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THE EPIDEMIOLOGY OF PSYCHOLOGICAL DISORDERS IN IRISH CHILDREN

Alan Carr

INTRODUCTION

The development of child mental health services in Ireland is in its early stages and the Government is committed to a programme of expansion in this area (Department of Health, 1992). One difficulty in planning the development of such services has been the lack of reliable epidemiological data on the prevalence of psychological disorders in childhood (Department of Health, 1984). Until very recently only a handful of small scale descriptive studies had been conducted (Fitzgerald, 1991; McCarthy, Fitzgerald & Smith, 1984; McCarthy & O'Boyle (1986); Bark, Walsh & Walsh, 1978; Hart & McQuaid, 1974; Sheehan & Byrne, 1989; Fitzpatrick, 1981.) These suffered many methodological weaknesses, not least of which was the unrepresentativeness of the samples of children studied. Cohorts of youngsters attending clinics or single classes of children in accessible schools typically participated in these projects. These methodological weaknesses prevented firm conclusions from being drawn.

However, in the past five years in Ireland three major epidemiological studies of childhood psychological problems have been conducted (Jeffers & Fitzgerald, 1991; O'Connor, Ruddle & O'Gallagher, 1988; Porteous, 1989, 1991). These studies have involved more than 4000 children from geographically

disparate areas. The collective findings of these investigations will be particularly important in planning the development of child mental health services. From a scientific viewpoint they will also contribute to the growing series of similar international studies (Links, 1983; Vikan, 1985). Unfortunately, the results of two of the Irish studies have been published in relatively inaccessible technical reports. Also no previous attempt has been made to draw together the results of all three investigations. The present paper aims to address both of these problems.

First, the methodological features of each of these studies will be discussed. This will be followed by a summary of key findings. Comparisons with results from similar studies in other countries will then be made. Finally, the implications of these findings for service development will be discussed.

METHODOLOGY

Jeffers & Fitzgerald, 1991

Jeffers and Fitzgerald screened all children in fourth standard in all schools (excluding those for the mentally handicapped) in a suburb of Dublin. Only one school refused to participate. This low non-response rate of only 2.5% is a particular strength of the study. In all, a population of 2029 children between the ages of 9 and 12 in 39 schools were screened. This typical Dublin suburb contained both private housing estates and local authority estates. Thus, all social classes were represented. Unfortunately, no more detail than this on the socio-demographic profile of the population studied is given by the authors.

Table 2.1. Sample characteristics in three major Irish epidemiological studies of childhood psychological disorders

CHARACTERISTIC	O'Connor, Ruddle et al	Jeffers & Fitzgerald	Porteous
Area	Clare & Limerick	Dublin Suburb	Cork county and City
Number of Schools	74	39	23
Sample size	1,361	2029	733
Male/Female Ratio	1/1.2	1.1/1	1/1.1
Age Range	6-12	9-12	9-10
School Classes	1st-5th	4th	3rd
% Disadvantaged	17%	45%	-----

Forty-five percent of the youngsters were in schools for the disadvantaged. These are schools which the Department of Education recognizes as containing a large number of pupils from socially deprived backgrounds. Schools for the disadvantaged are allocated additional staffing and resources. However, the degree to which this occurs and the precise nature of the additional staff and resources vary widely from one school to the next.

Participants were screened for psychological problems, intelligence and reading attainment. The Rutter Teacher Questionnaire (Rutter, 1967), Raven's Standard Progressive Matrices (Raven, Court & Raven, 1983) and the MICRA-T Reading Attainment Test, Level 3 (Wall & Burke, 1988) were used for this screening.

A 1 in 3 random sample of cases with scores above 9 on the Rutter Teacher Questionnaire and a 1 in 16 random sample of controls scoring below this cut-off point were intensively assessed and compared. One hundred cases

and 106 controls were identified for this part of the study. One hundred and ninety of these families agreed to participate. Thus, the non-response rate was only 8%. In each of these groups the index child's mother was interviewed by a psychiatrist blind to the child's status as a case or a control, using standardised schedules to assess child symptomatology (Graham and Rutter, 1968), maternal mental health (Goldberg & Blackwell, 1970; Rutter, Tizard & Whitmore, 1970) and maternal social environment (Clare & Cairns,1978). In a subsample of cases, a second psychiatrist attended interviews and made independent ratings. Acceptable levels of inter-rater reliability were obtained but details of these were not reported.

O'Connor, et al., 1988

O'Connor et al. drew a stratified random sample of 1,361 children in from a population of 26,633 children in 147 primary schools in County Clare and Limerick City. First, 147 schools were stratified into twelve subgroups according to size, participation in the government's disadvantaged school scheme and whether they were rural or urban. Second, from these subgroups, a total of 74 schools were randomly chosen. Third, within each of the 12 subgroups, 10 teachers were randomly selected and 12 pupils were chosen from their class lists using random number tables for inclusion in the study, yielding a total of 1,440 participants. The overall non-response rate was less than 5%. This is a particularly strong feature of the study.

Forty-four percent of the national school population studied were from Limerick City, 41% were rurally based and the remaining 15% were from small towns. All social classes were represented within the study. Unfortunately the authors do not give a breakdown of the population by socio-economic status.

Seventeen percent of participating schools were in the Government scheme for the disadvantaged described earlier.

Psychological problems, intelligence and reading attainment were assessed using standardised tests and teacher's judgements were also obtained. The Rutter Teacher Questionnaire (Rutter, 1967), Raven's (1983) Standard Progressive matrices, the Standard Reading Test (France, 1981) for 6-10 year olds and the Cloze Reading Test (Young, 1982) for 11-12 year olds were used for the screening.

Porteous, 1989, 1991.

Porteous (1989, 1991) drew a sample of 733 9-10 year olds in 23 schools from a population of 8,100 children in third standard in 369 primary schools in Cork city and county. Schools were stratified as rural or urban. A clustered sampling procedure was used for the rural stratum of the sample and a simple random sampling procedure was used for the urban stratum. For schools outside the city a one in seven random selection of numbered ordinance survey grid squares was made and the rural stratum of the sample comprised all the schools in these squares. Urban schools were selected at random from a numbered list of school names. Of 57 targeted schools only 23 agreed to participate in the survey, representing a school non-response rate of 40%.

Thirty-six percent of the national school going population studied were based in Cork city and the remaining 64% attended rural schools. The population contained children from all social classes although Porteous does not give a breakdown of the population by socio-economic status.

Of 813 children in third standard in these schools, 646 were screened with the Rutter Parent Questionnaire and 733 were screened with the Rutter Teacher

Questionnaire. The non-response rates for parents and teachers were 21% and 10% respectively.

Of 164 index cases scoring above the cut-off point on the Rutter Parent and Teacher Questionnaires, 124 were assessed on standardised psychological tests of intelligence, attainment and adjustment. Subtests from the British Ability Scales (Elliott, 1983) and the British Picture Vocabulary Scales (Dunn, Dunn & Whettan 1982) were used to assess intelligence and attainment. The drop-out rate here was 24% and the drop-out rate for a control group drawn randomly from children scoring below the cut-off points on the Rutter scales was 29%. One hundred and seventeen controls were tested.

The parents of 75 index cases and 65 control cases were interviewed using the Graham and Rutter (1968) schedule for assessing child symptomatology. The drop-out rates for this stage of the study were therefore 54% and 60% respectively. Drop-outs at this stage of the study did not differ significantly from those interviewed on teacher-reported difficulties.

Comment

Characteristics of the samples in the three studies are set out in Table 2.1.

Major strengths of all three studies are their scale, their attempts to study representative samples of children and the use of well standardised instruments of known reliability and validity. One of these, the Rutter (1967) Teacher Questionnaire deserves particular mention because many of the comparisons made later in this paper are based on this instrument. The Rutter Teacher Questionnaire is a 26 item paper and pencil behaviour problem checklist completed by teachers. Each item is a statement of a particular problem and teachers may respond by indicating if the problem applies to a child, applies

somewhat or does not apply. These response categories are given scores of 2, 1 or 0 respectively. The questionnaire yields three summary scores: a total score, a conduct problem score and an emotional problem score. The first of these, based on the sum of scores for all items, indicates the overall extent and severity of a child's behaviour problems. Children scoring above a cut-off point of 9 are classified as having a psychological disorder. Where children score above the cut-off point, they may be further subclassified as having significant conduct problems or significant emotional problems by obtaining their scores on two subscales comprising designated subsets of items. The conduct problem subscale contains items which refer to externalizing behaviours such as disobedience and fighting. Internalizing behaviours such as appearing to be worried or miserable make up the emotional problem subscale (Achenbach, 1984). Both inter-rater and test-retest reliability have been established for the Rutter Teacher Questionnaire. The validity of the scale has been established by showing that children who score above the cut-off point when clinically assessed are diagnosed as having a psychological disorder (Rutter, 1967; Rutter, Tizard & Whitmore, 1970; Rutter, Cox, Tupling, Berger & Yule, 1975).

While the studies reviewed in this paper have important strengths, each have weaknesses which effect the confidence with which conclusions may be drawn. First, none of the studies give a thorough socio-demographic profile of the populations studied. This makes comparisons of results from these studies with those based on other populations difficult to interpret.

Second, in Jeffer's and Fitzgerald's study, the population is clearly more disadvantaged than is commonly the case. The prevalence of psychological disorder is therefore probably higher than in more affluent areas. However, the results from the study are useful in making generalisations about similar sorts of less affluent areas around Irish cities.

Third, in Porteous' investigation, non-response was a major problem. No checks were made to determine the degree to which non-responders in the first stage of the study differed from the group who completed the study.

Fourth, a further problem with Porteous' study is the fact that inter-rater reliability was not determined for classification of children following the parent interview. However, a cautious approach was taken and therefore the estimate of the prevalence rate for psychological disorders in children is probably lower than the actual rate (Porteous, 1993).

Finally, in both Jeffers' and Porteous' studies initial screening was followed up with intensive interviewing of index cases and controls. This was not the case in O'Connor's investigation. She confined her work to screening alone. Her estimate of the prevalence of psychological disorders in youngsters may be an under-estimate because of the tendency of the Rutter Teacher Scale to underestimate prevalence rates by between 1-6% (Rutter, Cox, Tupling, Berger & Yule, 1975).

PREVALENCE OF PSYCHOLOGICAL DISORDERS

Because all three investigations used the Rutter Teacher Questionnaire, results from this scale will be used as the central set of variables for comparing studies. Frequencies were compared using Chi Square tests and all reported differences are statistically significant at or beyond $p < .05$.

Overall Prevalence Rates

2.2 contains a summary of prevalence data from the three studies derived from the Rutter Teacher Questionnaire.

Table 2.2. Prevalence of childhood psychological problems as assessed by the Rutter Teacher Questionnaire in three major Irish epidemiological studies.

Group	O'Connor, Ruddle et al (N=1,361)	Jeffers & Fitzgerald (N=2029)	Porteous (N=733)
Males & females with internalizing & externalizing behavioural problems	11%	17%*	15%*
Males & females with externalizing behavioural problems	8%+	13%*+	---
Males & females with internalizing behavioural problems	3%	4%	---
Males with internalizing & externalizing behavioural problems	13%	21%*+	15%
Females with internalizing & externalizing behavioural problems	10%	12%	14%*
Boys with externalizing behavioural problems	11%+	---	---
Girls with externalizing behavioural problems	7%	---	---
Males with internalizing behavioural problems	2%	---	---
Females with internalizing behavioural problems	4%	---	---

Notes: Mixed disorders of emotions and conduct or both internalizing and externalizing problems have been included in the externalizing behaviour problems category.
* :differs from other non-asterixed scores in that row at p<.05 on Chi Square test.
+:differs from other unmarked scores in the column of that section of the table at p<.05 on Chi Square test.
---: Data unavailable.

Prevalence rates, based on this instrument, ranged from 11% in Clare to 17% in a disadvantaged Dublin suburb. In Cork the rate was 15%. The rate in Dublin was significantly higher than that in Cork or Clare.

Prevalence rates based on in-depth interviews with parents of screened cases and controls were 16% for Dublin and 10% for Cork. The estimated prevalence rate in Dublin was significantly higher than that in Cork.

The prevalence rates furnished by interviews in the Dublin and Cork studies are lower than those furnished by screening questionnaire. This is unusual. For example, Rutter et al., (1975) found that his Teacher's Questionnaire classified 11% and 19% of 10-11 year olds on the Isle of Wight and in an Inner London Borough respectively as disordered. Parental interviews with positively screened cases and controls yielded prevalence rates for the Isle of Wight and the London Borough of 12% and 25% respectively.

The unusual pattern in the Irish data deserves explanation. Jeffers & Fitzgerald obtained an initial estimated prevalence rate of 25% from the parental interviews, but this group contained a large number of youngsters with primary enuresis and no other psychological difficulties. When these were excluded a prevalence rate of 16% was obtained. Porteous found that the Rutter Parent and Teacher Questionnaires screened out 25% and 15% of cases respectively. When parent interviews were conducted with a subsample of these cases, a prevalence rate of 10% for definite psychological disorder was obtained. A further 24% were identified as borderline. Porteous (1993) was conservative in making diagnoses. Had he been less cautious, some of the borderline cases would have been classified as having a definite psychological disorder.

Prevalence of Internalizing and Externalizing Behaviours

O'Connor et al. and Jeffers et al. (but not Porteous) reported prevalence rates for internalizing and externalizing behaviours based on data from the Rutter Teacher Questionnaire. These are presented in Table 2.2.

Table 2.3. Item distributions on the Rutter Teacher Questionnaire in two major epidemiological studies of Irish children.

Group	Jeffers & Fitzgerald Males (N=1094)	Jeffers & Fitzgerald Females (N=935)	Jeffers & Fitzgerald Males & Females (N=2029)	Porteous Males & Females (N=733)
Externalizing Behaviours				
Disobedient	28	15*	22	18
Fights	24	13*	18	16
Lies	18	8*	13	10
Bullies	15	4*	10	7
Destructive	12	5*	8	5
Truanting	4	2*	5	2
Steals	4	2*	3	2
Internalizing Behaviours				
Worried	19	26*	22	35
Fearful	16	18	17	21
Miserable	12	14	12	17
Absent from school for trivial reasons	12	11	12	8
Fussy	6	8	7	16
Tearful on arrival at school	2	2	2	2
Attentional Problems				
Fidgety	37	22*	30	35
Restlessness	33	20*	27	31
Poor Concentration	29	16*	23	27
Relationship Problems				
Solitary	16	13*	16	23
Irritable	23	12*	18	11
Not liked	13	10	11	18
Other Problems				
Apathetic	23	12*	18	-
Resentful	24	11*	18	-
Nail Biting	13	8*	11	10
Aches & Pains	5	8	6	5
Thumbsucking	4	4	4	7
Twitches	6	2*	4	7
Stammer	5	1*	3	7

Speech difficulty	-	-	-	4
Wets or soils	-	-	-	1

Note: All percentages are rounded and based on endorsement of 'applies somewhat' or 'definitely applies' response categories. Porteous did not include the *apathetic* or *resentful* items in his study and Jeffers did not include the *speech difficulty* or *wets/soils* items in her study. They used different versions of the Rutter B.
*Significant (P<.05) sex difference in the distribution of the item.

Externalizing behaviours were about three times as prevalent as internalizing behaviours and this difference was statistically significant in both studies.

Both Jeffers & Fitzgerald and Porteous presented detailed information on responses for each item on the Rutter Teacher Questionnaire. These data were used to calculate the prevalence of the specific problems listed in Table 2.3. Items from the questionnaire have been grouped into conceptually meaningful categories to aid interpretation.

Fighting and disobedience were the most prevalent problems falling into the externalizing behaviour category. Between 16 and 22% of children in Dublin and Cork had such difficulties.

Of the internalizing behavioural problems, being worried was consistently identified as the most prevalent difficulty in this category. Twenty-two percent of Dublin children and 35% of youngsters from Cork had this problem.

Between about a quarter and a third of youngsters were identified as having problems of restlessness, being fidgety and poor concentration. These are problems which would interfere with the successful completion of academic tasks such as developing literacy and numeracy skills.

Between 11 and 23% of youngsters in both areas presented with relationship difficulties including irritability, being disliked by peers and being solitary.

Sex Differences in Prevalence rates

From Table 2.2 it may be seen that both O'Connor et al and Jeffers & Fitzgerald found important sex differences. Psychological disorders were more common among boys than girls and this difference was statistically significant. This, finding is consistent with sex-difference data on the prevalence of childhood

psychological disorders from many other countries (Links, 1983). However, this widely reported pattern was not found in the Cork data.

O'Connor et al. reported prevalence rates for males and females classified as having predominantly internalizing or externalizing behavioural problems on the Rutter Teacher Questionnaire conduct problem and emotional problem subscales. From Table 2.2 it may also be seen that externalizing behavioural problems were significantly more prevalent among boys than girls. No significant sex differences for internalizing behaviours were observed.

Jeffers and Fitzgerald's is the only report providing separate male and female item distributions for the Rutter Teacher Questionnaire. These are presented in Table 2.3. On 18 of the 26 items significantly more boys than girls were rated as having a problem. Five of the eight items where no sex differences occurred refer to internalizing behaviours. This finding is consistent with O'Connor et al.'s results and with the international literature on sex differences in childhood psychological disorders (Links, 1983).

EDUCATIONAL & FAMILY CORRELATES

Statistically significant ($P<.05$) associations were found by both Jeffers & Fitzgerald and O'Connor et al. between the presence of a psychological disorder and intelligence, reading backwardness and being in an urban school for the disadvantaged. (Details of the intelligence test data are reviewed elsewhere (Carr, Submitted).

Jeffers & Fitzgerald also found statistically significant ($p <.05$) associations between childhood psychological disorder and adverse family circumstances. The following specific family adversities were associated with

psychological disorder: maternal depression, being in a single parent family, marital discord, maternal dissatisfaction with the role of parent, large family size, lack of social support and financial difficulties.

All of these results are consistent with the international literature on correlates of childhood psychological disorders (Links, 1983). The only unusual finding in this area came from Porteous' study. He found that index cases and controls did not differ on intelligence or reading attainment. An explanation for this anomaly is still lacking.

Unfortunately no attempt was made in these studies to identify the correlates of specific disorders. Such analyses would have been particularly fruitful in Jeffers' and Fitzgerald's study where a wealth of psychosocial data was available and a number of hypotheses about differences between conduct and emotional disorders could fruitfully have been tested. Such analyses are planned for the future (Fitzgerald, 1993).

COMPARISON WITH INTERNATIONAL DATA

Table 2.4 summarises overall prevalence rates for childhood psychological disorders as assessed by the Rutter Teacher Questionnaire in a number of major international epidemiological studies.

The prevalence of childhood psychological disorder in Dublin is close to that of London and Uganda but not as high as Mauritius. The similarity of prevalence rates for London and Dublin in particularly noteworthy. This finding suggests that the social stresses and lack of social supports associated with both urbanization and the development of childhood psychological disorders may now be at similar levels in both Capital cities (Goodyer, 1990).

The prevalence in Cork is close to that of Korea. It is quite likely that different factors account for the equivalent prevalences in these very different areas since both countries are at very different stages of social development and have widely differing cultures.

Table 2.4. Prevalence of childhood psychological disorder as assessed by the Rutter Teacher Questionnaire in Irish and international studies.

Author	Year	Country (Region)	N	% Psychological disorder
Venables	1983	Mauritius	1063	23%
Rutter	1975	UK (London)	1689	19%
Minde	1975	Uganda	577	18%
Jeffers	1991	Ireland (Dublin)	2029	17%
Porteous	1991	Ireland (Cork)	733	15%
Matsuura	1993	Korea	1975	14%
O'Connor	1988	Ireland (Clare)	1361	11%
Rutter	1975	UK (Isle of Wight)	1279	11%
McGee	1984	New Zealand	951	9%
Matsuura	1993	China	2432	8%
Matsuura	1993	Japan	2638	4%

Note: Cases scoring 9 or more on the Rutter B scale were classified as deviant and all % are rounded up to whole numbers.. Prevalence rates grouped by vertical line do not differ significantly from each other on Chi Square tests at $p < .05$. All other comparisons of prevalence rates were significant at $p < .05$.

The prevalence rate for Clare is the same as that for the Isle of Wight and similar to that of New Zealand. This is not surprising in view of the low level of urbanization present in all three locations.

In China or Japan the prevalence rates for childhood psychological disorders were lower than for anywhere in Ireland.

DISCUSSION

In Ireland currently there are approximately 1 million children between 0-16 years (Central Statistics Office, 1991). Assuming conservative prevalence rates of between 10 and 16% as indicated by the studies reviewed here, there are between 100,000 and 160,000 youngsters in Ireland with psychological disorders. There are more of these disordered youngsters in cities than in rural areas. Their psychological problems are typically compounded by both educational difficulties and family adversity. Boys with externalizing behavioural problems constitute the single largest group of psychologically disordered youngsters. A priority must therefore be placed on developing and evaluating services for these conduct disordered boys: services which address both the conduct problems themselves and related educational and family difficulties. This is particularly important because if untreated, a significant proportion of conduct disordered youngsters develop into personality disordered adults (Robins, 1987). Such a chronically disturbed population would place major demands on already overburdened adult mental health and correctional systems.

The need for service development is highlighted by the results of a recent survey of clinical psychologists in Ireland (Carr, In Preparation). From the survey it was estimated that the total number of psychologists working with children who have psychological problems in Ireland probably does not exceed 100. This figure includes psychologists working in the health boards, the voluntary hospitals and private practice. Assuming conservatively, from the data presented in this paper, that there are at least 100,000 children with psychological problems in the Republic of Ireland, the ratio of psychologists to children with psychological problems is about 1 per 1000. Even working with a full multidisciplinary team, no psychologist could adequately service more than one fifth of this caseload annually. These data suggest that clinical child

psychologists need to take steps to expand their manpower if they want to offer a truly comprehensive service to youngsters with psychological problems.

The results presented here are remarkably similar to those found in Rutter et al.'s (1975) studies of youngsters from the Isle of Wight and London. In both the Irish and British studies, higher prevalence rates were associated with urban dwelling, male sex, educational difficulties and family adversity. Not only that, but the actual prevalence rates obtained by questionnaire in rural and urban areas were strikingly similar to those obtained in Dublin and Cork.

Cross-sectional studies such as those reviewed in this paper are useful for throwing light on overall prevalence rates in various populations at a given point in time at a relatively low cost. However, many of the advances in the epidemiology of childhood psychological disorders are being made by teams who use longitudinal designs, information from multiple informants and research diagnostic criteria. For example, Patricia Cohen's team recently reported on a 10 year longitudinal study of 700 individuals across the period from 10 to 20 years of age (Cohen, Cohen, et al. 1993; Cohen, Cohen & Brook, 1993). Over time there were clear changes in the distribution of specific disorders conforming to DSM 111 R criteria across sexes and these suggested clear hypotheses about the course of psychological disorders in youngsters. For example, the rate of over-anxious disorder and attention deficit hyperactivity disorder became far less prevalent in boys as they matured but remained relatively stable in girls, suggesting that the biological and social changes that occur in adolescence help boys overcome these disorders but have little impact on girls. No such carefully designed longitudinal epidemiological studies have been conducted in Ireland to date and this is clearly the direction that future Irish research in this field needs to take.

SUMMARY

Three major epidemiological studies of psychological disorders in Irish children were reviewed. These are the first systematic investigations to be conducted in Ireland and all have been completed within the last 5 years. The studies were conducted in Dublin (N=2029), Clare (N=1361) and Cork (N=733). In all three studies children were screened with the Rutter Teacher Questionnaire. The prevalence rates of children with deviant scores were 17%, 11% and 15% for Dublin, Clare and Cork respectively. Externalizing behavioural problems were three times more prevalent than internalizing problems in Dublin and Clare. Data for Cork, on this variable, were unavailable. In all three studies the prevalence of disorders was higher in boys, but this pattern was particularly marked in Dublin where 21% of boys had disorders compared to 12% of girls. In Dublin and Clare, but not in Cork, lower intelligence and reading attainment difficulties were associated with the presence of a psychological disorder. In Dublin (the only area for which data on family circumstances were available) family adversity was associated with psychological disorder. In Dublin and Cork, screening by questionnaire was followed-up with an intensive interview study of cases and controls. Estimated prevalence rates of psychological disorder based on interview data were 16% for Dublin and 10% for Cork.

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