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Prevalence of DSM-IV Mental Disorders, Deliberate Self-Harm and Suicidal Ideation in Early Adolescence: an Irish population-based study

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ABSTRACT

Background: This study investigated the prevalence of DSM-IV Axis 1 mental disorders, deliberate self-harm and suicidal ideation in a sample of Irish adolescents aged 11-13 years.

Methods: A total of 1131 students were surveyed for general psychopathology using the Strengths and Difficulties Questionnaire. Following this, a representative sample of 212 adolescents were assessed for mental disorders, deliberate self-harm and suicidal ideation using the Schedule for Affective Disorders and Schizophrenia for School-Aged Children.

Results: 14.6% of the sample met criteria for a borderline score and 6.9% for an abnormal score on the Strengths and Difficulties Questionnaire. Following clinical diagnostic interviews, 27.4% of participants received a current diagnosis of an Axis 1 disorder and 36.8% received a lifetime diagnosis, those rates falling to 15.4% and 31.2% respectively when specific phobias were excluded.

Conclusions: Findings from this study reveal that Irish adolescents aged 11-13 years are experiencing high levels of mental ill-health.

INTRODUCTION

As a distinct phase of the lifespan adolescence is now considered to begin at around the age of 10 years (World Health Organisation) with biological changes related to puberty marking the transition from childhood to adolescence (Smetana, Campione-Barr, & Metzger, 2006). This heterogeneous period of life requires young people to negotiate a range of biological, psychological and social processes as they prepare for the roles and responsibilities that await them in adulthood (Sawyer et al., 2012). The onset of any mental disorder by or during adolescence is a risk factor for future mental ill-health (Kessler et al., 2007; Kessler et al., 2005b). In addition, the impact and consequences of mental disorder during the adolescent years are concerning as mental ill-health during this phase of the lifespan has been found to carry the greatest burden of disease, accounting for 45% of years lost to disability among young people aged 10-24 (Gore et al., 2011; World Health Organisation, 2008). With an estimated 1 in 5 young people between the ages of 12 and 19 years experiencing a mental disorder at any given time (Costello, Copeland, & Angold, 2011), adolescence has been recognised as a period of significant mental health vulnerability and risk for young people (Coughlan et al., 2013; Jones, 2013; Patel, Flisher, Hetrick, & McGorry, 2007).

In spite of calls for progressive international research programmes on adolescent health (Patton et al., 2012), epidemiological studies quantifying the prevalence of mental disorder in adolescents have been limited. Of the studies that have been conducted, most have focused on young people aged 13 years and older (Benjet, Borges, Medina-Mora, Zambrano, & Aguilar-Gaxiola, 2009; Farbstein et al., 2010; Gau, Chong, Chen, & Cheng, 2005; Kessler et al., 2012; Lynch, Mills, Daly, & Fitzpatrick, 2006; Merikangas et al., 2010; Vicente et al., 2012; Wittchen, Nelson, & Lachner, 1998) during the developmental phases of mid and late adolescence (Smetana et al., 2006). The focus on adolescents in this mid-late adolescent age range has resulted in a dearth of evidence on rates of disorder among younger adolescents during their formative early adolescent (Smetana et al., 2006) years. Although a number of studies have included younger adolescents in their samples (Costello, Mustillo, Erkanli, Keeler, & Angold, 2003; Ford, Goodman, & Meltzer, 2003; Martin, Carr, Burke, Carrol, & Byrne, 2006; Meltzer,

Gatward, Goodman, & Ford, 2000; Roberts, Roberts, & Chan, 2009) few provide age-specific data on adolescents aged 10-13 years and, to our knowledge, none has used a sample of young people specifically targeting this early adolescent age range. In the context of such limited data on rates of mental disorder among early adolescents, this study, as part of the Adolescent Brain Development Study (Kelleher et al., 2012), aimed to investigate the prevalence of DSM-IV Axis 1 mental disorders in a school-based sample of Irish adolescents aged 11-13 years.

METHOD

Participants

This study involved two phases: an initial survey phase (Phase 1) and a follow-up clinical interview phase (Phase 2). Phase 1 of the study involved a sample of 1131 adolescents from the general population. A total of 35 primary schools from two geographical areas in Ireland (north Dublin city and county Kildare) were contacted and invited to participate. Of those, 16 (46%) schools agreed to take part with a combined population of 2190 adolescents aged 11-13 years. There were no statistically significant differences between schools who agreed to participate and those that did not with regard to school size, school location and gender composition (i.e. whether schools were single sex or co-educational). Written informed consent to participate in the study was sought from both parents/guardians and the research participants. This opt-in method resulted in the recruitment of the 1131 adolescents who took part in this phase of the study.

The consent form used in the survey phase of the study included a section in which parents/guardians and participants were asked whether or not they would consider taking part in a further phase of the study involving a clinical interview (Phase 2). Parents of 656 adolescents (58%) consented to participating, from which a random sample of 450 was invited to interview and 212 attended. Interviews during this phase of the study took place over three consecutive years during summer breaks from school.

Ethical approval for the study was granted by the Medical Research Ethics Committee of Beaumont Hospital, Dublin, Ireland.

Assessment Instruments

a] Phase 1: Assessment of Psychopathology using the Strengths and Difficulties Questionnaire (SDQ)

All 1,131 young people in Phase 1 of the study were surveyed for psychopathology using the self-report version of the Strengths and Difficulties Questionnaire (SDQ) (Goodman, Ford, Simmons, Gatward, & Meltzer, 2003), a well-validated brief survey instrument that assesses for psychological attributes in young people. The instrument is comprised of 5 sub-scales that screen for 1] emotional symptoms (e.g. 'I have many fears, I am easily scared'), 2] conduct problems (e.g. 'I am often accused of cheating or lying'), 3] hyperactivity/inattention problems (e.g. 'I am restless, I cannot stay still for long'), 4] peer relationship problems (e.g. 'Other children or young people pick on me or bully me') and 5] pro-social behaviour (e.g. 'I try to be nice to people. I care about their feelings'). Results can be analysed both as continuous scores and/or as categorical scores indicating normal (scoring range 0-15), borderline (scoring range 16-19) and abnormal (scoring range of 20-40) levels of difficulties for each subscale. A total problem score is generated by combining the scores of sub-scales 1-4 only. Questionnaires were completed by study participants in classrooms with a researcher present.

b] Phase 2: Clinical Interview Assessment using the Schedule for Affective Disorders and Schizophrenia for School-Aged Children (K-SADS-PL)

The main clinical interview instrument used in Phase 2 of the study was the Schedule for Affective Disorders and Schizophrenia for School-aged Children, Present and Lifetime Version (K-SADS-PL) (Kaufmann, Birmaher, Brent, Rao, & Ryan, 1996). The K-SADS-PL is a well-validated semi-structured diagnostic interview for the assessment of Axis-1 DSM-IV mental disorders in children and adolescents aged 6-18. It determines both current (defined as occurring within the past month) and lifetime psychopathology and involves interviews with both study participants and their parents. It assesses for the most frequent mental disorders in

childhood and adolescence including mood disorders, anxiety disorders, eating disorders, attention deficit hyperactivity disorder, conduct disorder, oppositional defiant disorder, tic disorder, enuresis and encopresis. It also assesses for the presence of suicidal ideation, suicidal acts and deliberate self-harm (see Appendix 1 for details of the assessment questions and scoring criteria used). For each category of psychopathology, a parent rating, a child rating and a summary rating is given. The summary rating is the clinical rating of the interviewer and is based on the totality of the information gained from both the parent and child, as well as the independent observations of the interviewer during the assessment.

Interviews were conducted by two psychiatrists and four psychologists and interviewers received extensive training in the administration of the K-SADS-PL. Interviews lasted between 2-4 hours, depending on the level of symptomatology reported. Following interviews, meetings were held among interviewers to discuss each interview assessment and to reach a consensus on each participant's summary diagnostic scores.

Representativeness: Psychopathology, Socioeconomic Status and Ethnicity

A key aspect of the recruitment strategy was to ensure that the sample was representative of the general population. The Phase 2 sample was not enriched for the presence of any psychopathology based on their SDQ scores from Phase 1. When rates of psychopathology were assessed, participants in Phase 2 were found not to differ from those in Phase 1 on rates of abnormal or borderline scores on the SDQ ($\chi^2 = 1.22$ ($df = 1$), $p = 0.27$). The representativeness of Phase 2 study participants was also assessed using national statistics on socioeconomic status (SES) and ethnicity. This involved comparing demographic variables related to SES and ethnicity from the Phase 2 sample with those variables from the full sample from Phase 1. The SES of each study participant was determined using parental occupation assessed according to the Irish Social Class Scale from the national Irish Central Statistics Office (Central Statistics Office). For the purposes of the study the sample was divided into two major groups according to social class: the first group contained SES Groups 1 and 2 (professional/managerial) and the second group contained SES Groups 3-7: (non-manual

skilled; skilled manual; semi-skilled manual; unskilled manual; unemployed). The SES of the study was similar to national SES figures: 34.6% of the sample fell into SES Groups 1-2 compared to 32.1% of the national population and 65.4% fell into SES Groups 3-7 compared with 67.9% of the national population. The ethnic profile of participants was also representative of that found in the 2006 national census with 88.9% of the sample being Irish-born (compared to 90.3% of 0-14 year olds nationally). The Phase 2 sample was therefore assessed to be sufficiently representative of both the general population and of the sample of adolescents who were surveyed during Phase 1.

Statistical Analysis

Statistical analyses were conducted using STATA version 11.1 for Windows. Data from the SDQ were analysed as both continuous scores and within the categorical scoring ranges for normal, borderline and abnormal levels of psychological difficulty. Chi-square and t-tests were used to measure differences between the baseline characteristics of schools and participants who took part and those that did not.

RESULTS

Phase 1: Survey Phase

Demographic Data

Of the 1,131 adolescents who were surveyed in Phase 1 of the study, 50.2% were female and 49.8% were male. The mean age of the sample was 11.54 years (SD = 0.68). A total of 82% attended a co-educational school with the remaining 18% attending a single-sex school (8.4% from an all-boys school and 9.6% from an all-girls school).

SDQ Scores

Of the sample, 6.9% (n = 78) adolescents had an 'abnormal' score on the SDQ, suggesting that they were in the clinical range for mental health difficulties. A further 14.6% of the sample had a 'borderline' score on the SDQ, suggesting that they were experiencing a level of psychological difficulty that was approaching the clinical range. While there were no significant gender

differences found among those who scored in the abnormal (χ^2=0.42 (*df*=1) *p*=0.52) or borderline (χ^2=0.13(*df*=1) *p*=0.72) range, a significant gender difference was evident on continuous scores with females scoring higher than males (females: mean 11.53, SD 5.2; males: mean 10.6, SD 5.2; *t*(1130)= -2.7869, <0.01). Gender differences were evident in some of the SDQ subscales with females reporting more difficulties in the emotional symptoms subscale (25.4% versus 14.6%, χ^2=20.90 (*df*=1) *p*<0.0001) and males reporting higher rates of difficulty in both the conduct (27.9% versus 20.4%, χ^2=8.77 (*df*=1) *p*=0.003) and pro-social (8.8% versus 3.4%, χ^2=14.30 (*df*=1) *p*<0.0001) subscales. Combined prevalence rates for both borderline and abnormal scores within each subscale are shown in Table 1.

Table 1: Gender Distributions of 11-13 Year Olds Meeting Combined Borderline and Abnormal SDQ Scores in each Subscale

SDQ Scale	Males % [95% CI] n=577	Females% [95% CI] n = 555	χ^2 (*df*)	*P*
Emotional Symptoms Subscale	14.6 [11.7-17.7]	25.4 [21.8-29.2]	20.90 (1)	<0.0001
Conduct Problems Subscale	27.9 [24.2-31.7]	20.4 [17.0-23.9]	8.77 (1)	<0.003
Hyperactivity/Inattention Subscale	22.4 [19.0-25.9]	21.9 [18.6-25.6]	0.02 (1)	<0.879
Peer Problems Subscale	9.2 [6.9-11.8]	9.7 [7.3-12.5]	0.10 (1)	<0.754
Pro-social Subscale	8.8 [6.6-11.4]	3.4 [2.0-5.2]	14.30 (1)	<0.0001

Phase Two: Interview Phase

Of the 212 adolescents who participated in Phase 2 of the study, 48.1% were male and 51.9% were female. The current and lifetime rates for any Axis 1 mental disorder were 27.4% and 36.8% respectively. When specific phobias were excluded, rates dropped to 15.4% for a current and 31.2% for a lifetime diagnosis. None of the adolescents met criteria for either a current or lifetime substance use disorder. Table 2 gives a breakdown of current and lifetime prevalence rates for Axis 1 affective, anxiety, behavioural and substance use disorders and Table 3 provides rates of suicidal ideation and deliberate self-harm among the sample.

Table 2: Prevalence of Current and Lifetime Mental Disorders among 11-13 Year Olds[a]

DSM-IV disorder	Past Month Prevalence Total study population % (n=212) [95% CI]	Lifetime Prevalence Total study population % (n=212) [95% CI]
Any Mood Disorder	**1.7 [0.03-3.3]**	**14.9 [10.3-19.5]**
Major Depressive Disorder	1.3 [0.01-2.7]	6.8 [3.5-10.0]
Adjustment Disorder	-	8.9 [5.2-12.6]
Dysthymia	0.4[0.01-1.2]	0.4 [0.01-1.2]
Any Anxiety Disorder	**18.8 [13.7-23.8]**	**22.6 [17.2-28.0]**
Separation Anxiety Disorder	0.8 [0.01-2.0]	4.7 [1.9-7.4]
Avoidant Disorder	1.7 [0.03-3.3]	2.5 [0.5-4.6]
Specific Phobia	12.8 [8.5-17.1]	14.1 [9.6-18.5]
Social Phobia	5.1 [2.2-7.9]	5.1 [2.2-7.9]
Generalised Anxiety Disorder	4.7 [1.9-7.4]	5.5 [2.5-8.5]
Obsessive Compulsive Disorder	1.2 [0.01-2.7]	2.5 [0.5-4.6]
Anxiety Disorders Excluding Specific Phobia	**8.1 [4.6-11.6]**	**13.6 [9.2-18.1]**
Any Behavioural Disorder	**8.1 [4.4-11.6]**	**8.5 [4.9-12.1]**
ADHD	5.1 [2.2-7.9]	5.5 [2.5-8.5]
Conduct Disorder	0.8 [0.01-2.0]	0.8 [0.01-2.0]
Oppositional Deviant Disorder	3.8 [1.3-6.3]	3.8 [1.3-6.3]
Any Substance Use Disorder	**0.0**	**0.0**
Any DSM-IV Disorder	**27.4**	**36.8**
Any DSM-IV Disorder excluding Specific Phobia	**15.4**	**31.2**

[a] Combined percentages of mood, anxiety and behavioural disorders sum to more than 100 because a number of participants were assessed to have more than one disorder

Variations are evident in prevalence rankings for a number of disorders across time, with adjustment disorder (AD) showing the most marked variation: it did not feature in rates of current disorders but was ranked as the second most common lifetime disorder. Similarly, major depressive disorder (MDD) ranked as the sixth most common current disorder but the third most common lifetime disorder.

Table 3: Prevalence of Suicidal Ideation, Suicidal Acts and Deliberate Self-harm among 11-13 Year Olds

Suicidal Ideation, Suicidal Acts and Deliberate Self-Harm	Past Month Prevalence Total study population % (n=212) [95% CI]	Lifetime Prevalence Total study population % (n=212) [95% CI]
Suicidal Ideation:		
Occasional	4.7 [2.0-7.5]	4.7 [2.0-7.5]
Frequent	0.8 [0.01-2.0]	2.1 [0.02-4.0]
Suicidal Acts	0.0%	0.4 [0.01-1.2]
Deliberate Self-Harm (non-suicidal):		
2-3 times per year	4.3 [1.6-6.9]	5.1 [2.3-8.0]
4+ times per year	0.4 [0.01-1.2]	1.7 [0.03-3.4]

There were no gender or socioeconomic status differences in rates of either current or lifetime Axis 1 disorders. When categories of disorder were analysed separately, no gender or socioeconomic differences were evident in current or lifetime rates of mood disorders, anxiety disorders, suicidal ideation or deliberate self-harm. A gender difference was, however, evident in rates of behavioural disorders with males experiencing higher rates of both current and lifetime behavioural disorders compared to females (lifetime: 14% versus 4%, χ^2=7.2(df=1) p<0.01). There were no socioeconomic status differences in rates of behavioural disorders.

Comorbidity

Lifetime rates of comorbidity were evident among the sample. While 21.9% of adolescents had a single Axis 1 lifetime diagnosis of mental disorder, 10.3% had two lifetime diagnoses and 4.7% had 3 or more diagnoses. Lifetime rates of comorbidity within the three diagnostic categories of mood, anxiety and behavioural disorders are illustrated in Figure 1.

DISCUSSION

Data from this study demonstrate that mental ill-health is a common experience among Irish adolescents. We found that 27.4% of 11-13 year olds met current criteria for a DSM-IV Axis 1 mental disorder and 36.8% met lifetime criteria, those rates falling to 15.4% and 31.2%

Figure 1: Lifetime Co-morbidity of DSM IV Axis 1 Mood, Anxiety and Behavioural Disorders[e]

Mood Disorders
14.9%

4.7%   **1.7%**

1.3%

Anxiety Disorders
22.6%

Behavioural Disorders
8.5%

4.3%
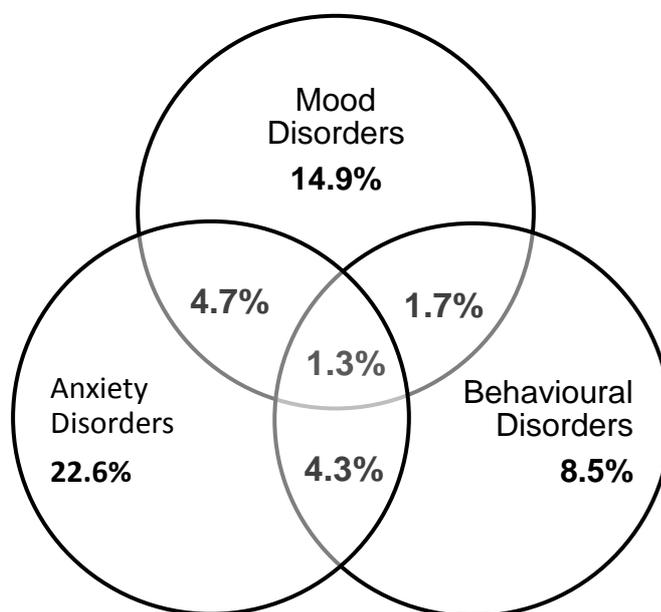
[e] Percentages are of overall sample (n=212)

respectively when specific phobias were excluded. We also found that 5.5% of young Irish adolescents were experiencing suicidal ideation and 4.8% were deliberately harming themselves. Like many adolescent studies (Ford et al., 2003; Merikangas et al., 2010; Roberts et al., 2009; Vicente et al., 2012) there was evidence of comorbidity among the young adolescents in this study with anxiety disorders being the most likely comorbid disorder. Of note was the absence of any diagnosable alcohol or substance use disorders reported, a finding that can be attributed to the young age of the sample (Kessler et al., 2007).

As can be seen in Table 4, when compared with the limited number of studies that provide data on adolescents within the 11-13 year age range using either DSM-IV or ICD-10 assessment criteria, this study found higher rates of disorder than similarly-aged adolescents in the UK (Ford et al., 2003) and the USA (Costello et al., 2003; Roberts et al., 2009), even when rates of specific phobia were excluded. No lifetime rates are available for adolescents in the 11-13 year age range but the lifetime rate found is lower than that of 39.0% in the Early Developmental

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Stages of Psychopathology Study (EDSP) in Germany (Wittchen et al., 1998) and of 49.5% in the National Comorbidity Study (NCS-A) in the USA (Merikangas et al., 2010), both of which involved older-aged samples than this study.

Table 4: Comparative Data on 11-13 Year-Old Adolescents

Authors	Year	Country	Study Title	Sample Size (N)	Age Range	Instrument Used	Time Frame	Prevalence Rate (%)	Rates of Disorders (%)
Coughlan et al	2013	Ireland	Adolescent Brain Development Study: ABD [current study]	212	11-13	Schedule for Affective Disorders and Schizophrenia for School-Aged Children, Present and Lifetime Version (K-SADS-PL)	Current & Lifetime	*Current:* 27.4 *15.4%*[b] *Lifetime:* 36.8 *31.2%*[b]	*Current:* Anxiety: 18.8 Affective: 1.7 Behavioural: 8.1 Substance Use: 0.0 *Lifetime:* Anxiety: 22.6 Affective: 14.9 Behavioural: 8.5 Substance Use: 0.0
Roberts et al	2009	USA	The Teen Health 2000 Study: TH2K	345	11-12	Diagnostic Interview Schedule for Children, Version 4 (DISC-IV)	12-month first Incidence	5.5	Anxiety: 2.6 Affective: 0.2 Behavioural: 2.4 Substance Use: 0.5
Costello et al	2003	USA	The Great Smoky Mountains Study: GSMS	2,588	11-13	Child and Adolescent Psychiatric Assessment (CAPA)	3-month	11.2	Anxiety: 1.8 Affective: 1.6 Behavioural: 5.0 Substance Use: 0.1
Meltzer et al Ford et al	2000 2003	Great Britain	The British Child and Adolescent Mental Health Survey 1999: BCAMHS	1,901	11-12	Development and Well-Being Assessment (DAWBA)	Current	9.6	Anxiety: 4.0 Affective: 0.7 Behavioural: 5.9 Substance Use: N/R[c]

[b] Rates excluding specific phobia
[c] Not reported

In addition to quantifying rates of disorder among 11-13 year olds, data from this study also yielded some valuable information about the emergence of mental disorders in early adolescent populations. As the number of prospective studies that have documented rates of DSM-IV mental disorders during the early adolescent years has been limited, many studies have had to rely on retrospective accounts to quantify experiences of mental ill-health before the age of 13. The combined evidence from both prospective and retrospective data on mental disorders across time suggests that a majority of mental disorders in adulthood will have emerged by or during adolescence and that behavioural, affective and anxiety disorders have a high incidence of continuity from adolescence into adulthood (Costello et al., 2011; Jones, 2013; Kessler et al., 2005a). Findings from this study are consistent with this evidence to date and provide further

non-retrospective evidence of the emergence and experience of mental ill-health during the early adolescent years. Future research with this study cohort will help determine whether or not Irish adolescents experience a similar degree of continuity within or across a range of mental disorders over time when compared with adolescent and young adult populations internationally (Jones, 2013).

The observed stability in rates of anxiety and behavioural disorders across current and lifetime time phases has shown that these disorders were either recent in onset or followed a recurrent or enduring course for those young people who experienced them. A very different pattern emerged for affective disorders. Current and lifetime rates for affective disorders were 1.7% and 14.9% respectively with major depressive disorder (MDD) and adjustment disorder (AD) having the greatest impact on reported lifetime rates. Although lifetime rates are not available on similarly-aged adolescents, the lifetime rate for affective disorders found in this study is comparable to that found in both the Early Developmental Stages of Psychopathology Study (EDSP) in Germany (Wittchen et al., 1998) and the National Comorbidity Study (NCS-A) in the USA (Merikangas et al., 2010) which involved sample populations aged 14-24 years and 13-18 years respectively. This suggests that the adolescents in this study had higher than average lifetime rates of affective disorders for their age, a finding that is not consistent with existing evidence of a later age-of-onset for affective disorders than both anxiety and behavioural disorders (Green et al., 2011; Kessler et al., 2005a). This raises the question of whether or not these disorders were associated with homotypic continuity from childhood to adolescence, as has been reported elsewhere (Costello et al., 2011; Jones, 2013; Kessler et al., 2005a). While our findings on affective disorders are suggestive of a low degree of homotypic continuity, it may be possible that these disorders followed an episodic, recurrent path for many adolescents and were simply not present at the time the study was conducted. Future research with this cohort will help to determine more clearly the degree of continuity of affective disorders among Irish adolescents over time. It may also assist in uncovering those factors that mediate against the risk of continuity of psychopathology over time.

High rates of deliberate self-harm (DSH) and suicide among young people have been of particular concern in Ireland over the past decade (Illback & Bates, 2011) and, according to the latest available national statistics, Ireland has the 4th highest rate of youth suicide in the European Union (National Office for Suicide Prevention, 2011). The rate of suicidal ideation found in this study is higher than that of 1.9% found in a previous study of 12-16 years olds in Ireland (Lynch et al., 2006) but is lower than reported rates in previous Irish adolescent surveys of young people aged 11-18 years (Brown, Fitzgerald, & Kinsella, 1991; Dooley & Fitzgerald, 2012; Jeffers & Fitzgerald, 1991; McDonough, Fahy, & Fitzgerald, 2003; Murphy, Fitzgerald, Kinsella, & Cullen, 1989), one of which reports a rate of suicidal ideation of 18% among 11-14 year olds (McDonough et al., 2003). Reasons for the wide variance in reported rates of suicidal ideation and DSH across Irish studies are unclear. However, in a previous epidemiological adolescent study in Ireland 19.4% of adolescents reported experiencing suicidal ideation in a self-report questionnaire, that rate dropping to just 1.9% following clinical interview (Lynch et al., 2006). This variation could be explained on the basis of threshold criteria used to determine suicidal ideation during the interview phase of that study but may also reflect a tendency among young people to under-report these experiences in face-to-face interviews.

Low socioeconomic status has been implicated as a key risk factor in the experience of mental disorders among young people (World Health Organisation, 2012). A recent systematic review by Reiss (2013) that examined the association between socioeconomic status and mental ill-health in children and adolescents found that children and adolescents from socioeconomically disadvantaged families were between two and three times more likely to experience mental ill-health than young people with a higher socioeconomic status. In the context of such evidence, an unexpected finding in this study was the absence of any association between socioeconomic status and mental disorders among the study sample. In future research with Irish populations, additional measures of socioeconomic status would be helpful to enable a more detailed analysis of the impact of socioeconomic status on adolescent mental health.

Methodological Considerations

In the context of such limited data on young adolescents, the 11-13 year age range of the study sample is a key strength, providing some of the only data on prevalence rates in this formative early adolescent phase of life. The use of a general population sampling method is also a strength of the study. Although the number of young adolescents interviewed in Phase 2 of the study was small, they were found to be representative of the larger cohort of adolescents surveyed during Phase 1 of the study and, using both SES and ethnicity criteria, they were also representative of the national adolescent population. The use of this representative community-based sample therefore enabled us to reliably estimate prevalence rates for all young people in this geographical region of Ireland.

We note that the prevalence of young people scoring in the borderline or abnormal range on the self-report SDQ questionnaire in our study (21.5%) was higher than that of 17.8% reported in a previous Irish study of Irish 12-15 year olds (Lynch, Mills, Daly, & Fitzpatrick, 2004). It was also higher than the normative rate of 16.4% found among 11-15 year olds in the UK (Youth in Mind, 2012). When compared with data from the UK, differences in rates were evident in both abnormal and borderline SDQ scores. Our study found that 6.9% of our adolescent sample met criteria for an abnormal SDQ score compared with 5.1% of adolescents in the UK and that 16.4% of our sample fell within the borderline range of difficulties compared to 11.3% of similarly-aged adolescents in the UK (Youth in Mind, 2012). When we examined rates across the five SDQ sub-scales, we found that the greatest differences were evident in the rate of emotional difficulties reported by both genders in our sample. In our study, 14.6% of males and 25.4% of females reported emotional difficulties compared with 8.9% of males and 13.5% of females in the UK (Youth in Mind, 2012). The fact that, based on their SDQ scores, our original sample was found to have higher baseline rates of psychopathology than those found in Ireland (Lynch et al., 2004) and the UK (Youth in Mind, 2012) does raise some questions regarding their level of representativeness of the general population of Irish 11-13 year olds. Additional research with similarly aged adolescents across Ireland, particularly from rural locations, would help to determine if this difference is a result of the urban (or semi-urban) nature of our sample

or indicates a real increase in psychopathology among Irish youth. If it is the latter then the causes for such an increase should be investigated.

Another methodological factor that could have affected the high rates of psychopathology found in this study was the selection process between Phase 1 and Phase 2 of the study. Participation in Phase 2 of the study was dependent on parents and young people voluntarily self-selecting for inclusion and this may have resulted in selection bias, with parents who were concerned about their young adolescent children putting them forward for the interview phase of the study. However, the fact that the Phase 2 sample did not differ from the Phase 1 sample in terms of psychopathology measured on the total sample at Phase 1 suggests that this was not the case.

A further methodological factor considered was whether or not the threshold criteria in the K-SADS-PL (Kaufmann et al., 1996), an instrument used in very few other adolescent studies, were too low, resulting in an over-estimation of prevalence rates. This hypothesis is not supported by analyses that were conducted as part of the NCS-A study (Kessler et al., 2012) That study, which used both the Composite International Diagnostic Interview (CIDI) and the K-SADS to determine prevalence rates among their sample, found that, in general, the level of concordance between diagnoses made using the CIDI and the K-SADS was strong. The fact, however, that use was made of the K-SADS-PL is relevant when considering any comparisons made with data from studies that used different diagnostic instruments on account of variations in threshold criteria across these instruments. In addition, it has previously been reported that divergent views on threshold criteria and on the assessment of significant impairment, along with a lack of clarity in the terminology of diagnostic criteria, can affect the determination of rates of specific phobia and other anxiety disorders and that these factors must be considered when interpreting any prevalence data (LeBeau et al., 2010; Ollendick, King, & Muris, 2002).

A strength of our study is that, along with current rates, the sample was also assessed for lifetime Axis 1 disorders. Ascertaining current rates only would have limited our understanding

of psychopathological trends among adolescents over time. With evidence that the experience of mental disorder in childhood and adolescence is a risk factor for future psychopathology (Copeland, Shanahan, Costello, & Angold, 2009; Jones, 2013; Kessler et al., 2005b; Merikangas, Nakamura, & Kessler, 2009), the inclusion of lifetime rates facilitated us in understanding the level of risk among this cohort. The benefit of assessing for both current and lifetime rates is demonstrated by our findings on rates of affective disorders in this study. Such information is essential in the context of service planning and delivery.

While this study points to high rates of psychopathology among early adolescents in Ireland, caution needs to be exercised when comparing data from this study with those from other prevalence studies. The limited availability of prospective epidemiological data on adolescents aged 11-13 years and the variability in study design and assessment instruments used across those studies that have been conducted make it difficult to draw any definitive conclusions about relative rates of disorder among early adolescent populations internationally. More comprehensive research programmes involving early adolescent samples or the stratification of existing data sets to uncover rates among 11-13 year olds would enhance any comparative analyses of data across international studies. In addition, future research with this study cohort during their mid and late adolescent years will provide additional data that could be compared with existing international lifetime prevalence data involving older adolescents.
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CONCLUSION

In the context of limited international prevalence data on early adolescence, findings from this study offer a valuable contribution to the body of knowledge on mental disorders among young adolescents. It is clear from this study that young people in their early adolescent years in Ireland are experiencing high rates of Axis 1 disorders. Estimates based on findings from this study suggest that over 1 in 4 Irish adolescents aged 11-13 years may be experiencing a mental disorder at any given time; that, by age 13 over 1 in 3 will have had some experience of mental ill-health over the course of his or her life; and that almost 1 in 20 are either engaging in

DSH or experiencing suicidal thoughts. With evidence of both homotypic and heterotypic continuities across a range of mental disorders from childhood to adolescence and from adolescence to adulthood (Copeland et al., 2009; Costello et al., 2011; Fergusson, Boden, & Horwood, 2007; Jones, 2013; Rutter, Kim-Cohen, & Maughan, 2006) this study has shown that over 1 in 3 Irish adolescents may be at increased risk for future mental ill-health in adulthood. Given their young age, they are also at risk of developing substance use disorders as they progress through their adolescent and emerging adult years (Costello et al., 2011). As this study did not examine any specific psychological or socio-cultural factors that may have been implicated in the rates of disorder found among such young adolescents, further research in this area would help to establish the determinants of mental disorder in Irish adolescent populations more clearly. From a population health perspective, more comprehensive early prevention, detection and intervention services for adolescents in Ireland are essential to respond to the high level of mental health need among young people and to reduce the risk of enduring mental ill-health across the lifespan.

CONFLICT OF INTEREST

On behalf of all authors, the corresponding author states that there is no conflict of interest.

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