The Friendships and Recent Life Events of Anxious and Depressed School-Age Children

IAN GOODYER, CAROLINE WRIGHT and PATRICIA ALTHAM

The number of moderate to severe undesirable life events and the quality of friendships were compared between a consecutive series of 100 childen aged 7–16 years with emotional disorders and a series of community controls matched for age, sex, and social class. Undesirable events and friendship difficulties exerted independent direct effects of similar magnitude on the probability of developing emotional disorders; 33% of disturbed children experienced both adversities compared with 6% of controls. An additive interaction was found for the two factors. The results were uninfluenced by the sex or pubertal status of the subjects. There appears to be no greater probability of being anxious rather than depressed in the presence of life events, alone or in combinations with friendship difficulties. Recent undesirable life events and friendship difficulties arise through independent social pathways and may exert their effects through different psychological mechanisms.

In recent years a number of studies have investigated the pathological effects of relatively long-standing social adversities in the lives of children and adolescents (Rutter, 1985). The risk of psychiatric disorder following more acute adversities has received less attention (Rutter, 1981). A recent investigation has confirmed that moderately or highly undesirable recent life events exert potentially causal effects on the onset of emotional and behavioural symptoms in school-age children and adolescents (Goodyer et al, 1985, 1987). The study also demonstrated that recent major events are neither necessary nor sufficient to provoke symptoms: 30% of the children did not experience a life event in the 12 months before onset of disorder; 20% of controls reported one or more major life events in the 12 months before interview.

It is apparent that a range of life experiences may potentially cause psychiatric disorders. Examples include long-term continuous difficulties such as poor relations with parents or parental psychiatric disorder (Rutter, 1990), life events such as bereavement or divorce (Van Eerdewegh *et al*, 1982; Hetherington *et al*, 1985), and recent adversities such as peer-group difficulties (Goodyer *et al*, 1989). The present evidence suggests that children with psychiatric disorder, particularly conduct symptoms, have experienced chronic social adversities. It may be the patterning and multiplicity of adversities that determines the risk of psychiatric disorder rather than the effects of any one type of event or difficulty (Rutter, 1987).

We have therefore considered in more detail other social factors that may be causally involved in the onset of anxious and depressive disorders of school-age children. We decided to continue our search for factors in the children's recent lives before examining the contributions of past experiences. One factor was the quality of childrens' friendships. The importance of friendships for well-being in childhood has been recognised by clinicians and researchers alike (Hartup, 1983; Rutter, 1985). Two broad themes are apparent from the literature. First, good peer relationships are probably necessary for healthy mental development. Thus they may operate by promoting a child's self-esteem and the development instrumental skills and emotional ties with other children (Hartup, 1983; Harter, 1983; Field et al, 1984). Second, the absence of close relationships with others may increase the risk of psychiatric disorder (Rutter, 1987).

Our previous research had shown that reports of peer-group difficulties as life events were uncommon (Goodver et al. 1985). The impression was however that a sizeable proportion of children experienced peer-group problems as protracted difficulties over time rather than as discrete life events. Such difficulties were excluded from analysis because they failed to meet criteria for a circumscribed life event. Because of this methodological shortcoming we decided to develop an interview to investigate friendship difficulties over the last 12 months. We would then be in a position to evaluate the role of ongoing friendship difficulties in the presence and absence of recent life events collected over the same time. Furthermore we wished to measure friendships rather than peer relations in general because the present evidence suggests that psychological as well as social factors will determine who is regarded as a 'friend'. For example, it is apparent that children

discriminate between friends and peer relations on the basis of how well they know another child (Berndt, 1984; Rubinstein, 1984). In addition, the meaning of 'friendship' for children involves emotional investment as well as a consideration of the availability and adequacy of the social relationship (Hartup, 1983); friends are likely to arise only if children have sufficient opportunity to meet other children (Berndt, 1983).

We have reported findings concerning the method and measurement of the quality of children's friendships (Goodyer et al, 1989). These findings indicated that puberty represented a point of change in the effects of friendships difficulties. Thus, while pre-pubertal children were overall equally likely to be anxious or depressed, post-pubertal children were significantly more likely to be anxious in the presence of moderate to poor friendships. There were however no significant differences in the proportion of boys or girls experiencing friendship difficulties and sex exerted no effects on the three-way interaction between moderate to poor friendships, puberty, and diagnosis. The findings reported in that research raise many questions concerning the meaning and the mechanisms of friendship difficulties that require further clarification. For example, how should the psychological impact of poor friendships be considered in the presence of other variables such as recent stressful life events? Both these adversities may exert independent effects on the risk of developing emotional disorder. Alternatively, they may be related such that the effects of one type of adversity are dependent on the presence of the other.

This paper reports data testing three main hypotheses:

- (a) that friendship difficulties and recent stressful life events exert independent effects on the risk of developing emotional disorder in school-age children
- (b) that emotional disorder in children between the ages of 7 and 16 is significantly more likely in the presence of a moderate to severely undesirable recent life event than in the presence of moderate to poor friendships
- (c) that the three-way interaction between moderate to poor friendships, puberty, and diagnosis is altered in the presence of recent stressful life events.

Method

A cross-sectional case-control study was carried out in the City of Salford. Psychiatric cases were obtained from the clinics of the University Department of Child and Adolescent Psychiatry, based in a paediatric hospital containing out-patient psychiatric services for children and adolescents, and a psychiatric hospital containing outpatient and in-patient services for adolescents up to 18 years of age. Control subjects were obtained from general practice case registers in the same urban area.

Selection of the cases

All patients attending the two clinics were considered potential research subjects. Inclusion criteria for the study were:

- (a) age between 7 and 16 years
- (b) no mental handicap
- (c) living with mothers or mother surrogates for at least two years before referral
- (d) mothers or mother surrogates free of recent psychoses or serious medical conditions likely to impair their ability to take part in research interview
- (e) suffering a disorder whose onset could be identified as occurring within the last 14 months, so that retrospective recall of life events was no longer than 26 months
- (f) met criteria for emotional disorder described below.

Onset of disorder was defined as the appearance of new symptoms or a marked and identifiable change in the frequency, duration and quality of signs and symptoms, which resulted in referral. The 100 clinical cases can be classified in three groups in terms of onset of disorder:

- (a) 38 with no evidence of signs or symptoms before onset
- (b) 32 with reported vague distress which did not affect the child's life, who developed definable new signs and symptoms resulting in referral; onset was taken at the point of new symptoms being reported
- (c) 30 with reported vague distress whose degree, frequency and quality had altered and resulted in referral; these emergent symptoms resulted in referral because previously they had not been causing difficulties for the child or altering his/her everyday living but were now doing so. Onset was taken at the point where symptoms were reported as emergent.

Criteria for emotional disorder

Mothers (or their surrogates) completed the Rutter A(2) parent questionnaire on their first visit to the clinic. Those children who were definitely conduct disordered on the basis of their scores were excluded. Those children with definite emotional or mixed disorders and those whose scores were ambiguous (i.e. too low and therefore uninterpretable) were subject to a clinical screen, consisting of mental state examination of the child and interview with the mother in all cases and family interviews in half.

One of the authors (IG) then established with the clinicians whether the child was suffering from an emotional disorder. This was defined as a two-week history (minimum) of predominant features of altered mood characterised by anxiety, fearfulness, sadness or misery, accompanied by one or more of the following features: phobic or obsessional symptoms, sleep disturbance, eating disturbance, alimentary symptoms, or social withdrawal (including school refusal).

Children whose clinical picture contained these features but dominated by behavioural characteristics such as lying, stealing, firesetting or destructiveness were excluded. In the ten cases where clinicians remained in doubt, children were reinterviewed by IG and a consensus diagnosis agreed. Of these ten cases four were included in the study.

Finally, all cases were subject to two further classifications:

- (a) anxiety-dominant disorders, presenting with marked features of fearfulness, phobias, obsessions, and somatic symptoms (headache, abdominal pain and other non-specific pains); features of misery and sadness were transient or absent
- (b) depressive-dominant disorders, presenting with marked and persistent features of misery and sadness accompanied by one or more negative thoughts (hopelessness, helplessness, suicidal ideation, poverty of thought), and one or more somatic features (undesirable alteration in sleep, appetite, energy, performance); anxiety symptoms may also be present but are not predominant clinical features. Therefore no concurrent diagnosis of anxiety was made.

All cases reported here were collected between August 1984 and October 1985. Of 1100 children referred to the services participating in the study, 121 met the criteria for inclusion, and 115 (95%) agreed to participate. Thus newonset emotional disorders in school-age children represented approximately 10% of all referrals.

Criteria for community controls

Community controls consisted of children identified from the case registers of two general practices in the health district: practice 1, an inner-city general practice which houses part of the University Department of General Practice and serves a predominantly (>80%) working-class population as identified by their own case register using the Registrar General's classification (classes 3 (manual), 4, 5); and practice 2, a suburban general practice associated with the university whose population is approximately 50% middle-class (classes 3 (non-manual), 2, 1): where parents were unemployed for over two years the family was identified as social class 6. The age, sex, and social class of each case was identified at the time of interview.

The social class of the child was used to determine which general practice case register a control would be selected from. For each case a control subject was identified of the same sex and age to within six months (three months older or younger) whose surname began with the same letter. A second, reserve control was also identified.

When a control had been selected from the register he/she was subject to a brief screening procedure to exclude medical and psychiatric disorder. The children's health records were examined by the general practitioners, who vetoed cases if they had treated them for emotional/ behavioural difficulties. The mothers of the control subjects underwent a preliminary interview. If the child had been seen by a school doctor or psychologist for emotional/ behavioural difficulties in the previous month or if such difficulties were present at interview they were excluded. Twelve were excluded.

Eighty of the first controls were used. Ten families had moved and were untraceable, two were in hospital for medical treatment, and eight refused to enter the study. Thus 20 reserves were used. Of the 100 controls 60 were selected from practice 1, and 40 from practice 2. Of the 20 controls not used from the first-control sample, 14 were from practice 1 and 6 from practice 2. The first 100 cases were matched with 100 controls for age and sex and group matched for social class.

The results presented in this paper are based on the analysis of this matched group (n = 200).

Measurement of friendship

Firstly, we were concerned to measure the effects of recent friendship rather than attempt to make inferences about longer-term relationships spanning years and different developmental stages. We therefore confined ourselves to inquiry about the last 12 months. Secondly, we were concerned to measure the everyday organisation of friendships and not a particular set of circumstances that might arise. Therefore we established that we were not identifying patterns of friendships occurring at a time of substantial crisis such as a family death, or as a consequence of a unique experience resulting in unusual notoriety, such as gaining admirers through recent personal achievement. We therefore took into account components of social network, frequency, duration and number of contacts with children, the social setting in which contacts occurred, the reciprocity of contacts, and the preference and affiliation of contacts.

Children presenting with long-term continuous difficulties in socialisation were excluded because they would not meet the entry criteria for recent-onset emotional disorder described below. Some children, however, may well have had episodes of friendship difficulties in the past and these were not measured in the present interview.

A semistructured interview schedule was developed which obtained substantive information about the ongoing nature of friendships. A description of the child's friendship was then constructed on the basis of all available information derived from the interview, including background information collected concurrently from the mother. A check on potential independence was carried out at this stage by IG and CW using a consensual rating, so that only information considered certainly or almost certainly independent of disorder was included. The description of the child's friendships used for rating consists of the confluence of child's and mother's contextual information. Unresolvable disagreement between the mother and child occurred only twice, both psychiatric cases and both 15-year-old girls.

Friendship was rated on a three-point scale (good, moderate, or poor) by consensus between IG and CW.

The length of recall time for cases and controls was different: for controls it was the last 12 months, whereas for cases it was to 12 months before onset, and as the duration of disorder was 1-12 months (mean 8.6 months, s.d. 5.1 months), recall time for cases was 13-24 months.

Full details of the methods and measurements of friendships, including data indicating satisfactory reliability for test-retest of mother-child pairs, reports of friendships and the rating of friendships by objective raters, are given in a separate paper (Goodyer *et al*, 1989).

Recent stressful life events

Recent life events were measured using the child and adolescent Life Event Schedule (2nd version). The interviewer inquires by a means of a general paragraph about a given class of event (accidents, illnesses, marriages, bereavements, legal, natural disasters) and then specifically about each event in that class. Detailed questioning determined the exact nature and circumstances of each event that had occurred in the 12 months before onset of disorder for the cases or day of interview for the controls.

The schedule was administered to the mothers of all the subjects, and more than 90% of the interviews took place in the child's home. One of the authors (CW) was responsible for over 85% of the interviews.

The likelihood that a life event was independent of illness was rated on a five-point scale ranging from 'not independent' to 'almost certainly independent' (Brown & Harris, 1978). The degree to which an event would exert an undesirable effect on the child likely to last days or weeks was also rated on a five-point scale ranging from 'not undesirable' to 'almost certainly undesirable'. This rating is derived from the negative-impact rating reported by Paykel (1983) and is based on the concept of long-term threat developed by Brown & Harris (1978). All events received both ratings which, were obtained by consensus between IG and and CW.

Only events that were almost certainly independent of illness and carried a moderate to severe degree of undesirability were used in the analysis. Previous research has suggested that mild events are not significantly associated with emotional disorder (Goodyer *et al*, 1985). Some reliability data have been previously published (Paykel, 1983; Goodyer *et al*, 1985).

The identification of puberty

We were not able to subject children to exact puberty measurement. Therefore a comprehensive interview inquiring about the physical changes associated with puberty was used. Both mothers and children were interviewed.

The interview was based on Tanner's (1962) criteria for pubertal development. Puberty was considered present when any one of three criteria were present in the previous 12 months (Marshall & Tanner, 1969, 1970):

- (a) a sustained growth spurt reported by either child or parent
- (b) a sustained increase in size of testes or breast development
- (c) the development of other secondary sexual characteristics.

Therefore we endeavoured to establish retrospectively the presence or absence of puberty over the same time frame as the inquiry about friendships and life events rather than at the point of interview.

Statistics

Comparisons were made between cases and controls for the proportion of subjects experiencing moderate to poor friendships and one or more moderate to severely undesirable life events. Sex and puberty were included in the analysis.

Logistic regression (GLIM program) was used for examining independent and interactive effects of variables (Fleiss *et al*, 1986). This technique determines the best fit of the data and calculates the log odds or probability of being a case. The statistic reported is the scaled deviance, which approximates the χ^2 when the fitted model is correct. Further details of the method and tabulated logisticregression data are available on request.

Results

The characteristics of the sample

There were 51 girls and 49 boys in each group. The mean duration of symptoms in the psychiatric group was 8.6 months (s.d. 5.1). The age range of the cases was 7-16 (mean 12.7, s.d. 2.6). The age range of the controls was the same as for the cases (mean 13.1 years, s.d. 2.5). There were no significant differences for age between the two groups (t=1.0). The cases consisted of 67% working-class and 33% middle-class subjects and the controls were 55% working-class and 45% middle-class subjects $(\chi^2 = 3.0, NS)$.

Of the 100 cases 32 were classified as depressed and 68 as anxious (thus in school-age children a diagnosis of anxious-dominant disorder is twice as likely than depressivedominant disorder in new-onset cases presenting with emotional symptoms). The prevalence of new-onset emotional disorders at a child and adolescent psychiatry service is approximately 3% for depression and 6% for anxiety.

The influence of social class

The procedure for matching social-class groups used in the study may lead to a bias in the proportion of subjects reporting social adversity despite the lack of significant differences overall. Comparisons were therefore made between cases and controls for the effects of social class on life events and friendship difficulties. Of 122 working-class children, 66 (54%) experienced one or more moderately to severely undesirable life events compared with 36 of 78 middle-class children, 42 (34%) experienced friendship difficulties compared with 22 of the 78 middle-class children (28%) (χ^2 = 0.84, NS).

The influence of age

We have previously demonstrated that there are no significant age differences in the proportion of cases or controls experiencing one or more recent undesirable life events (Goodyer *et al*, 1987). These results were replicated in this study, where 38 of 71 (53%) cases aged over 12

experienced one or more events compared with 17 of 31 of controls (53%) ($\chi^2 = 0.01$, NS). Similarly, 28 of 48 cases (58%) reporting moderate to poor friendships were aged over 12 compared with 10 of 16 controls (63%) ($\chi^2 = 0.08$, NS). Therefore no significant age effects are present in the proportion of children experiencing life events or friendship difficulties.

Friendships, events, sex, and puberty

Table I shows the distribution of cases and controls experiencing one or more recent moderate to severely undesirable life events and moderate to poor friendships. Seventy-one cases reported one or more events compared with 31 controls ($\chi^2 = 32.0$, d.f. = 1, P < 0.001); 48 cases reported moderate to poor friendships compared with 16 controls ($\chi^2 = 23.5$, d.f. = 1, P < 0.001). The combination of the two recent adversities is considerably more common in cases than controls (33% v. 6% respectively) than either adversity is when it occurs alone (38% v. 25%, 15% v. 10%for events and friendships, respectively) (Table I).

The findings suggest that the likelihood of being a case rather than control may be best explained by considering events and friendship difficulties together. The potential interaction between the two factors however cannot be adequately investigated from a χ^2 analysis. For these purposes a logistic regression is required so that the independent and interactive effects of events and friendships can be determined. In addition the effects of both sex and puberty need to be investigated to determine whether the associations between the social adversities and the probability of emotional disorder is influenced by these personal attributes.

Table II shows the associations between friendships, events, sex, and puberty. The best fit was a model in which the two factors life events and friendships were found to have an additive interaction on the log of the odds in favour of being a case rather than a control. This additive model was not significantly improved when the effects of sex and puberty were taken into account (see footnote to Table II). These results suggest that these two recent adversities exert independent effects on the probability of being a case or control.

TABLE I Numbers of cases and controls experiencing adversity

	C (n = anxious (n = 68)	ases = 100) depressed (n = 32)	Controls (n = 100)
No moderate/severe events o	or O	5	50
Moderate/severe life events	9	5	73
only Moderate/poor friendships	25	13	25
only	11	4	10
Both moderate/severe events and moderate/poor			
friendship	23	10	6

The results show that exposure to either of these two recent adversities results in a similar magnitude of risk for the likelihood of developing emotional disorder: moderate to poor friendships increase the relative odds by a factor of 4.9; moderate to severely undesirable life events increase the relative odds by a factor of 5.5.

From Table I we have ascertained that in a third of cases both adversities occurred compared with some 6% of controls. Therefore we need to establish the magnitude of risk likely to occur when severe events and friendship difficulties occur in combination. The additive interaction between the two recent adversities results in increasing the relative odds of being a case by a factor of (4.9×5.5) 26.95 (the additive effect of the two independent effects is obtained by a multiplication of their known odds).

An indication of how moderate/poor friendships and one or more moderate/severe life events relate to each other can be obtained from further analyses of the data in Table II. The analyses for cases and controls were undertaken independently as relationships between the same social factors may be different for different groups of children (Goodyer *et al*, 1988).

For cases, a model fitted in which life events were independent of friends, sex, and puberty. By comparison, friends and sex were shown to be conditionally independent given puberty (scaled deviance = 5.794, d.f. = 9, NS). In other words, in order to understand the origins and effects of friendship difficulties, a knowledge of puberty is required. In order to understand the origins and effects of life events, however, no knowledge of puberty or sex is required. The conditional relationships between puberty and sex does not involve either of the social adversities measured in the study and is therefore not relevant to the investigation of the origins or effects of these adverse factors.

A similar analysis was carried out for controls (again using the raw data shown in Table II). In this analysis a model fitted in which all four factors were independent (scaled deviance = 6.2744, d.f. = 11, NS).

Thus life events and friendships are unrelated to each other in both cases and controls. This suggests that the origins (as well as effects) of these two recent adversities are independent of each other.

Diagnosis

It may be that the presence of both moderate to severely undesirable life events and moderate to poor friendships has an effect on the form of disorder, particularly if puberty and sex are entered into the analysis.

Table I shows the proportion of anxious and depressed cases reporting neither, one, or both social adversities. The proportions of anxious and depressed children in each cell are equivalent. This suggests no significant difference between anxious and depressed cases for the type or combination of events and friendship difficulties.

Table III shows diagnosis and social adversities crosstabulated with sex and pubertal status. Fourteen of the 32 depressed children (44%) were boys and 18 (56%) were girls. Nine boys (65%) and five girls (28%) were pre-pubertal, and five boys (35%) and 13 girls (72%) were post-pubertal

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		Ca	ises			Con	trols	
	Boys (n = 49)		<i>Girls</i> (n = 51)		Boys (n = 49)		Girls (n = 51)	
	Pre- pubertal (n = 32)	Post- pubertal (n = 17)	Pre- pubertal (n = 22)	Post- pubertal (n = 29)	Pre- pubertal (n = 27)	Post pubertal (n = 22)	Pre- pubertal (n = 25)	<i>Post-</i> <i>pubertal</i> (n = 26)
Good friends								
Events $(n = 63)$	16	4	8	10	5	5	6	9
No events $(n = 73)$	6	2	4	2	19	13	14	13
Moderate/poor friendships								
Events $(n = 39)$	8	8	8	9	1	1	3	1
No events $(n=25)$	2	3	2	8	2	3	2	3

 TABLE IIA

 Friendship and life-event status by pubertal status and sex

GLIM computation fits a model that the probability of being a case or control depends only on friends and events status and not on sex or puberty.

(a) Scaled deviance = 7.509 at cycle 4, d.f. = 11, NS (with sex and puberty): Estimate Se Parameter

Estimate	s.e.	Parameter
2.177	0.4589	1
- 1.645	0.3764	Friend (2)
- 1.704	0.3306	Events (2)
-0.1321	0.3336	Sex (2)
-0.2711	0.3375	Puberty (2)
(scale paramete	r taken as 1).	• • • •

(b) Removing sex and puberty. Scaled deviance = 8.452 (change = 0.943) at cycle 4, d.f. = 13, NS (change = + 2) (without sex and puberty): *Estimate* s.e. Parameter

Estimate	s.e.	Paramete
1.929	0.3643	1
-1.580	0.3667	Friend (2)
- 1.697	0.3288	Events (2)
	-	• •

(scale parameter taken as 1). (Scaled deviance approximates χ^2 when the model is a good fit.)

Logistic regression model of factors predicting emotional disorder

Friendships	Adverse life event	Sex s	Puberty	No. of cases observed (n = 100)	Total no. of children (n = 200)	Fitted	Residual
Moderate/poor	No	Boys	Pre	2	4	2.231	-0.233
Moderate/poor	No	Boys	Post	3	6	3.347	-0.285
Moderate/poor	No	Girls	Pre	2	4	2.231	-0.233
Moderate/poor	No	Girls	Post	8	11	6.136	1.132
Moderate/poor	Yes	Boys	Pre	8	9	7.859	0.142
Moderate/poor	Yes	Boys	Post	8	9	7.859	0.142
Moderate/poor	Yes	Girls	Pre	8	11	9.605	- 1.454
Moderate/poor	Yes	Girls	Post	9	10	8.732	0.255
Good	No	Boys	Pre	6	25	5.362	0.309
Good	No	Boys	Post	2	15	3.093	- 0.698
Good	No	Girls	Pre	4	18	3.506	0.296
Good	No	Girls	Post	2	15	3.093	- 0.698
Good	No	Boys	Pre	16	21	12.315	1.633
Good	Yes	Boys	Post	4	9	5.278	- 0.865
Good	Yes	Boys	Post	8	14	8.210	-0.114
Good	Yes	Girls	Post	10	19	11.142	-0.532

FRIENDSHIPS AND EVENTS IN CHILDHOOD

	Frien	dship and li	i fe-even t stat	tus by puberte	al status, sex a	and diagnos	is	
		Depr (n =	essed = 32)			Anx (n =	cious = 68)	
	Boys Girls				Ba	ys	Girls (n = 33)	
	(n = 14)		(n = 18)		(n = 35)			
	Pre- pubertal	Post- pubertal	Pre- pubertal	Post- pubertal	Pre- pubertal	Post pubertal	Pre- pubertal	Post- pubertal
Good friends		0 (40 %)	2 (40 M)	((40 M)	12 (6781)	0 (1787)	((38.01.)	A (24M-)
Events No events	3 (33%) 2 (22%)	2 (40%) 1 (20%)	2 (40%) 0	6 (40%) 2 (15%)	13 (57%) 4 (17%)	2 (17%) 1 (8%)	6 (35%) 4 (24%)	4 (24%) 0
Moderate/poor friendships								
Events	4 (45%)	1 (20%)	2 (40%)	3 (20%)	4 (17%)	7 (58%)	6 (35%)	6 (38%)
No events	0	1 (20%)	1 (20%)	2 (15%)	2 (9%)	2 (17%)	1 (16%)	6 (38%)

		TABL	e IIIA			
Friendshin and	life-event	status by	, pubertal	status.	sex and	diagnosis

GLIM computation fits a model that the probability of being anxious or depressed depends only on the interaction friends \times puberty and not on sex or life events.

(a) Scaled deviance = 18.356 at cycle 3, d.f. = 15, NS. Scaled deviance = 8.931 at cycle 4, d.f. = 10, NS. *Estimate* - 0.6833 - 0.7257 - 0.5066 s.e. 0.5333 Parameter 1 0.6381 Friends (2) 0.6506 Puberty (2) 0.09360 0.4658 Sex (2) 0.5059 Events (2) 0.08503 0.9240 2.287 Friends (2) \times puberty (2) (scale parameter taken as 1). (b) Scaled deviance = 9.002 at cycle 3, d.f. = 12, NS. *Estimate* -0.6190 Parameter s.e. 0.4682 1 -0.7309 0.6316 Friends (2) Puberty (2) Friends (2) × puberty (2) -0.4796 0.6398 2.281 0.9069

(scale parameter taken as 1).

Friendships	Adverse life events	Sex	Puberty	No. of cases observed (n = 32)	Total no. of emotionally disordered children (n = 100)	Fitted	Residual
Poor	No	Boys	Pre	0	2	0.700	- 1.038
Poor	No	Boys	Post	1	3	0.750	- 0.333
Poor	No	Girls	Pre	1	2	0.700	0.445
Poor	No	Girls	Post	2	8	2.000	-0.000
Poor	Yes	Boys	Pre	4	8	2.800	0.889
Poor	Yes	Boys	Post	1	8	2.000	-0.817
Poor	Yes	Girls	Pre	2	8	2.800	- 0.593
Poor	Yes	Girls	Post	3	9	2.250	0.577
Good	No	Boys	Pre	2	6	1.235	0.772
Good	No	Boys	Post	1	2	1.222	-0.322
Good	No	Girls	Pre	0	4	0.824	-1.018
Good	No	Girls	Post	2	2	1.222	1.128
Good	Yes	Boys	Pre	3	16	3.294	-0.182
Good	Yes	Boys	Post	2	4	2.444	- 0.456
Good	Yes	Girls	Pre	2	8	1.647	0.309
Good	Yes	Girls	Post	6	10	6.111	0.072

TABLE IIIB dal of fac Logistic re -dominant dis .

 $(\chi^2 = 2.14$ with Yates' correction, d.f. = 1, NS). The trend suggests that a larger sample may confirm the indication that, in new-onset cases of depression attending clinic, boys appear more likely to be depressed when pre-pubertal and girls when post-pubertal.

Thirty-five of the 68 anxious children (51%) were boys and 3 (49%) were girls. Twenty-three boys (68%) and 17 girls (51%) were pre-pubertal and 12 boys (32%) and 16 girls (49%) were post-pubertal. There are no significant differences or indications that sex or puberty influences the proportions of new-onset anxious cases attending clinic $(\chi^2 = 1.4, d.f. = 1, NS)$.

We have previously demonstrated however that a threeway interaction exists between puberty, moderate to poor friendships and diagnosis, suggesting that moderate to poor friendships were significantly associated with both anxious and depressive-dominant disorders in pre-pubertal cases, but significantly more likely to be associated with anxious-dominant disorders in post-pubertal cases (Goodyer et al, 1988). Because of these findings the interaction term (puberty × friendships) was entered into the analysis together with sex. The purpose was to investigate whether or not including life events in the analysis would alter this three-way interaction. Sex was also included because we could not refute the possibility that this factor may exert effects in a new model involving more than one social adversity. The logistic regression showed that the best fit was the original model (footnote to Table III): the inclusion of life events does not alter the form of association between friends, puberty, and diagnosis. The absence of a sex effect confirms previous analyses.

Discussion

The results indicate that both moderate to poor friendships and moderate to severely undesirable recent life events exert independent effects on the probability of being either anxious or depressed in school-age children and adolescents. They confirm that more than one type of recent adversity exerts potentially causal effects on the probability of developing emotional disorder in school-age children. Therefore our first hypothesis that recent undesirable life events and friendship difficulties are independent in their effects is supported.

There was an approximately fivefold increase in the risk being a case rather than a control in the presence of either factor. Thus our second hypothesis that life events would exert a greater risk for emotional disorder than friendship difficulties was not supported.

Taking these two findings together is interesting, because they suggest that recent undesirable life events and friendship difficulties exert a similar degree of risk for the onset of emotional disorders but may arise from different social pathways and perhaps operate through different psychological mechanisms. The two social adversities occurred in combination in 33% of cases. The logistic analysis indicated however that there is no significant interaction between the two variables, and their effects are additive. This of course represents a substantial risk and an important psychological interaction between two social adversities.

The fact that 6% of controls experience both adversities is of some interest. This raises the question of which other social factors (e.g. the presence of social success) or personal attributes (e.g. the presence of an easy, flexible temperamental style) protect some children from emotional disorder in the presence of significant recent social adversity.

Interestingly, the odds of being a case in the presence of life events or friendship deficits were not significantly changed by the inclusion of sex and puberty in the analysis. This does not imply that the mechanism by which boys and girls appraise such stresses are the same. There is a substantial literature indicating that there are sex differences in the mechanisms by which children develop social relations (e.g. Higgins *et al*, 1983). What the results indicate is that both pre- and post-pubertal boys and girls are exposed to the same qualities of social adversity together with the costs and benefits these experiences may bring.

The independence of life events from friendships indicates that there is no mechanism operating between these two adversities which may explain the presence of one in the presence of the other. The origins of recent undesirable events and friendship difficulties may however arise from a third factor common to both. For example, deficits in pre-school social development, mother-infant relations, or intrinsic qualities in the child such as a difficult temperament may all increase the likelihood that either of these acute social adversities may arise. It is equally the case however that the origins of these recent adversities may be substantially independent.

The inter-relationship between social factors occurring at different points in a child's life, personal attributes such as temperament or level of intelligence, and the mechanisms through which they exert their effects have only recently begun to be investigated (e.g. Masten *et al*, 1988; Goodyer *et al*, 1988). The results in this paper indicate that the three-way interaction between friendship difficulties, puberty, and diagnosis is not altered by the inclusion of recent undesirable life events in the analysis. Thus our third hypothesis that life events would alter this relationship is unsupported. Previous reports have suggested that family-focused adversities, including life events, maternal distress, and mothers reporting a lack of intimate confiding relations in their own lives, do not discriminate between anxious and depressed cases (Goodyer et al, 1988). These findings continue to support the notion that factors other than recent adversities (either extrinsic or intrinsic) influence the form of emotional disorder in school-age children. The inclusion of both past social adversities and personal attributes in future research may help to determine how the symptoms and form of psychopathology arises. Clearly, the significance of friendship difficulties and pubertal status will need to be taken into account in any such study. As we have seen, puberty exerts a robust and important interaction with friendships and diagnosis which is uninfluenced by life events. Indeed the association between emotional disorder and life events is uninfluenced by either sex or puberty, confirming our previous findings (Goodyer et al, 1987).

We cannot however determine from this research whether there are significant differences in the personal meaning of undesirable life events and friendships difficulties. The general inference from these results is that friendship difficulties are appraised differently by pre- and post-pubertal children, whereas life events are not. A finer-grain analysis of the qualities of both these adversities is required if we are to explore mechanisms in more detail. In addition, inclusion of sex-role behaviour rather than categorical classification into male and female may improve our understanding of the potential effects of gender (Wilson & Cairns, 1988). These findings do however provide further support for the view that puberty rather than age alone is an important variable in developmental psychopathology (Rutter, 1986).

Some methodological points require comment. Firstly, we have attempted to minimise potentially confounding associations between life events and friendship difficulties by the use of systematic interviewing and careful selection of cases. Nevertheless, a cross-sectional study of this type remains open to biases as a result of retrospective inquiries on a prospective population. A firmer test of the potential relationships between stressful life events and friendship difficulties would be to conduct a longitudinal community study. Under these conditions children's social experiences can be evaluated both before and after the development of disorder. Secondly, the additional use of structured interviews to classify psychiatric disorders may help to improve the specificity of findings in relation to diagnosis. A number of interviews have now demonstrated adequate reliability and discriminant validity for clinical and epidemiological purposes (Gutterman et al, 1987). Thirdly, the conclusions drawn from studies such as this are affected by the measures and

the statistics used (Parry & Shapiro, 1986). For example, friendship measurement can be obtained from direct observation as well as interview, and a comparison of such techniques may help clarify the optimal method for a given research question. Drawing causal inferences and assigning psychological meaning to social variables depends on independent replication of findings rather than a particular statistical analysis (Brown & Harris, 1986; Rutter, 1986). Overall, however, we believe that our findings suggest different pathways for different social adversities likely to cause anxiety or depression in 7-16-year-old children.

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* Ian Goodyer MD, FRCPsych, DCH, University Lecturer and Honorary Consultant in Child and Adolescent Psychiatry, Department of Psychiatry, University of Cambridge, Addenbrooke's Hospital, Hills Road, Cambridge CB2 2QQ; Caroline Wright, MSc, CQSW, Psychiatric Social Worker, Booth Hall Children's Hospital, Charlestown Road, Blackley, Manchester; Patricia Altham, MA, PhD, Statistical Laboratory, University of Cambridge, Mill Lane, Cambridge

*Correspondence



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