some of the individual sections (mainly mood disorders) were slightly longer than those recorded in the pilot (see Table 3), others (notably alcohol and substance use) were slightly shorter, with the consequence that the total interview time was shorter than that predicted in the pilot. Overall, the decision to operate with a restricted set of sections in the Voice-DISC project reduced the average time from 63 minutes to 45 minutes, well within the average school period.

Table 5: Timings for the main study (minutes and seconds)

<table>
<thead>
<tr>
<th>SECTION</th>
<th>Mean</th>
<th>St: Dev:</th>
<th>Median</th>
<th>Min-Max</th>
<th>5%</th>
<th>95%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social phobia</td>
<td>2:34</td>
<td>2:06</td>
<td>1:40</td>
<td>0:01-19:46</td>
<td>0:31</td>
<td>6:08</td>
</tr>
<tr>
<td>Panic</td>
<td>1:15</td>
<td>1:25</td>
<td>0:52</td>
<td>0:02-17:37</td>
<td>0:27</td>
<td>3:44</td>
</tr>
<tr>
<td>Generalised anxiety disorder</td>
<td>2:39</td>
<td>1:45</td>
<td>2:06</td>
<td>0:38-20:16</td>
<td>1:08</td>
<td>6:12</td>
</tr>
<tr>
<td>Obsessive compulsive disorder</td>
<td>3:07</td>
<td>2:10</td>
<td>2:13</td>
<td>0:08-16:38</td>
<td>1:17</td>
<td>7:44</td>
</tr>
<tr>
<td>Eating disorders</td>
<td>2:40</td>
<td>1:36</td>
<td>2:15</td>
<td>0:05-18:53</td>
<td>1:06</td>
<td>5:46</td>
</tr>
<tr>
<td>Major depressive disorder</td>
<td>3:51</td>
<td>1:54</td>
<td>3:22</td>
<td>0:11-18:17</td>
<td>2:03</td>
<td>7:33</td>
</tr>
<tr>
<td>Oppositional defiant disorder</td>
<td>2:53</td>
<td>1:59</td>
<td>2:09</td>
<td>0:04-19:48</td>
<td>0:58</td>
<td>6:38</td>
</tr>
<tr>
<td>Conduct disorder</td>
<td>4:13</td>
<td>2:20</td>
<td>3:31</td>
<td>0:08-19:01</td>
<td>1:47</td>
<td>8:54</td>
</tr>
<tr>
<td>Alcohol</td>
<td>2:53</td>
<td>2:28</td>
<td>2:48</td>
<td>0:00-24:15</td>
<td>0:10</td>
<td>7:03</td>
</tr>
<tr>
<td>Tobacco</td>
<td>1:09</td>
<td>1:25</td>
<td>0:32</td>
<td>0:00-12:40</td>
<td>0:06</td>
<td>4:00</td>
</tr>
<tr>
<td>Marijuana</td>
<td>0:43</td>
<td>1:19</td>
<td>0:16</td>
<td>0:00-20:56</td>
<td>0:03</td>
<td>3:57</td>
</tr>
<tr>
<td>Other substance</td>
<td>1:15</td>
<td>1:08</td>
<td>0:57</td>
<td>0:03-12:37</td>
<td>0:19</td>
<td>3:07</td>
</tr>
</tbody>
</table>

Inspection of Table 5 shows that the minimum times for a number of sections were very short, in some cases (N = 8 for alcohol, 17 for tobacco and 19 for marijuana) taking less than a second (rounded down to 0 seconds). Such extremely fast times give rise to the possibility that these data are invalid. However, since for those with no experience of these substances, these sections really are short (a minimum of 2 questions), and when read rather than listened to, the questions can be answered very quickly, there is no reason to suppose that in the majority of cases this represents invalid data. On the other hand, since very short times can be achieved by tapping the ‘2’ (‘no’) key, or else holding it down (thus allowing the repeat function to take over), it is possible that is how some respondents achieved short times, although both the ‘repeat delay’ and ‘repeat rate’ were set to their slowest values in anticipation of this. Further exploration of the timing data has shown very few with brief timings on more than one section, although in a handful of cases respondents may have rushed through the final modules. For example, in one school 2 boys completed the ODD section in 4 and 7 seconds respectively, while in another, a girl who had arrived late recorded a total time of 55 minutes which included a number of lengthy sections at the start of the interview (7 minutes for Social Phobia, 11 for Panic, 8 for Generalised Anxiety and 10 for MDD) together with some very short times at the end (5, 8, 0, 0, 1 and 3 seconds respectively on the final 6 sections).
5.5e: Terminating the session
When respondents signalled they had finished the interview, it was checked by a team member. This involved a series of procedures which took a minute or two, and could generally be completed while at the same time asking the respondent for their opinions on the interview.

The procedures were:

- a double-check of their name against that highlighted on the screen (this corresponding to the identity number with which the interview was matched);
- closing the interview program;
- saving their interview data on a floppy disc inserted into the laptop (for subsequent transfer to the PC network later that day);
- finally, running an automated ‘check interview’ program in order to see if intervention was required. If suicidal ideation within the last 4 weeks or a lifetime suicide attempt were identified, the screen showed a ‘check interview’ prompt. If this happened with one of the team members who was not mental health trained, (s)he would immediately involve a nurse, thus initiating the intervention. Alternatively, the screen would show an ‘interview OK’ prompt, at which point the respondent would be thanked and told to go.

5.5f: Intervention
Ten percent (187) of respondents triggered the ‘check interview’ prompt, having indicated either that they had thought about suicide in the previous month or made an attempt sometime in their lives. In each of these instances, in accordance with our agreed intervention policy, nurses followed a set procedure:

- having asked permission to check some responses, they ran a ‘display interview details’ program which showed the answers which had been given (in a shortened and cryptic format) to the relevant suicide items in the interview;
- the nurses then asked the respondent to come and have a ‘chat’ (unfortunately an adjacent room was not always available for one-to-one consultation so such ‘chats’ sometimes took place in the classroom itself);
- using their mental health training together with knowledge of the responses made in respect of suicide, the nurses assessed the respondent and if necessary made a referral.
Table 6  ‘Outcomes’ of Voice-DISC mental health nurse interventions (compiled from nurse record forms)

<table>
<thead>
<tr>
<th>Outcome</th>
<th>N</th>
<th>valid %</th>
</tr>
</thead>
<tbody>
<tr>
<td>referred to professional</td>
<td>4</td>
<td>2.6</td>
</tr>
<tr>
<td>referred to school guidance</td>
<td>6</td>
<td>3.9</td>
</tr>
<tr>
<td>previously / currently in contact with professional service #</td>
<td>19</td>
<td>12.3</td>
</tr>
<tr>
<td>discussed / advised - no further action taken</td>
<td>100</td>
<td>64.9</td>
</tr>
<tr>
<td>refused to discuss</td>
<td>9</td>
<td>5.8</td>
</tr>
<tr>
<td>stated error made in DISC completion</td>
<td>16</td>
<td>10.4</td>
</tr>
<tr>
<td>missing</td>
<td>33</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>187</td>
<td></td>
</tr>
</tbody>
</table>

# psychiatry, psychology, social work, A & E.

The nurses were instructed to keep records of each contact (Appendix P). In two-thirds of cases (see Table 6) respondents were given brief counselling, including discussion of alternative courses of action and sources of help should they be required in the future. A further 10% insisted they had simply given a mistaken response in the interview while 5% refused to discuss their responses with the nurse; in both circumstances no further action could be taken. Although the remaining 19% had more serious problems, the majority had current or previous contact with professionals including psychiatric, psychological, social work and Accident and Emergency services. In only 10 (6.5%) cases did nurses make a referral, 6 to school guidance staff and 4 to a health professional. Thus, in practice, the great majority of those who ‘triggered’ were not assessed as a serious risk.
6. Conclusion

The Voice-DISC project aimed to provide information on the prevalence of most psychiatric disorders among a sample of 15 year olds attending mainstream education, thereby contributing to the growing body of literature on adolescent psychiatric epidemiology. The lack of an optimal design involving multiple informants is an acknowledged weakness, but the inclusion of a parental interview was simply beyond the scope of the project. In the light of evidence that children are better informants than parents in respect of mood disorders (McLellan & Scott, 2000) estimates of the prevalence of disorders like MDD should be relatively unaffected. However, given the prevailing consensus that parental (and teacher) informants are superior to children or adolescents in respect of externalising disorders (Costello, 1996; Meltzer et al., 2000), it is likely that the prevalence of disorders like CD or ODD will be under-estimated. This may, to some extent, be offset by the computerised method itself which is believed to facilitate greater disclosure of deviant behaviour than is achievable in traditional face-to-face interviews (Shaffer et al., 1996, 2000).

It will also be necessary to consider the implications of a design based on attendance at mainstream secondary schools for prevalence estimates. The 11 to 16 sample does not include long-term truants, nor were Voice-DISC absenteees followed up in a second session. Each of these will lead to some under-estimation of prevalence rates, particularly in respect of disorders like CD. It is also the case that the design excludes a number of children, estimated at 2-3%, who were, in consequence of educational, psychological or psychiatric problems, attending special rather than mainstream schools. Though numbers are small, this too will lead to an under-estimation of the prevalence of particularly severe disorders.

In addition to diagnostic data, the Voice-DISC interview provides information on a wide range of symptoms, allowing the identification of respondents with potentially significant problems that are nevertheless sub-threshold for diagnosis. In combination with other mental health measures, such as the GHQ-12, it will be possible to characterise the mental health of this sample of 15 year-olds in several different ways, and at several different levels. Together with information about psychiatric disorder, it will also allow us to address the question of the extent to which social correlates are disorder specific or general across disorders or other measures of mental health. Furthermore, the longitudinal nature of 11 to 16 extends the potential of these analyses considerably. Existing data, from the two earlier phases of the study, should facilitate an examination of the antecedents of disorder, and with the planned follow-up at age 18, which will permit analyses of outcomes, the potential is extended still further.

The Voice-DISC project has been a very rewarding learning experience. It involved an enormous amount of work, both in persuading schools to accommodate us and actually achieving the fieldwork (coupled with the standard 11 to 16 questionnaire sessions) over the course of one school term. We learned that (almost all) schools will welcome research teams, even on a sensitive issue like mental health; that the use of computers is attractive to both staff and pupils; that the majority of pupils take it very seriously indeed, and that it seems to encourage honest answers to sensitive questions. On the downside, and reflected in some of the very fast interview times recorded, there is some evidence that a few respondents were able to get through the interview too quickly by hitting the ‘no’ button too regularly, in a way that would be more difficult in a face-to-face interview. As indicated earlier, the reliability and validity of the Voice-DISC (in contrast to the DISC) has not yet been properly established, and it is exactly this sort of problem, associated with the self-administered computer method, that needs further investigation. There is also a question about the extent to which the lack of customisation to a local (Scottish) context might affect either motivation to complete or the accuracy of responses.
(though clear instructions were given to clarify US terms). However, we have no evidence to suggest this was an important factor.

The single most important advantage of using a computerised interview like Voice-DISC is the advantage of cost, a major consideration in any study. In 11 to 16 this was estimated at around a third the cost of a face-to face interview (administered by lay interviewers). In situations where it is possible to gather data in groups (such as the school), therefore, it is particularly attractive, an advantage however that does not necessarily extend outside that situation. In the planned follow-up at age 18, for example, which will be conducted in respondents’ homes, the projected cost advantage is much less. For Phase III of 11 to 16, involving 15 year-olds in school, it was not only the preferred method, but (given limited resources) the only method available.
References


Royal College of General Practitioners and National Adolescent and Student Health Unit. (1996), *The Health of Adolescents in Primary Care. How to Promote Adolescent Health in Your Practice*, London: RCGP.


West P. & Sweeting, H. (1996) *Background, Rationale and Design of the West of Scotland 11 to 16 Study*, MRC Medical Sociology Unit Working Paper No. 53, Glasgow: MRC Medical Sociology Unit.


Appendix A: ‘Essential Features’ of Diagnoses Included in 11 to 16 Voice-DISC Survey:

‘ESSENTIAL FEATURES’ OF DIAGNOSES INCLUDED IN 11 to 16 VOICE-DISC SURVEY: Reproduced from DSM-IV (American Psychiatric Association, 1994)

Diagnostic Criteria for Social Phobia
‘The essential feature of Social Phobia is a marked and persistent fear of social or performance situations in which embarrassment may occur. Exposure to the social or performance situation almost invariably provokes an immediate anxiety response. This response may take the form of a situationally bound or situationally predisposed panic attack. Although adolescents and adults with this disorder recognise that their fear is excessive or unreasonable, this may not be the case with children.’ (p.411)

Diagnostic Criteria for Panic Disorder
‘The essential feature of Panic Disorder is the presence of recurrent, unexpected Panic Attacks (‘a discrete period of intense fear or discomfort that is accompanied by at least 4 of 13 somatic [e.g. palpitations, pounding heart or accelerated heart rate; sweating; nausea or abdominal distress] or cognitive [e.g. fear of losing control or going crazy; fear of dying] symptoms’ p.394-5) followed by at least 1 month of persistent concern about having another Panic Attack, worry about the possible implications or consequences of the Panic Attacks, or a significant behavioural change related to the attacks.’ (p.397)

Diagnostic Criteria for Generalised Anxiety Disorder
‘The essential feature of Generalised Anxiety Disorder is excessive anxiety and worry (apprehensive expectation) occurring more days that not for a period of at least 6 months, about a number of events or activities. The individual finds it difficult to control the worry. The anxiety and worry are accompanied by at least three additional symptoms from a list that includes restlessness, being easily fatigued, difficulty concentrating, irritability, muscle tension, and disturbed sleep (only one additional symptom is required in children).’ (p.4343-4)

Diagnostic Criteria for Obsessive Compulsive Disorder
‘The essential features of Obsessive-Compulsive Disorder are recurrent obsessions or compulsions that are severe enough to be time consuming (i.e. they take more than 1 hour per day) or cause marked distress or significant impairment. At some point during the course of the disorder, the person has recognised that the obsessions or compulsions are excessive or unreasonable. If another Axis I disorder is present, the content of the obsessions or compulsions is not restricted to it. The disturbance is not due to the direct physiological effects of a substance … or a general medical condition.’ (p.417-8)

Diagnostic Criteria for Eating Disorders
‘The essential features of Anorexia Nervosa are that the individual refuses to maintain a minimally normal body weight, is intensely afraid of gaining weight, and exhibits a significant disturbance in the perception of the shape or size of his or her body. In addition, postmenarcheal females with this disorder are amenorrheic.’ (p.539).
‘The essential features of Bulimia Nervosa are binge eating and inappropriate compensatory methods to prevent weight gain. In addition, the self-evaluation of individuals with Bulimia Nervosa is excessively influenced by body shape and weight. To qualify for the diagnosis, the binge eating and the inappropriate compensatory behaviours must occur, on average, at least twice a week for 3 months.’ (p.454)

Diagnostic Criteria for Major Depressive Disorder
‘The essential feature of Major Depressive Disorder is a clinical course that is characterised by one or more Major Depressive Episodes without a history of Manic, Mixed, or Hypomanic Episodes.’ (p.339).
‘The essential feature of a Major Depressive Episode is a period of at least 2 weeks during which there is either depressed mood or the loss of interest or pleasure in nearly all activities. In children and adolescents, the mood may be irritable rather than sad. The individual must also experience at least four additional symptoms drawn from a list that includes changes in appetite or weight, sleep, and psychomotor activity; decreased energy; feelings of worthlessness or guilt; difficulty thinking, concentrating, or making decisions; or recurrent thoughts of death or suicidal ideation, plans, or attempts.’ (p.320)

**Diagnostic Criteria for Dysthymic Disorder**

‘The essential feature of Dysthymic Disorder is a chronically depressed mood that occurs for most of the day more days than not for at least 2 years. … In children, the mood may be irritable rather than depressed, and the required minimum duration is only 1 year. During periods of depressed mood, at least two of the following additional symptoms are present: poor appetite or overeating, insomnia or hypersomnia, low energy or fatigue, low self-esteem, poor concentration or difficulty making decisions, and feelings of hopelessness. The individual may note the prominent presence of low interest and self-criticism, often seeing themselves as uninteresting or incapable. Because these symptoms have become so much a part of the individual's day-to-day experience … they are often not reported unless directly asked about by the interviewer.’ (p.345)

**Diagnostic Criteria for Attention/Deficit/Hyperactivity Disorder**

‘The essential feature of Attention Deficit/Hyperactivity Disorder is a persistent pattern of inattention and/or hyperactivity-impulsivity that is more frequent and severe than is typically observed in individuals at a comparable level of development. Some hyperactive-impulsive or inattentive symptoms that cause impairment must have been present before age 7 years, although many individuals are diagnosed after the symptoms have been present for a number of years. Some impairment from the symptoms must be present in at least two settings … There must be clear evidence of interference with developmentally appropriate social, academic, or occupational functioning.’ (p.78)

**Diagnostic Criteria for Oppositional Defiant Disorder**

‘The essential feature of Oppositional Defiant Disorder is a recurrent pattern of negativistic, defiant, disobedient, and hostile behaviour toward authority figures that persists for at least 6 months and is characterised by the frequent occurrence of at least four of the following behaviours: losing temper, arguing with adults, actively defying or refusing to comply with the requests or rules of adults, deliberately doing things that will annoy other people, blaming others for his or her own mistakes or misbehaviour, being touchy or easily annoyed by others, being angry and resentful, or being spiteful or vindictive.’ (p.91).

**Diagnostic Criteria for Conduct Disorder**

‘The essential feature of Conduct Disorder is a repetitive and persistent pattern of behaviour in which the basic rights of others or major age-appropriate societal norms or rules are violated. These behaviours fall into four main groupings: aggressive conduct that causes or threatens physical harm to other people or animals, nonaggressive conduct that causes property loss or damage, deceitfulness or theft, and serious violations of rules.’ (p.85)

**Diagnostic Criteria for Substance (Alcohol, Tobacco, Marijuana & Other Substances) Abuse/Dependence**

‘The essential feature of Substance Abuse is a maladaptive pattern of substance use manifested by recurrent and significant adverse consequences related to the repeated use of substances. There may be repeated failure to fulfil major role obligations, repeated use in situations in which it is physically hazardous, multiple legal problems, and recurrent social and personal problems.’ (p.182).

‘The essential feature of Substance Dependence is a cluster of cognitive, behavioural, and physiological symptoms indicating that the individual continues use of the substance despite significant substance-related problems. There is a pattern of repeated self-administration that usually results in tolerance, withdrawal, and compulsive drug-taking behaviour.’ (p.176)
Appendix B: Structure within Sections Included in 11 to 16 Voice-DISC Survey

STRUCTURE WITHIN SECTIONS INCLUDED IN 11 TO 16 VOICE-DISC SURVEY:

All sections have a similar general structure which includes:

1. The presence of **symptoms** (within a specified time period);

2. **Severity** (via screening or subsidiaries) measured by frequency of symptoms and/or consequences of symptoms (including actions to avoid);

3. **Impairment** of activities (either restricting activities with family ‘caretakers’ or friends or impairing school-work or occupational work and/or causing negative reactions (annoyance/upset) of caretakers, teachers or boss, together with a rating of the severity of the reaction (e.g. very bad, bad, not too bad).

In addition, a question is asked about **age** started and whether symptoms **ever stopped and/or lasted for 2 months or more**.

Finally, a question is asked about whether or not the respondent has attended a **clinic or hospital** for the ‘problem’ in the last year and, if not, whether they have an appointment to see someone (optional details can be gathered here).

**SOCIAL PHOBIA**

Three layers:
1. Any 1 of 3 symptoms (nervous/uncomfortable with strangers; in a group, performing);
2. Either of 2 feelings about symptoms (make a fool of self; others might notice);
3. Any 2 of 6 items referring to severity or consequences (e.g. avoidance of situations) of symptoms.

Followed by a list of 8 possible symptoms (e.g. dizzy, difficulty breathing).

**PANIC DISORDER**

Three layers:
1. Any of 3 types of attacks (‘very afraid’; couldn’t breathe; palpitations) in the last year;
2. More than 1 attack and 1 or 2 symptoms (e.g. choking; fear of death) during attack – note that number of symptoms depends on type of attack;
3. Check that not due to medical problems (e.g. asthma) or only following substance use.

**GENERALISED ANXIETY DISORDER**

Three layers:
1. Any 1 of 5 severe worries (e.g. about having some sort of illness);
2. Any 1 of 7 symptoms associated with worrying (e.g. restless; easily tired), plus severe criterion (up to 6 months);
3. Physical symptoms (e.g. headaches; stomach aches) not due to physical illness.

**OBSESSIVE COMPULSIVE DISORDER**

Two layers:
1. Two or more severity indicators (e.g. almost every day; upset) in relation to any of 3 obsessions (dirt; offending people; repetitive behaviour) or any of 4 compulsions (washing; checking; counting; other) and excluding schizophrenia diagnosis (behaviour due to an external power);
2. Frequency tally of symptoms (at least an hour per day and thoughts on most days for as long as 2 weeks).
EATING DISORDERS

Anorexia - two layers:
1. One of 2 questions (anyone worried about you being too thin; feel about self because fat);
2. Severity (think about food almost all the time).

Bulimia – two layers:
1. Binge eating;
2. Severity (at least twice per week).

Both – followed by:
1. List of 6 behaviours (e.g. induced vomiting; lots of exercise) to lose weight or prevent weight gain;
2. Severity (at least 2 days per week for the last 3 months).

Note height and weight are available either as measured or self assessed in order to identify ‘underweight’ respondents which, in conjunction with other symptoms is used to make the diagnosis.

MAJOR DEPRESSIVE DISORDER

Two layers:
1. Three general items about depressed mood (sad or depressed; nothing much fun; grouchy or irritable) plus 16 items reflecting possible consequences of mood disturbance (e.g. loss of appetite or weight changes; sleep disturbance; loss of energy; lack of concentration) plus 2 items on suicidal ideation, serious thoughts and whole life suicide attempts;
2. Severity of symptoms (nearly every day for two or more weeks) or severe symptoms or suicidal ideation.

Note that diagnosis of MDD involves exclusion of depression following bereavement.

DYSTHYMIC DISORDER

This is an extension of MDD and is ‘a chronically depressed mood that occurs for most of the day more days than not for at least 2 years’. MDD trumps DD and only those not meeting the criteria for a major depressive disorder either in the last year or last 4 weeks are routed through, thus it is by definition less serious.

The structure is similar to MDD, with 2 layers:
1. Three general items about depressed mood ‘for as long as a year’;
2. Thirteen related symptoms (based on the MDD list but excluding suicidal ideation or attempts).

ATTENTION DEFICIT/HYPERACTIVITY DISORDER

Two sub-modules, inattention and hyperactivity, each with the same two layer structure:
1. Symptoms within time period (last year or last 6 months);
2. Severity (lasting 6 months or more).

The age of onset question is also important, as are 2 subsidiaries checking if symptoms occur at home or in school, because both diagnoses need some symptoms prior to age 7 and presence in more than one setting.

For inattention, a diagnosis is made if 2 main items (tried to avoid things requiring attention; disliked doing things requiring attention) plus 3 or more of 8 other items (e.g. careless mistakes; losing things) are present.

For hyperactivity, a diagnosis is made if 4 main items (climbing/running around; restlessness; interrupting people; butting in) plus 3 or more of 7 other items (e.g. talking more than others; not waiting your turn) are present.

OPPOSITIONAL DEFIENT DISORDER

Two layers:
1. Twelve symptoms (e.g. argued with caretakers; blamed someone else for mistakes)
2. Severity (at least once a week for 6 months or more).
Diagnosis is made if 2 of the 12 symptoms were checked (occurring at least weekly during period), to include 1 each of (a) doing things told not to / refused to do what told; (b) mad at people or things / angry because things unfair (weekly within last 6 months or for 6 months in last year); (c) done mean things to people on purpose / got even with others by doing things like telling lies (5 or more times in time period). Note that some items exclude behaviours with siblings.

**CONDUCT DISORDER**

Three layers:
1. Twenty-nine behaviours ever done, plus 5 reactions to bad behaviour ever (school expulsion/suspension; trouble with police; fired from job)
2. Any behaviours done (and reactions to) in the last year;
3. Severity (frequency) of behaviour in the last year.

Diagnosis is made either if 3 or more behaviours occurred in the last year (e.g. secretly stole money from family member; threatened someone), or when certain behaviours (e.g. staying out late; skipping school) were frequent (at least 5 times in past year) or severe (e.g. bullying someone other than siblings more than 5 times in past year) or otherwise serious (e.g. forced sex) and when one of these has occurred in the past 6 months.

**ALCOHOL**

Three layers:
1. Ever had a drink;
2. Six or more drinks in the past year;
3. *Abuse* in past year (9 items – e.g. missed school; physical fights while drinking – with severity – more than once), and *dependence* in past year (8 items relating to use of alcohol – e.g. trying to cut down – or consequences – e.g. many hangovers, 11 symptoms associated with not drinking – e.g. headaches, seizures – and 2 other relevant items – tranquillisers to avoid effects, memory loss).

For *abuse*, a diagnosis is made if either 2 or more of the 9 abuse items, or any indicating severity (more than once or continuing to drink in spite of problems) are present. For *dependence*, a diagnosis is made if either 2 or more of the 8 dependency items or 2 adverse effects of not drinking are present.

**TOBACCO**

Four layers:
1. Ever smoking (tobacco or snuff);
2. Past year;
3. Severity (at least once per week for a month or more (and additional questions about regularity and amount of smoking);
4. *Abuse* (although not identified as such, comprises 6 items – e.g. chain smoking), and *dependence* (also not identified as such comprises 4 items on associated consequences – e.g. being unable to participate in sports – and 10 symptoms associated with not smoking – e.g. irritability).

Diagnosis (which reflects the lack of consensus about the definitions) of *dependence* is related to 2 or more physical consequences or 3 or more withdrawal symptoms.

**MARIJUANA**

Three layers;
1. Ever used;
2. Six times in past year (or 6 or more times in any single year);
3. *Abuse* as for alcohol, and *dependence* (10 items relating to use of marijuana – e.g. smoked more than before – or consequences – e.g. sick when not used).

**OTHER SUBSTANCE MODULES**

(Includes stimulants/amphetamines; sedatives/tranquillisers; cocaine/crack; heroin; opiates; PCP; LSD; amyl nitrate; solvents; steroids; other drug.)

Three layers:
1. Ever used;
2. Past year;
3. *Abuse* and *dependence* as marijuana and alcohol.
Dear «Name»,

Although we are not due to re-visit your school for some time yet, we are writing to you now to update you on progress on the **11 to 16** study, with which you kindly helped in 1996/7, and to introduce an exciting new development for the S4 phase of the study due to take place next year. Please find enclosed one of our recent papers, together with a report in the ‘Herald’. We will continue to feed back our findings on a regular basis.

The proposed development involves a stronger focus on young people’s mental health which, though a component of our research from the beginning in 1994, is assuming more and more importance. It has recently been identified as one of the key health priorities by the Government and is a major focus of attention by the Scottish Office and health boards and authorities both north and south of the border. We know that this is an important educational issue and the emotional and behavioural problems of young people are a real concern of teachers on the ground. There is a great need for information, and with your help, we are uniquely placed to answer several key questions in this area.

One of these, very often mentioned by teachers, refers to the possible deterioration in young people’s mental health over the last decade or so. We will be able to answer this question by comparing the mental health of **11 to 16** participants when next surveyed at age 15 with another group of 15 year olds surveyed in the same geographical area 11 years ago in 1987. Another question concerns the mental health of young people in the crucial period between ages 15 and 18. This is a time when emotional and behavioural problems are known to peak but we know remarkably little about the nature of these problems and their causes. We are not only in a position to make a major contribution to knowledge in this area, but also to make this a world first by using a state of the art computer interview.

To do this, we need your help to readjust and expand the procedures for our next contact with **11 to 16** participants. Specifically:

- Because the 1987 study was conducted in the Spring, we would ideally like to arrange the **11 to 16** visit for the same time of year (Spring, 1999) in order to maximise the scientific comparison between the two studies. This involves no new procedures, with health and lifestyle questionnaires being administered by our teams to pupils in whole year groups as before, and taking one school period to complete.

- In addition, to obtain more detailed information on young people’s mental health, we would like to administer a standard interview which allows us to identify specific
problems. In collaboration with the National Institute for Mental Health at Columbia University, New York, we have available for the first time a computer administered interview which can achieve this. Respondents listen to questions on headphones and type their answers into a laptop computer, a procedure which both maximises privacy and has youth appeal. It takes about one hour to complete, and with help from our supervisors can be administered in groups of up to 20 pupils. We would like to do this a week or so after the questionnaire session and any suggestions as to how we could best fit this into the school timetable would be appreciated (PSD classes are one possibility).

- To investigate mental health problems between age 15 and 18, we obviously need to follow our 11 to 16 participants beyond school-leaving. To do that, we need to access study members via their home address which up to now has not been necessary. In addition to obtaining the usual parental permission for participation in the study, therefore, it will be necessary to seek their permission for the release of addresses.

We are aware that a request of this nature inevitably involves more work for schools, and that the S4 year is particularly difficult. We hope, however, that our request to arrange the next contact for the Spring term of 1999, and to see each 11 to 16 participant twice - the first to administer self-complete questionnaires, the second to administer the computer interview - will not impose too much of an additional burden. Informal contact with a number of head teachers in study schools suggests this will be possible, but if you foresee any major logistical or other problems with our proposal do please contact us now. Nearer the time, of course, we will arrange a meeting either with yourself, or Mr/Ms xxxx who helped us last time, to explain matters further and discuss procedures. We would also welcome any suggestions as to how best to present the mental health component to 11 to 16 participants and their parents.

We hope you will agree this is a most exciting scientific development with long-term benefits for young people, and that you will feel able to give the project your support. We would be very grateful if you could indicate this at this stage so that we may go ahead with plans for the next visit. We enclose a brief reply form and look forward to hearing from you.

Yours sincerely,

Patrick West
(Non-Clinical Senior Scientist)

Helen Sweeting
(Non-Clinical Scientist)
27 November, 1998

Dear H/T,

First of all, thank you for replying to our earlier letter outlining proposals for the next phase of the 11 to 16 study. We have now heard from all 43 secondary schools who participated in Phase 2 in 1996 together with two others who have joined in the study following closure of schools in the Glasgow division. You may be interested to know that the response to our proposals for Phase 3 has been overwhelmingly positive and almost all schools are able to accommodate us in the Spring term. We earlier said we would provide more information about the mental health interview and accordingly an information sheet is enclosed (Attachment A). In respect of access to home addresses, necessary for post-school follow-up, we will follow whatever procedures you and your educational division deem appropriate.

We are now writing to you with some more details of the two components of Phase 3 and the procedures involved, and to outline our preferred method of obtaining consent.

As you may remember, Phase III consists of (a) self-complete questionnaires together with measures of height, weight and respiratory function (b) the computer administered mental health interview (Voice DISC). In respect of the first, we propose to repeat the successful procedures followed last time and are confident this can be achieved within one school period seeing all 11 to 16 pupils together. In respect of the second, since the computer interview is better administered in relatively small groups, and anyway we only have 40 laptop computers at our disposal, a similar approach is ruled out. It might be possible, however, to administer the Voice DISC to a number of groups over the course of one day. Thus, for the xx 11 to 16 pupils in (Name of school), we could achieve this in two consecutive periods with two groups of around yy pupils. This has the considerable scientific advantage of minimising any biases introduced by pupils talking to each other, and it might actually be the most efficient and least disruptive method from the school’s point of view. We do realise, however, that this will not always be possible and will work with you in whatever way you think best fits the school timetable and the interests of pupils in their S4 schoolwork. The interview takes 45-60 minutes, and it is therefore better to schedule it before a school break.

Following discussion with teachers and education divisions, our preferred mode of seeking consent is to split it into two stages, the first referring to participation in Phase 3 of the 11 to 16 study, the second to access home addresses for purposes of follow-up. This recognises the inevitability of some losses to follow-up, but we believe by maximising response to Phase 3 it best safeguards the scientific interests of the 11 to 16 study. Specifically, we propose to:

• seek consent from parents for their child to participate in both the self-complete and mental health components of the study (as described in the draft parental letter and information sheet [B]) using the standard opt-out procedure, and in addition to seek
consent from the young people themselves to take part in the mental health interview when we see them for the questionnaire session (as described in the information leaflet [C]) using an opt-in procedure;

- seek consent from parents for the release of addresses either via an opt-in or opt-out procedure (depending on school and educational division policy), the purpose of which is explained to them in a second letter (D) taken home by their child at the end of the questionnaire session (and returned if necessary at the mental health interview).

We reiterate that this is our preferred consent procedure and recognise that some schools may wish us to adopt different procedures and/or adapt letters and consent forms accordingly. This we will be pleased to do.

We know that our requests are rather more complicated than those usually asked of schools, but hope that by outlining procedures in some detail we can maximise the efficiency of the study and minimise disruption to both the school and the pupils involved. One of us will follow up this letter within a week or so by phoning to discuss any problems you may have and, hopefully, to arrange dates for our visits to your school. Although well in advance, we enclose a list of pupils (E) who have already taken part in 11 to 16 and who we believe to be still attending your school.

Many thanks again for supporting the study, and very best wishes,

Yours sincerely,

Patrick West
(Non-Clinical Senior Scientist)

Helen Sweeting
(Non-Clinical Scientist)
Appendix E: General 11 to 16 Study Information for Schools

This study, funded by the Medical Research Council, is following up around 2,500 children from their final year of primary school (P7) into their secondary schools, with contacts at S2 and S4. The sample is drawn from schools randomly selected to represent the population of the Central Clydeside Conurbation, which includes the Education Departments of East Dunbartonshire, City of Glasgow, North and South Lanarkshire, Renfrewshire and East Renfrewshire.

Despite the importance of the teenage years for health, and behaviours which might damage or promote health, we know much less about this age group than younger children or adults. We also know little about what influences health at this age, and whether these influences change between 11 and 16 years.

The **West of Scotland 11 to 16 Study** therefore aims to document:
- the range and nature of health problems in the teenage years;
- influences on health and health behaviours with particular reference to differences between boys and girls, and those from disadvantaged or advantaged families;
- the importance of the school for health and health behaviours;
- the impact of a child's future expectations on current health and health behaviours.

The study is collecting information relating to:
- physical and mental health, self-esteem and self-image;
- health damaging and promoting behaviours such as smoking and exercise;
- family life, friends, leisure activities, achievements and attitudes to school;
- children's expectations of the future (e.g. likelihood of getting a job after leaving school).

**At Stage 1 (1994)** P7 children, parents, teachers and primary head teachers participated:
- children, in the school setting, via self-completion questionnaires and measurements of height, weight and respiratory function taken by nurses;
- parents, via a questionnaire about their child’s earlier health history and family background;
- class teachers, via a very brief questionnaire relating to the behaviour and achievements of the child;
- head teachers, via a questionnaire regarding school health-related policies and practices.

In all, 93% of eligible children took part, and 86% of their parents filled in a questionnaire themselves.

**At Stage 2 (1996)** the teenagers in S2, filled in a self-completion questionnaire and measurements of height and weight were taken by nurses. At this stage, 92% of those eligible took part.
Stage 3 (1998-9) has two separate components:
• as previously, the teenagers, now in S4, will fill in a self-completion questionnaire and measurements of height, weight and respiratory function will be taken by nurses;
• in addition, to extend the focus on mental health, they will use individual headphones and laptop computers to listen to and complete a standard interview which allows the identification of specific emotional and behavioural problems.

To capitalise on the wealth of data from the 11 to 16 Study, and to chart post-school health and lifestyles, the new 16+ Study will continue to follow the teenagers into young adulthood via home-based interviews.

All information is, of course, treated as strictly confidential. No individuals or schools will ever be named in reports arising from the study.
Appendix F: Voice-DISC Information for Schools

What do we want to know?
Reflecting its importance to policy makers, professionals, parents and - we believe - young people themselves, mental health has been an important focus of the 11 to 16 study since its inception in 1994. We have asked, and will continue to ask, questions about self-esteem and general psychological wellbeing, the resulting information revealing much higher levels of distress and unhappiness than many people believed. This information is, however, of a rather general nature, and there is a need to know more about the specific emotional and behavioural problems young people experience so that we can provide a more comprehensive assessment of their mental health needs.

Why the Voice DISC?
The Voice DISC is a computerised version of the Diagnostic Interview Schedule for Children (DISC) which is a widely used, and well validated, instrument for the identification of specific mental health problems in children and young people. Traditionally administered by clinicians or trained interviewers in face-to-face interviews, a computerised version has recently been developed by experts at Columbia University, New York, which allows the young person to self-administer the interview. This is state of the art interactive technology whereby the direction of the interview is determined by responses to specific questions. Using headphones, subjects hear questions read out to them by an interviewer and answer accordingly, typically by typing ‘1’ (yes) or ‘2’ (no). The advantages compared to more traditional methods are substantial; it reduces embarrassment, offers greater privacy, and because it can be administered to subjects in groups it is very cost effective.

What does it consist of?
Our version of the Voice DISC comprises five main modules relating to different aspects of mental health. These refer to:

- **anxiety** including phobias (e.g. ‘In the last year, have you ever felt very nervous or uncomfortable with a group of children/young people?’) and generalised anxiety disorder (e.g. ‘In the last year, have you worried a lot that you might have some sickness or illness?’)
- **eating disorders** (e.g. ‘In the last year, have you often felt bad about yourself because you thought you were fat or overweight?’)
- **mood disorders** including depression (e.g. ‘In the last year, was there a time when you felt slowed down...like you walked or talked much slower than you usually do?’) and suicidal ideation (e.g. ‘did you think about suicide during the time you were depressed?’)
- **conduct disorder** (e.g. ‘Have you broken or damaged somebody else’s things on purpose in the last year?’)
- **alcohol and substance abuse** (e.g. ‘In the last year did you miss school to go drinking or because you were hung over?’)
The interview begins with detailed instructions on how to respond to questions and asks subjects to recall an event that happened a year ago, six months ago and four weeks ago. The computer stores these events and reproduces them as reminders of the timeframe involved in questions relating to each of the modules outlined above. Within each, the questions follow the same pattern, focusing first on the previous year (as above), then the last four weeks, and asking both about the frequency of symptoms and the extent to which activities (e.g. schoolwork) have been disrupted. In this way, we get information about severity and, in respect of alcohol and substance use, dependency. The whole interview takes 45-60 minutes to complete.

**What equipment is needed and how is it administered?**
Voice DISC is administered via individual laptop computers, of which 40 are available. Power is useful but not essential since the laptops can be battery operated. No equipment is required from the school other than access to a room or hall containing a hard surface such as a desk on which to situate the laptops. If possible, we would like pupils to sit far enough apart to maximise privacy and minimise disruption. The interviews will be administered to groups of up to 20 pupils supervised by teams consisting of a leader (normally Patrick West or Helen Sweeting), a computer expert and one or more nurses with mental health training. Sessions will commence with a brief introduction to the interview during which pupils will be reminded of our rules in respect of confidentiality (broken only if they choose to disclose a serious problem putting them at risk) and introduced to the team member (mental health nurse) available should they simply wish to talk to someone or should a serious problem be identified.

**What are the consent procedures?**
A two-stage process of consent to the Voice DISC is proposed; first involving parents who will receive a consent form together with an explanatory letter requesting permission for their teenager to participate in both components of the 11 to 16 study (the self-complete questionnaires and the Voice DISC), and second from pupils themselves who will be asked to consent in their own right to Voice DISC. The latter will be achieved during the self-complete questionnaire session when the procedure will be explained and an information leaflet given out.

**What happens if a problem is identified?**
It is possible that a pupil with an emotional problem might choose to reveal this to one of the team during the session. There is also a very small chance that a more severe problem (e.g. suicidal thoughts) might be identified on completion of Voice DISC (the computer is programmed to identify anyone at serious risk). In either case the individual identified will be asked (or may ask) to see the team’s mental health nurse who will review the problem and recommend an appropriate course of action. If non-urgent treatment is recommended we will advise the pupil to contact their GP. In the extremely unlikely event of urgent treatment being required they could be directly referred to the adolescent psychiatric services in their health board area, all of whom know about the research and are prepared to respond if necessary. In this case we will immediately inform a responsible adult in school (our contact teacher) and take appropriate steps to inform parents. We do emphasise that the number of young people identified with a serious emotional problem is likely to be very small, but that as responsible researchers we have an obligation to intervene and recommend an appropriate course of action. We offer this as reassurance to parents in our letter to them.
How are we describing the Voice DISC to parents and young people?
Unfortunately, the term ‘mental health’ still has negative connotations. In recognition of this, and following the advice of many teachers, we are referring to it in a positive way as ‘emotional wellbeing’. Thus, in the letter to parents, we describe the Voice DISC as focusing on ‘emotional aspects of health and wellbeing’ with questions on ‘feelings, worries and lifestyles’.

What approval has been obtained?
Approval for the computer administered mental health interview (together with the self-complete questionnaire component of the 11 to 16 Study) has been received from all educational departments involved and the Glasgow University Ethics Committee.
Appendix G: Letter for Parents

Dear Parent,

As you will remember, your teenager (now in S4) has already taken part in the 11 to 16 Study on two occasions, first four years ago when they were in P7, and again two years ago. The study so far has been extremely successful and informative. We hope you received the P7 and S2 results feedback leaflets which we sent out via the school. Further details of the study are enclosed with this letter.

We now want to re-contact the 11 to 16 study members to find out how their health has changed since we last saw them and what may have affected it. This time, the survey will be in two parts. First, just as previously, they will be asked to fill in a questionnaire at school and our nurses will simply measure their height, weight and lung function (a simple measure of puff). In addition, we wish to learn more about the emotional aspects of their health and well-being. To do this, we are inviting them to complete a confidential state of the art interview using individual personal computers (with headphones) to answer questions about their feelings, worries and lifestyles. You will be reassured to know that there will be someone present to offer advice if necessary and, in the very unlikely event of our detecting any serious problem, they would take appropriate action and inform you.

The 11 to 16 Study is a most important study of teenage health and lifestyles. It is funded by the Medical Research Council and has received support from the local authority education departments, health boards and your teenager’s head teacher. To build on the results so far, and to track young people’s health and lives after leaving school, we have designed a new study named 16+ which will follow the participants into young adulthood. We will contact you shortly with more details about this.

We hope that you will continue to support this final stage of 11 to 16. However, if for any reason you do not wish your teenager to continue to take part, please return the enclosed form to the school. Further information is available by contacting one of us.

Yours sincerely,

Patrick West PhD
(Senior Non-Clinical Scientist)

Helen Sweeting PhD
(Non-Clinical Scientist)
11 to 16 so far - a reminder
The 11 to 16 Study, funded by the Medical Research Council, was set up four years ago. It is based in Strathclyde, and involves around 2,500 teenagers who were first surveyed in the final year of primary school (P7, aged 11) and then followed up two years later (S2, aged 13). The study received tremendous support from the 135 primary and 43 secondary schools involved, and from children and parents: over 90% of children took part at each of the first two stages, and at P7 almost 90% of their parents filled in a questionnaire themselves.

What is the study about?
Between the ages of 11 and 16 children leave the relative security of the primary school, enter the new world of secondary, make plans about what to do after school, and finally leave school altogether. As they grow older their friendships and leisure activities change and their independence increases. However, we know much less about the health problems of teenagers than we do about younger children or adults. Nor do we really know what factors influence health and health habits (e.g. smoking or exercise) over this time and whether they change between the ages of 11 and 16. The 11 to 16 Study was set up to look at these issues.

Some results
- People assume that teenagers are a fit and healthy group. However, at age 11, fewer than half the 11 to 16 children regarded themselves as being in good health, and over half reported recent stomach aches or sickness, colds or flu and headaches. One-in-six boys and one-in-ten girls suffered from asthma. Emotional symptoms were common, with over a third saying they had felt nervous and worried, or sad and low in the month before the survey. These results challenge assumptions of good health and well-being at this age.
- At 13, three-quarters had visited the dentist, half been to the doctor’s surgery and one-in-twenty had a doctor’s house call in the past 6 months.
- At 11, over a third ate salads and vegetables several times a week - but similar numbers ate chips that often. A third were worried about their weight, but on the day before the survey almost 90% ate sweets and 80% had crisps.
- At 11, 14% had tried smoking once or twice, but there were hardly any current smokers. By age 13, almost half had tried, and 11% of were regular or occasional smokers. At 13 one-in-ten drank alcohol weekly or more often, and almost one-in-five had tried drugs. Girls were more likely to smoke, boys to drink and to have experience of drugs.
- At 11, when parents also completed a questionnaire, 16% of them said it was very difficult to make ends meet, and 13% of fathers were unemployed.
- Sport plays a big part in the lives of many teenagers. For example, at 13, as well as exercise taken in school PE lessons, over four-in-five boys played football, and two-in-five girls did gymnastics or dancing weekly or more often. Swimming was equally popular among boys and girls, fewer than one-in-ten never went to the pool.
- At both 11 and 13 the vast majority said they had lots of friends, but for a small group this was not the case. At 11 years, 44% reported having been teased or called
names, and 15% having been bullied. It is no surprise that these children had lower self-confidence than the rest.

- Finally, the 11 to 16 children made some predictions for the future. At age 13, around 10% thought they were not likely to do well in their standard grades, and 15% predicted experience of unemployment by the time they reached the age of 21. However, three-quarters thought they would be students, and almost all that they would be in good health by that age.

Who has been informed of the results?
Feedback leaflets with some of the early findings from the P7 and S2 stages were sent to the schools for distribution to the children and parents involved in the study, and each school has received a booklet of results for their own use. Researchers involved in the study have presented results about teenage health problems and lifestyles at local, national and international conferences, to health professionals, teachers and policy makers. Findings have been published in academic and professional journals, and reported in the media. Greater Glasgow Health Board has used data from the study to help them plan young people’s health services.

What’s involved now?
We have reached the final stage of the 11 to 16 Study. At this stage, as previously, the teenagers, now in S4, will be given a self-compete questionnaire containing questions about their health and well-being, habits, life at home, school and in their leisure time, their attitudes and expectations. Our nurses will record their height, weight and respiratory function (a simple measure of the amount of puff they have). In addition, we wish to learn more about young people’s emotional well-being, which is one of the Government’s key health priorities. To do this, the teenagers will use individual personal computers with headphones to listen to and complete a state-of-the-art interview which will allow us to identify specific problems.

The next stage - 16+
The 11 to 16 Study has been extremely successful. To capitalise on the wealth of information it has generated, and to chart health and lifestyles after leaving school, a new study called 16+ will continue to follow the teenagers into young adulthood.

Confidentiality
At each stage, the study has received the approval of the local education departments and schools involved. All information is treated as strictly confidential. No names of individuals or schools will ever be released to any organisation except the Medical Research Council, nor in any reports arising from the study.
Appendix I: Opt-Out Consent Form for Parents

WEST OF SCOTLAND
11 TO 16 STUDY: TEENAGE HEALTH

CONSENT FORM FOR PARENTS OR GUARDIANS

ONLY TO BE COMPLETED BY A PARENT OR GUARDIAN WHO WISHES TO WITHDRAW THEIR CHILD FROM THE S4 STAGE OF THE 11 TO 16 STUDY.

This form is accompanied by an explanatory letter and information sheet for you to keep.

Only complete the form IF YOU ARE UNWILLING for your child to take part in the study, as described in the letter.

If you do not complete and return the form this will be taken to mean that you WISH your child to take part.

ONLY COMPLETE AND RETURN THIS FORM TO THE SCHOOL IF YOU DO NOT WISH YOUR CHILD TO TAKE PART IN THE S4 STAGE OF THE 11 TO 16 STUDY

Please Use Block Capitals

I, (insert your name)

BEING THE (insert your relationship to the child, e.g. mother/father/guardian)

OF (insert child’s full name)

A PUPIL IN (insert class or form)

OF (insert name of school)

Wish to withdraw my child from the S4 stage of the 11 to 16 Study, as described in the letter attached.

SIGNATURE: ................................................................. DATE: ....................................
Appendix J: Information Sheet for Young People

The story so far ...
You are one of around 2,500 pupils, now in S4, who are part of the 11 to 16 Study. You will remember that you were still in primary school when we first met you four years ago, and we saw you again two years ago, when you were in S2. Each time we have asked you to complete a questionnaire about your life and your health, and our nurses have measured your height, weight and the amount of puff you have.

The information you have given us so far is very important. We have presented results at conferences in this country and overseas to doctors and other medical workers, teachers and health service planners. We hope you received the P7 and S2 results feedback leaflets which we sent out via your school.

What about this time ...
• This time we are asking you to fill in a questionnaire and have your measurements taken, just as previously. That is what you are doing today.
• Also, we would like to learn more about how you are feeling. There is a lot of talk about the problems and stresses which young people face nowadays. Some of you will be leaving school at the end of the year, you’ve got exams and you’re probably unsure of what the future holds. Some of you may be worried about your families or relationships with girl or boyfriends. Some of you may be anxious about money, or drugs. We are therefore asking you to complete a state-of-the-art interview, designed in the USA, to tell us more about your feelings and emotions. It uses personal computers with headphones so that you can hear the questions and type in your answers. We will bring the equipment for this interview to your school in a week or so.

Confidentiality ...
Our rule is that all 11 to 16 information is confidential. However, there is somebody on the team who can offer advice if you ask for it. We only ever break our confidentiality rule if you choose to tell us about:
• sexual abuse (when we have to tell a teacher)
• a very serious emotional problem (when we have to involve a doctor, in which case your parents and the school will have to know).
For a list of other people you can contact if you feel the need to talk about any of the subjects in today’s questionnaire or the computer interview, turn over the page.

We need your consent ...
When 11 to 16 began, your parents gave us permission to include you in the study. Now you are old enough to decide for yourself, we are asking whether you want to take part in the computer interview study which we will carry out in the next few days.

SO, BEFORE YOU GO, PLEASE COMPLETE THE CONSENT SHEET AND HAND IT IN.
If you feel you need to talk to someone about any of the subjects in today’s questionnaire or the computer interview …

Remember …
your Guidance teacher is there to help you, she or he is always available.

If you don’t want to talk to a teacher …
What about a friend, a parent, a brother or sister, an aunt or uncle, a grandparent, a friend’s parent, the school nurse or counsellor, a youth worker, a social worker, or your doctor.

If you don’t want to talk to any of those ….
It may help to ring some of these people. It is easy to feel unsure about ringing these numbers, but the people who answer have been trained to take all sorts of calls and will be kind and helpful. Some lines can be very busy so it may be hard to get through, but keep trying.

• ChildLine ☏ 0800 1111
  A free national 24 hour counselling service for all children and young people who need help or who are in trouble or danger. Or you can write to ChildLine, Freepost 1111, Glasgow G1 1BR.

• ChildLine for Children in Care ☏ 0800 88 44 44
  A service for children and young people who are looked after by a local authority.

• The Samaritans ☏ 0345 909090 or 0141 248 4488
  24 hours 7 days a week. Offers free emotional support to anyone going through a crisis.

• National Child Protection Helpline (NSPCC) ☏ 0800 800 500
  FREEPHONE 24 HOURS. Offers counselling, information and advice for anyone concerned about a child or young person at risk of abuse including young people themselves.

Who else?

• MINDinfoLine ☏ 0345 660163
  Mon-Fri 9.15am - 4.45pm. Provides information on all aspects of mental distress.

• Carers Line ☏ 0345 57 33 69
  Mon-Fri 10.00 - 12.00 and 2.00 - 4.00. Offers help to every carer, including young people.

• Saneline ☏ 0345 678000 (Lo-Call)
  All week 2.00pm - 12.00 midnight. Provides information and support to anyone suffering from mental illness, their friends and family.

• Family Mediation ☏ 0141 332 2731
  Mon-Fri 9.00am - 5.00pm. Information, support and coping with parental separation or divorce, or stepfamilies, for 11-25 year olds.

• Strathclyde Gay and Lesbian Switchboard ☏ 0141 332 8372
  Open 7.00pm - 10.00pm. Counselling, sexual health advice and general information on the gay scene. Or you can write to PO Box 38, Glasgow, G2 2QF.

• Mac Helpline ☏ 0800 59 10 28
  Mon-Fri 9.30 - 1.00 and 2.00 - 5.00. For any child or young person who has cancer or is dealing with cancer in their family.

• ChildLine Scotland Bullying Line ☏ 0800 44 11 11
  A service for children and young people concerned about bullying.

• Eating Disorders Association ☏ 01603 765050 (Youth Helpline)
  Mon-Fri 4.00pm - 6.00pm. Offers help, a listening ear and understanding of eating problems to sufferers and their friends and family.

• Scottish Child Law Centre ☏ 0800 317 500
  Mon-Fri 9.00am - 5.00pm. Free confidential legal advice for the under 18’s.

• Youth Access ☏ 0181 772 9900
  Mon-Fri 9.00-5.30. Will put you in touch with local contacts for counselling, advice and information.

• Notre Dame Centre Adolescent Unit ☏ 0141 334 6131
  Mon, Wed, Fri 9.00-5.00; Tues, Thurs 9.00 - 7.00. Offers help to young people who have suffered the loss of a friend or relative.
Appendix K: Opt-In Consent Form for Young People

WEST OF SCOTLAND
11 TO 16 STUDY:
TEENAGE HEALTH

CONSENT FORM FOR YOUNG PEOPLE

THIS FORM ASKS WHETHER YOU WANT TO TAKE PART IN THE COMPUTER INTERVIEW STUDY OF FEELINGS AND EMOTIONS

READ THE INFORMATION SHEET BEFORE FILLING IN THE FORM.

PLEASE ASK ONE OF THE STUDY TEAM IF THERE IS ANYTHING WHICH IS NOT CLEAR, OR IF YOU WANT TO KNOW MORE DETAILS.

Please Use Block Capitals

I, (insert your name) .........................................................................................................................

DO / DO NOT (circle one) want to take part in the computer interview study, as described in the information sheet.

Signature: ........................................... Date: ........................................
Appendix L: Letter to Parents of Pupils Involved in Pilot Interview

WEST OF SCOTLAND
11 TO 16 STUDY:
TEENAGE HEALTH

November, 1998

Dear parent,

We are writing to you in connection with the next stage of the 11 to 16 study with which you kindly helped four years ago when your teenager (now in S4) was in the final year at (NAME) Primary school. At that time, both you and your child completed a questionnaire about their life and health. Together with over 2500 other teenagers and their parents, you have already helped to make the study a considerable success. Although it's a long time ago, we hope you got the results leaflet we sent to you via the primary school.

We now want to recontact the 11 to 16 study members to find out more about the emotional aspects of their health and wellbeing. To do this, we are inviting them to complete a state of the art interview using individual personal computers (with headphones) to answer questions about their feelings, worries and lifestyles. It is entirely confidential and has considerable youth appeal. In the very unlikely event of detecting any serious problem, we would of course inform you.

11 to 16 is a most important study of the health of young people. It is funded by the Medical Research Council and has received support from all local authority education departments, health boards and the headteachers of both your child's primary and secondary school. We hope that you too will continue to support the study by allowing your child to take part. However, if for any reason you do not wish this, please return the enclosed form to the school. Further information is available on request either from the school or by contacting one of us.

We will keep you informed of progress on the study and continue to give you feedback.

With thanks and best wishes,

Yours sincerely,

Patrick West
(Non Clinical Senior Scientist)

Helen Sweeting
(Non-Clinical Scientist)
Appendix M: Height and Weight Feedback & Conversion Sheet

YOUR HEIGHT AND WEIGHT

<table>
<thead>
<tr>
<th>HEIGHT</th>
<th>WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>cms.</td>
<td>kilos.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

To calculate your height in feet and inches
FIRST divide by 2.54

.......................... inches

THEN, remember there are 12 inches in 1 foot, so your height is

.... feet .... inches

To calculate your weight in stones and pounds
FIRST multiply by 2.2

..........................

THEN, remember there are 14 pounds in 1 stone, so your weight is

.... stones .... pounds

You will need to know your height (in centimetres or feet & inches) and weight (in kilos or pounds, BUT NOT stones & pounds) for the computer interview, so bring this along if you think you won’t remember.
Appendix N: Protocol for running Voice – DISC interview

On arrival at school.
Researcher liaises with head teacher or contact teacher.
Teams unload laptops to interview room and begin unpacking.
Computing staff check for number and position of power points.
Team set up lap tops on mains power or battery, as directed by computing staff. Computing staff note which laptops are run on battery.

Set-up of lap-tops.
Unpack, plug in to power if possible, plug in headphones.
Put on headphones.
Switch on laptop (blue button centre back of keyboard).
Listen for the start up jingle through the headphones to make sure they are working.
After hearing the jingle, remove the headphones.
Double click on load school details icon.
Enter 4digit number corresponding to the school.
This also starts up the interview program.
Once it has started.
Press F2, then press Enter. A list of pupils names should appear.
If so, the lap top is ready for use.
Carry on setting up the lap tops.
[Pupils enter and start the interview.]
Checking the interview.

When a pupil has finished the interview, a team member should check the interview results.

Check the pupil's name. It should correspond to the name highlighted in the 11to16 folder, or at the top of the screen.

Check that the column headed Administered says 14/14 and the status column says 'completed'.

Close down the interview program. (Click on the button with the X in at the top right of the screen.)

Insert your floppy disk in the drive.

Double click on check interview.

The screen should show the pupil's name and study ID number.

If the message following that says simply 'Interview completed OK', the procedure is complete. Thank the pupil and tell them they can go.

If message says 'Check Interview details', intervention may be needed.

Call over one of the psychiatric nurses (unless you are one!), and wait with the pupil until they arrive.

Remove your floppy disk, and close down the check program. (Click on the button with the X in at the top right of the screen.)

The psychiatric nurse should ask the pupil for permission to view some of the responses they have made, and then display the interview details. Double click on the display interview details icon.

When these have been read, close the program down. (Click on the button with the X in at the top right of the screen.)

[Details are given elsewhere of the procedure for the mental state and risk assessment.]

If two consecutive sessions of interviewing have been arranged with the school, set the lap top up for the next pupil.

Double click on the run interview icon, press F2 and then Enter.

The laptop is now ready for the next pupil.
Problems:

Wrong number entered for the school.
• Close down interview program and re-run load school details.

No names appear when Voice DISC program is started and 11to16 folder selected.
• Close down interview program and re-run load school details.

Pupil's name is not on list in 11to16 folder.
• If they have changed name between waves, ask them to use their old name.
• Otherwise use one of the extra names at the bottom of the list. There may be up to 10 of these identified as 'znn A.N.Other'. Select the first available one of these, bearing in mind that some may already have been used. Liaise with the person who took (or is taking) the register of pupils present.
• Make a written note.
• Choose Patient, Edit and change the name. Then start the interview for the pupil. Notify other team members that the extra name, eg. z85, has been allocated.

Pupil has started the interview using another pupil's name.
• If the interview has only just begun, close it down (Alt-Q), select the correct name and restart.
• If they have gone some way into the interview, or completed it, make a note of their name and of the name they have used. If they have used the name of the previous pupil who used the laptop, use a separate disk for backing up their data.
Appendix O: Instruction Sheet Placed on Keyboard at Start of Session

HINTS FOR THE COMPUTER INTERVIEW

MOST IMPORTANT - DO NOT DO ANYTHING OR TOUCH ANY BUTTONS UNTIL WE ASK YOU.

In a very few questions the voice is missing - do not worry.

If it is quicker, you can read the question - you do not have to wait until the voice finishes before you answer it.

It will be quicker if you press 1 or 2 to answer, rather than using the mouse.

Don’t worry if you can’t remember your height and weight exactly - an estimate will do.

if there are lists of things, remember to highlight all that apply.

It is American, so some words may not be familiar:
• when it asks for ‘school grade’ - put 16,
• ‘biological/adoptive mother and father’ means your mum and dad,
• when it asks for money in dollars - put £s,
• ‘wine coolers’ means hooch etc.

ASK IF THERE ARE ANY PROBLEMS
Appendix P: Voice-DISC Nurse Record Form

WEST OF SCOTLAND
11 TO 16 STUDY:
TEENAGE HEALTH

VOICE-DISC NURSE
RECORD FORM

PUPIL NAME .................................................................
D.O.B. ...........................................................................
SCHOOL ....................................................................... 
NURSE NAME ................................................................
DATE ...........................................................................

PROBLEM

ACTION TAKEN

SIGNED ................................................................. DATE ........................................
Appendix P: Voice-DISC Nurse Record Form - Notes

VOICE DISC NURSE RECORD FORM - NOTES

These notes refer to a phone conversation with the UK Central Council for Nursing Midwifery & Health Visiting advice desk.

- the layout of the form matters less than what we do with it;
- we must keep these forms secure, with other results documents about the respondent;
- the forms should document any actions taken by nurses;
- they do not need to be completed if no significant interventions are made (i.e. not required if you were to just reassure on minor issue such as worry about a one-off nightmare last night);
- they are certainly needed if there is any risk, follow-up or referral letter;
- the form can be used as an aide-memoire when writing a referral;
- don’t get too hung up on the form - the letter of referral will become the clinical record for that respondent.

Helen Sweeting - 18.1.99