

Anne Thompson  
Chris Hollis  
David Richards†

# Authoritarian parenting attitudes as a risk for conduct problems

## Results from a British national cohort study

Accepted: 29 January 2003

Dr. D. Richards†  
Division of Child Health  
The University of Nottingham  
Queens Medical Centre  
Nottingham, NG7 2 UH, UK

Dr. A. Thompson (✉)  
Child & Adolescent Mental Health Service  
Lincoln Partnership NHS Trust  
Moore House, 10/11 Lindum Terrace  
Lincoln, LN2 5RS, UK  
Tel.: +44-15 22/5 13-7 85  
Fax: +44-15 22/5 13-4 05

Prof. C. Hollis  
Section of Developmental Psychiatry  
Division of Psychiatry  
The University of Nottingham  
Queens Medical Centre  
Nottingham, NG7 2 UH, UK

■ **Abstract** This study examines the associations, and possible causal relationship, between mothers' authoritarian attitudes to discipline and child behaviour using cross-sectional and prospective data from a large population sample surveyed in the 1970 British Cohort Study. Results show a clear linear relationship between the degree of maternal approval of au-

thoritarian child-rearing attitudes and the rates of conduct problems at age 5 and age 10. This association is independent of the confounding effects of socio-economic status and maternal psychological distress. Maternal authoritarian attitudes independently predicted the development of conduct problems 5 years later at age 10. The results of this longitudinal study suggest that authoritarian parenting attitudes expressed by mothers may be of significance in the development of conduct problems.

■ **Key words** discipline – parental attitudes – conduct problems

### Introduction

The association between parental discipline styles and childhood conduct problems has been the subject of psychological research for over 50 years. Theoretical models of the processes by which parenting behaviour may be associated with disturbed child behaviour have become increasingly sophisticated, moving from simplistic cause and effect ideas to complex multi-factorial models which include the impact that children have on their parents' behaviour [14, 15].

Harsh parental discipline is one aspect of parenting which is associated with the development of childhood conduct disorder [16]. Meta-analysis suggests it is probably the third most important parenting behaviour associated with childhood conduct disorder, with parental time spent with the child and parental supervision of the child being more influential [9]. "Harsh" discipline is de-

defined in various ways by different researchers. In general, harsh discipline encompasses a restrictive style of interaction with children which does not take their views and wishes into account, and in which the parent responds to unwanted child behaviour with severe punishment. Maccoby and Martin [17] describe an 'Authoritarian-Power Assertive' dimension of parenting characterised by "firmly enforced rules and edicts decided by parents, without acceptance of children's demands and without bargaining and discussion". Preschool children who receive this style of parenting have been shown to be less content, less secure and more likely to become hostile or regressive when under stress than other children [2]. Young children who have experienced authoritarian parenting tend to be less popular and behave less helpfully towards their peers [6].

In clinical settings, naturalistic observations of parental discipline practice are rarely possible. Clinicians usually have to rely on accounts given by parents

including the attitudes they express towards discipline. There is conflicting information from research as to whether attitudes to discipline reflect actual parenting practices [11, 13]. Practitioners may, therefore, feel uncertain as to how far attitudes about harsh discipline expressed by parents in clinical interviews may be significant in the aetiology of current or future child conduct problems.

An opportunity arose during the analysis of data collected by the 1970 British Cohort Study (BCS70) to examine both cross-sectional and longitudinal associations between mothers' authoritarian attitudes to discipline and child conduct problems in a population sample. The data from the BCS70 also allowed us to examine maternal stress and family socio-economic status (SES) as potential confounding variables within the association between authoritarian maternal attitudes to discipline and child behaviour. There is good evidence that both of these are associated with childhood conduct problems. Depressed mothers are more critical, disapproving and aversive in their interactions with other family members than non-depressed mothers [12] and they rate their children as being more disturbed [4]. SES needs to be considered as a potential confounder given the recognised association between socio-economic disadvantage and externalising behaviour in children [22].

Our aim was to test the specific hypothesis that authoritarian maternal attitudes to discipline reported at age 5 would increase the risk of conduct problems measured both at age 5 and at age 10, and that this effect would be independent of the effects of socio-economic status and maternal psychological distress.

---

## Methods

### ■ Participants

#### The 1970 British Cohort Study (BCS70)

BCS70 is a prospective study of all individuals born during the week of 5–11 April 1970 in England, Scotland and Wales [3, 20]. The British Cohort Study was formerly known as the British Births Survey at birth and the Child Health and Education Study at 5 and 10 years. The follow-up population is based on the 16,151 survivors at 1 month in England, Scotland and Wales, plus subsequent immigrants with the same dates of birth. Of the sample, 50.1% were boys and 49.9% were girls. A total of 92.3% of the children's parents were born in the UK and were of white Caucasian origin, and 5.3% of children were born to single mothers. Detailed follow-up surveys of the health, and social and educational circumstances were conducted on 81% of the cohort at age 5 (N = 13,135) and 92% at age 10 (N = 14,904). The re-

sponse rates may be slightly underestimated as populations do not exclude later deaths or emigrations.

Comparison of birth characteristics of those followed up at age 5 and age 10, with those who were not, revealed no significant social class or gender differences. There was a relatively small under-representation of children born to teenage unmarried mothers, those of high parity and adopted and immigrant children. However, bias resulting from non-response at the 5-year and 10-year assessments is likely to be small.

### ■ Measures

#### Authoritarian parenting attitudes

Our aim was to construct a scale tapping authoritarian parenting attitudes using data drawn from the mothers' responses to a 43-item Maternal Opinions Questionnaire (MOQ) completed at the 5-year assessment. This 43-item questionnaire covered a range of domains including attitudes to child rearing, maternal employment and the role of women at home and in society (copies of the questionnaire are available from the authors on request). Agreement with attitudinal statements was rated on a 1–5 Likert scale. Data from the MOQ were available for 12,968 mothers out of a possible 13,135 respondents at the 5-year assessment (98.7% response rate).

The item content of our constructed scale was determined primarily by our *a priori* theory of what constituted 'authoritarian parenting'. A secondary aim was to optimise the psychometric properties of the scale. Our definition of 'authoritarian parenting' was based on the work of Maccoby and Martin [17].

We used factor analysis (principal components analysis followed by varimax rotation) to investigate whether a similar dimension of authoritarian parenting could be identified in the MOQ. A total of ten factors were extracted with eigenvalues of greater than one which accounted for 42.6% of the total variance. Eleven items loading on the first factor accounted for 11.6% of the variance. We labelled this factor 'broad authoritarianism' to signify that it contained a range of statements which extended beyond our *a priori* definition of 'authoritarian parenting' attitudes. Using our *a priori* definition of 'authoritarian parenting', we selected seven of these 11 items (see Table 1). Six of the seven items in our 'authoritarian parenting attitudes' scale had the highest factor loadings on the 'broad authoritarianism' factor. The seventh item was included despite a low factor loading because it tapped authoritarian parenting attitudes and increased the content validity of the scale. The four items not included from 'authoritarian parenting attitudes factor' with their factor loading given in parenthesis were 'a person who doesn't let others stand in their way is to be admired' (0.48), 'children who get

**Table 1** Sorted factor loadings and reliability statistics for the seven items of the 'authoritarian parenting attitudes' scale

Item	Factor loading	Reliability statistics	
		Item total correlation	Alpha if item omitted
1: Children under five should always accept what their parents say as being true	0.62	0.44	0.66
2: Nothing is worse than a person who does not feel great love, gratitude and respect for his/her parents	0.62	0.45	0.66
3: A well brought up child is one who does not have to be told twice to do something	0.54	0.43	0.66
4: A child should not be allowed to talk back to his parents	0.52	0.43	0.66
5: Pre-school children should pay more attention to what they are told	0.49	0.44	0.66
6: Children should not be allowed to talk at the meal table	0.49	0.39	0.67
7: There are many things a 5-year-old child must do with no explanation from his parents	0.35	0.29	0.70

upset in hospital soon get over it afterwards' (0.44), 'parents must sort out children's quarrels for them and sort out who is right and who is wrong' (0.41) and 'you cannot expect a child under five to understand how another person feels' (0.35).

Cronbach's  $\alpha$  coefficient for the 7-item scale was 0.70, reflecting a satisfactory degree of internal consistency. The possibility that the relatively low factor loading of item 7 in Table 1 would reduce the overall reliability of the scale was tested by examining whether the  $\alpha$  coefficient increased when item 7 was removed. As the removal of the item produced no significant improvement in reliability, while reducing the scale's content validity, it was decided to retain all seven items within the scale.

An unweighted, summed score for the 'authoritarian parenting attitudes' scale was then computed (each item rated from 1 to 5) with high scores signifying endorsement of authoritarian parenting. A complete dataset for all seven items was available for 12,637 children. Scores were prorated for responses with one to three missing items from the 7-item scale ( $N = 331$ ). Responses with more than three missing items were treated as having completely missing data ( $N = 167$ ). The summed scores were then ranked and divided into quintiles for analysis.

### Conduct problems at age 5 and age 10

Mothers completed a modified Rutter A(2) questionnaire [23] at the 5- and 10- year assessment. At the 5-year assessment, the modified Rutter A(2) consisted of 29 items. Minor changes from the standard 31-item A(2) questionnaire were made to the Health and Habits sections. Additional items included separate questions on day-time and nocturnal enuresis, and an item on "biliousness". The wording of the standard A(2) item: "tears on arrival at school or resistance to enter school" was reduced to: "tears on arrival at school". The standard A(2) item on stealing was moved from the Health and Habits section to the main body of the questionnaire in the form: "sometimes takes things belonging to others". The

standard A(2) items on asthma, stuttering and speech problems were not included in the modified A(2) at the 5-year assessment (although questions on stuttering and speech problems did appear in another questionnaire). Three response categories were used: "does not apply" scored 1, "applies somewhat" scored 2 and "certainly applies" scored 3.

At the 10-year assessment, the modified Rutter A(2) contained 32 items. Compared to the version of the A(2) used for the 5-year assessment, two standard A(2) items were added to the Health and Habits sections: "stammering/stuttering" and "speech difficulties". A visual analogue scale was used to rate the 19 behavioural items in the main body of the questionnaire. A score was given for each item ranging from 0 (does not apply) to 100 (certainly applies).

Behavioural subscales and caseness cut-offs were derived specifically for this study. There were several reasons for this. First, the use of an analogue rating scale at the 10-year assessment and categorical ratings at the 5-year assessment meant that absolute scores were not comparable across the two assessments. Second, the use of modified Rutter scales meant that variation in item content was likely to reduce the validity of standard subscale cut-offs. Third, the 5-year assessment lies outside the age-range of samples used to validate standard Rutter subscale cut-offs [23]. Behavioural dimensions were extracted from a factor analysis of the Rutter A(2) scales at the 5- and 10-year assessments. It was decided *a priori* to only include items in subscales with factor loadings equal to, or greater than, 0.45 (i.e. the factor explains at least 20% of the variance on the item). For the factor analysis, which required a full dataset, analysis was restricted to the following samples after list-wise deletion of missing data: 11,205 children (85.3% of eligible cases) for the A(2) scale at age 5 and 11,235 children (75.2%) for the A(2) scale at age 10.

Three factors corresponding to the subscales of *conduct problems*, *hyperactivity* and *emotional problems* were found at ages 5 and 10. The *conduct problems* sub-

scale consists of the following Rutter A(2) items with factor loadings of 0.45 or greater: “lies”, “steals”, “bul-lies”, “fights”, “destructive” and “disobedient”.

An unweighted, summed score for the *conduct problems* subscale was computed for the 5-year and 10-year assessment, with scale scores prorated for cases with three or less missing items. For the purposes of the study, the definition of ‘severe conduct problems’ as a categorical behavioural outcome was a score above the 90<sup>th</sup> percentile on the conduct problems subscale. Because of the limited range of scores produced by categorical ratings at the 5-year assessment, the cut-off scores chosen are those closest to the 80<sup>th</sup> and 90<sup>th</sup> percentiles. Hence, at the 5-year assessment the subscale score closest to the 90<sup>th</sup> percentile identified approximately 7% of participants.

### Maternal psychological distress and socio-economic status

The self-completed 24-item Malaise Inventory [23] at the 5-year assessment provided a measure of maternal psychological distress. We adopted a cut-off score of 7 or more, which was recommended by the authors of the scale for identifying cases at an increased risk of psychiatric disorder. A dichotomous ‘malaise’ variable was derived to signify scores above and below this cut-off.

Socio-economic status (SES) was coded according to the Office of Population and Census Survey classification of the father’s occupation at the 5-year assessment. For the purpose of analysis, SES was divided into three categories: social class I and II (households with professional and managerial workers), social class III (non-manual and manual workers) and social class IV and V (unskilled and unemployed).

### Analysis

All analyses were conducted using *SPSS for Windows* version 6.1 [19]. Logistic regression was used to estimate the odds ratios (relative risk) for developing severe conduct problems (i. e. scores > 90<sup>th</sup> percentile) at the 5- and 10-year assessment. Quintiles were used to categorise authoritarian parenting attitudes. The lowest quintile of authoritarian parenting attitudes (least authoritarian) was assigned an odds ratio of developing conduct problems of 1, and the other quintiles were compared with this baseline. Our analyses report both unadjusted risks associated with authoritarian parenting attitudes as well as odds ratios adjusted for the effects of SES and maternal psychological distress. The analysis of the risk of developing conduct problems at age 10 is presented first, for the whole cohort, and second, excluding participants with conduct problems (sub-threshold and severe) at the 5-year baseline. Tests for trends were calculated by estimation of the odds ratio for authoritarian parenting attitudes modelled as a continuous variable (five categories).

### Results

#### Relationships between authoritarian parenting attitudes, socio-economic status, maternal psychological distress and conduct problems

Table 2 shows a reverse trend between high SES and authoritarian parenting attitudes as well as a clear positive relationship between high maternal malaise scores (7 or over) and authoritarian parenting attitudes. Bivariate analyses showed that a low SES was significantly associated with an increased risk of severe conduct problems at age 5: 9.4% of children in social class IV and V had conduct problems compared with 3.6% of children in social class I and II ( $\chi^2$  for linear trend = 77.3, df = 1,  $p < 0.0001$ ). No association in SES class III was found.

**Table 2** Authoritarian parenting attitudes, social class and maternal psychological distress at the 5-year assessment

	Authoritarian parenting attitudes (quintiles)					Statistic	p value
	Low score				High score		
	I N (%)	II N (%)	III N (%)	IV N (%)	V N (%)		
<b>Social Class</b>							
I and II	1,074 (39.2)	651 (29.9)	607 (27.0)	576 (21.5)	368 (14.3)	$\chi^2$ for linear trend = 495.2	< 0.00001
III	1,035 (48.0)	1,203 (55.2)	1,246 (55.4)	1,561 (58.3)	1,521 (59.1)		
IV and V	348 (12.7)	325 (14.9)	398 (17.7)	540 (20.2)	686 (26.6)		
Total	2,737	2,179	2,251	2,677	2,575		
<b>Maternal</b>							
Malaise score (7+)	479 (17.0)	482 (21.4)	570 (24.5)	730 (26.3)	940 (34.2)	$\chi^2$ for linear trend = 227.7	< 0.00001
Total	2,817	2,254	2,324	2,775	2,748		

High maternal malaise score was also associated with severe conduct problems at age 5: 14.3% of mothers with malaise scores of 7 or more had children with conduct problems compared with 4.7% of mothers with malaise scores less than 7 ( $\chi^2 = 338.6$ ,  $df = 1$ ,  $p < 0.0001$ ). These results confirm that both SES and maternal psychological distress could potentially confound an association between authoritarian parenting attitudes and conduct problems.

### ■ Conduct problems at age 5 and authoritarian parenting attitudes

Table 3 shows a clear positive gradient between the risk of conduct problems at age 5 and more authoritarian parenting attitudes. The proportion of children with severe conduct problems (>90<sup>th</sup> percentile) increases from 2.8% in the bottom (baseline) quintile to 10.1% in the top quintile. The unadjusted odds ratio of severe conduct problems is 2.25 in the top authoritarian quintile relative to the least authoritarian quintile.

SES and maternal psychological distress each accounted for about 20% of the gradient of risk between the top and bottom quintiles of authoritarian parenting attitudes. Adjusting for SES reduced the odds ratio in the top quintile from 2.25 to 1.82, and adjusting for maternal psychological distress reduced the odds ratio from

2.25 to 1.80. Adjusting for both together reduced the odds ratio of the top quintile relative to the baseline from 2.25 to 1.54.

The increased risk of conduct problems associated with the top authoritarian parenting quintile is also found when the contrast group includes all other mothers, not just those in the bottom quintile for authoritarian parenting attitudes. After adjusting for social class and malaise score, children with mothers scoring in the top quintile of authoritarian parenting attitudes have an odds ratio (relative risk) for severe conduct problems of 1.34 (95% CI 1.14, 1.57) compared to all other children with mothers scoring below the 80<sup>th</sup> percentile.

### ■ Conduct problems at age 10 and authoritarian parenting attitudes

Table 4 shows that the proportion of children with severe conduct problems at age 10 increases from 6.6% in the least authoritarian (baseline) parenting attitudes quintile to 12.6% in the most authoritarian quintile. There is a clear positive gradient of risk for conduct problems at age 10 moving from the lowest (baseline) quintile to the top quintile of authoritarian parenting attitudes. The unadjusted odds ratio for severe conduct problems is 2.13 in the top quintile relative to the baseline. Adjusting for the confounding effects of SES and

**Table 3** The risk (unadjusted and adjusted odds ratios) of conduct problems at age 5 associated with authoritarian parenting attitudes

Authoritarian parenting attitudes scale (quintiles)	Conduct problems at age 5		Odds ratios (OR) of severe conduct problems at age 5 (95% CI)			
	Total number	Number of cases (%)	Unadjusted	Adjusted for social class	Adjusted for malaise score	Adjusted for social class and malaise score
I (Low score)	2,821	134 (2.8 %)	1*	1*	1*	1*
II	2,256	146 (6.5 %)	1.39 (1.09, 1.77)	1.28 (1.00, 1.64)	1.31 (1.02, 1.67)	1.22 (0.95, 1.57)
III	2,332	146 (6.3 %)	1.34 (1.05, 1.70)	1.18 (0.92, 1.51)	1.20 (0.94, 1.53)	1.10 (0.85, 1.41)
IV	2,777	205 (7.4 %)	1.60 (1.28, 2.00)	1.38 (1.09, 1.75)	1.41 (1.12, 1.77)	1.27 (1.00, 1.60)
V (High score)	2,739	276 (10.1 %)	2.25 (1.82, 2.78)	1.82 (1.45, 2.28)	1.80 (1.44, 2.24)	1.54 (1.23, 1.94)
Total	12,925	907 (7 %)				

\* p (trend test) < 0.05

**Table 4** The risk (unadjusted and adjusted odds ratios) of conduct problems at age 10 associated with authoritarian parenting attitudes

Authoritarian parenting attitudes scale (quintiles)	Conduct problems at age 10 (> 90 <sup>th</sup> percentile)		Odds ratio (OR) of conduct problems at age 10 (> 90 <sup>th</sup> percentile)			
	Total number	Number of cases (%)	Unadjusted	Adjusted for social class	Adjusted for malaise score	Fully adjusted for social class and malaise score
I (Low score)	2,469	164 (6.6 %)	1*	1*	1*	1*
II	1,970	180 (9.1 %)	1.41 (1.13, 1.76)	1.37 (1.09, 1.93)	1.33 (1.06, 1.66)	1.30 (1.03, 1.64)
III	2,011	196 (9.7 %)	1.52 (1.22, 1.89)	1.45 (1.16, 1.81)	1.41 (1.13, 1.75)	1.38 (1.10, 1.72)
IV	2,384	241 (10.1 %)	1.58 (1.28, 1.95)	1.42 (1.14, 1.76)	1.45 (1.17, 1.78)	1.33 (1.07, 1.65)
V (High score)	2,252	283 (12.6 %)	2.13 (1.65, 2.47)	1.67 (1.35, 2.07)	1.72 (1.40, 2.11)	1.46 (1.18, 1.83)
Total	11,086	1,064 (9.6 %)				

\* p (trend test) < 0.05

maternal psychological distress (measured at age 5) shows that each accounts independently for approximately 20% of this gradient of risk. Adjusting simultaneously for the effects of SES and malaise score reduces the odds ratio for severe conduct problems at age 10 associated with the top authoritarian parenting attitudes quintile (relative to the baseline) from 2.13 to 1.46.

■ **Conduct problems at age 10 and authoritarian parenting attitudes in children free of conduct problems at age 5**

The analysis of the association between conduct problems at age 5 and authoritarian parenting attitudes (Table 3) demonstrates a significant positive relationship with authoritarian parenting attitudes after adjusting for social class and malaise score. This association is cross-sectional and, hence, it is not possible to determine the direction of the effect. Authoritarian parenting attitudes also predict conduct problems at age 10 (Table 4). However, this relationship may simply be due to children with conduct problems at age 5 showing strong behavioural continuities to age 10. In order to explore a possible causal link between authoritarian parenting attitudes and conduct problems, it is necessary to estimate the longitudinal risk in children initially free from conduct problems (i.e. the measure of parental attitudes must precede the development of conduct problems). We did this by repeating the analysis shown in Table 4 using only those cases at age 5 who scored below the 80<sup>th</sup> percentile for conduct problems.

The results of this analysis are presented in Table 5. As in the previous analyses, there is a clear positive gradient between higher scores for authoritarian parenting attitudes and the risk of conduct problems. The unadjusted odds ratio for conduct problems at age 10 is 2.17 for the top authoritarian parenting attitudes quintile relative to the baseline. Approximately 16% of this gradient of risk is accounted for by SES, while under 8% is ac-

counted for by maternal psychological distress. Adjusting for both confounders simultaneously reduces the odds ratio for severe conduct problems at age 10 associated with the top authoritarian parenting attitudes quintile from 2.17 to 1.70.

**Discussion**

Our results of the cross-sectional analysis demonstrate a clear linear relationship between authoritarian maternal attitudes to discipline and conduct problems in 5-year-old children. This association is independent of the effect of SES and maternal psychological distress. The direction of the association between authoritarian parenting attitudes and conduct problems in children is, of course, not apparent from the analysis at age 5.

Looking longitudinally at the entire sample, there was also a linear association between authoritarian parental attitudes expressed when children were 5 years old and subsequent externalising child behaviour at age 10. This longitudinal association is greater in children who were free of conduct problems at age 5. The temporal sequence in this sub-sample suggests the possibility of a causal relationship, but the limited data available in the BCS70 prevented a robust examination of this.

These findings add to the substantial literature documenting a relationship between dysfunctional family processes and the development of disruptive behaviour disorders in children [9, 16]. The study most closely replicates the findings of Dodge et al. [7, 8] whose longitudinal study of aggressive behavioural development in a random sample of 585 boys and girls demonstrated associations between harsh discipline practices rated by clinical interviewers when children were aged 5 and a range of later externalising behaviour problems. This study adds the suggestion that parental attitudes, which in principle could be modified, play a part in the development of conduct problems in children.

**Table 5** The risk (unadjusted and adjusted odds ratios) of conduct problems at age 10 associated with authoritarian parenting attitudes in subjects free from conduct problems at age 5 (< 80th percentile for conduct problems at age 5)

Authoritarian parenting attitudes scale (quintiles)	Conduct problems at age 10 (> 90th percentile)		Odds ratio (OR) of conduct problems at age 10 (> 90th percentile)			
	Total number	Number of cases (%)	Unadjusted	Adjusted for social class	Adjusted for malaise score	Fully adjusted for social class and malaise score
I (Low score)	2,007	71 (3.5 %)	1*	1*	1*	1*
II	1,547	77 (5 %)	1.43 (1.03, 2.00)	1.39 (1.00, 1.95)	1.38 (0.99, 1.93)	1.36 (0.97, 1.90)
III	1,603	90 (5.6 %)	1.62 (1.18, 2.23)	1.52 (1.09, 2.10)	1.54 (1.12, 2.12)	1.46 (1.05, 2.03)
IV	1,817	104 (5.7 %)	1.65 (1.21, 2.25)	1.53 (1.11, 2.10)	1.59 (1.17, 2.17)	1.48 (1.08, 2.04)
V (High score)	1,627	120 (7.4 %)	2.17 (1.61, 2.93)	1.81 (1.32, 2.48)	2.00 (1.48, 2.71)	1.70 (1.24, 2.33)
Total	8,601	462 (5.4 %)				

\* p (trend test) < 0.05

## ■ Methodological issues

### The validity of the 'authoritarian parenting attitudes' scale

Our 7-item 'authoritarian parenting attitudes' scale has been developed by a combination of statistical analysis and theoretical knowledge. In developing the scale we attempted to balance internal consistency (reliability) with content validity [25]. The seven items in the scale show moderate factor loading and moderate measures of internal consistency, but we have not pursued other tests of reliability and external validity. However, the factor's prediction of conduct problems provides good *post hoc* predictive validity. Because the MOQ was not repeated during the cohort study, we are unable to comment on the stability of the 'authoritarian parenting attitudes' factor over time. The data about parental attitudes are, of course, open to being organised in ways other than our own.

### Potential confounders and biases

The most important bias in our analysis was created by the fact that maternal opinions and child behaviour are both rated by the same subjects (mothers) in the BCS70. Corroborative information about child behaviour was unfortunately not available in the BCS70 dataset. Correlations could, therefore, simply reflect the response tendencies of mothers. However, reporting bias will have been reduced to some extent by using data collected at an interval of 5 years, and bias produced by the responses of stressed and depressed mothers will have been reduced by the inclusion of a measure of maternal mental state in the analysis.

Our findings could still be due to residual confounding by other unmeasured variables associated with both authoritarian parental attitudes and conduct problems such as family stress, a general pattern of interpersonal conflicts within families [24, 26] or neurodevelopmental disorders in the child. Unfortunately, the BCS70 did not contain data about these factors to allow for further analysis. Attrition in sample size could also introduce bias (perhaps by the loss of a disorganised or disadvantaged subgroup), but in fact the rate of attrition was small.

## ■ Implications for practice

Our cut-off for "conduct problems" identified approximately 7% of children in the whole cohort. This proportion is similar to a recent estimate of the prevalence of Conduct Disorder in the UK population [18]. In addition, the items in the *conduct problem* subscale are included in the diagnostic criteria of Conduct Disorder [1]. We suggest, therefore, that the children identified in this study as having "conduct problems" are similar to those children who present to clinicians with significant behavioural difficulties likely to be diagnosed as Conduct Disorder.

Cultural differences are known to moderate the effect of parenting style on child behaviour [5], and so the findings of our study probably cannot be automatically generalised to families of other ethnic groups.

The measure of attitudes to discipline available from the BCS70 did not include any measure of severe punishment. Because of this, we have examined a style of discipline which is not as extreme as the "harsh", "punitive" or "coercive" discipline sometimes referred to in the literature. Observational research shows that mothers use multiple disciplinary techniques depending on the nature of their child's behaviour [10] and parental attitudes to child rearing are probably complex and changeable over time [11]. Questionnaire data are also a less robust method of quantifying parental discipline than direct observation. So the completion of a single opinions questionnaire can be considered a crude and potentially inadequate way of obtaining data about parental discipline. The presence of associations between maternal authoritarian attitudes and child conduct problems in this study was, therefore, somewhat surprising, but suggests that authoritarian attitudes to the discipline of young children expressed by mothers should be recognised as one possible marker of current and future child conduct problems.

■ **Acknowledgements** We are grateful to Professors Neville Butler and John Bynner of the Social Research Unit, City University for granting us access to the BCS70 data-files and to Ms Chin Lyn U of the Department of Child Health, University of Nottingham for computing assistance with regard to the linking and editing of the data. Mr Michael Dewey of the Trent Institute for Health Services Research commented on earlier drafts of this paper.

## References

1. American Psychiatric Association (1994) Diagnostic and statistical manual of mental disorders, 4<sup>th</sup> edn. American Psychiatric Association, Washington DC
2. Baumrind D (1967) Child care practices anteceding three patterns of preschool behavior. *Genetic Psychology Monographs* 75:43–88
3. Butler NR, Golding J (eds) (1986) From birth to five: a study of the health and behaviour of Britain's 5-year-olds. Pergamon Press, Oxford
4. Cundall DB (1987) Children and mothers at clinics: who is disturbed? *Archives of Disease in Childhood* 62:820–824
5. Deater-Deckard K, Dodge KA (1997) Externalising behavior problems and discipline revisited: nonlinear effects and variation by culture, context and gender. *Psychological Inquiry* 8: 161–175
6. Dekovic M, Janssens JMAM (1992) Parents' child rearing style and child's sociometric status. *Developmental Psychology* 28:925–932
7. Dodge KA, Bates JE, Pettit GS (1990) Mechanisms in the cycle of violence. *Science* 250:1678–1683
8. Dodge KA, Pettit GS, Bates JE, Valente E (1995) Social information processing patterns partially mediate the effect of early physical abuse on later conduct problems. *Journal of Abnormal Psychology* 104:632–643
9. Frick PJ (1994) Family dysfunction and the disruptive behavior disorders: a review of recent empirical findings. *Advances in Clinical Child Psychology* 16:203–226
10. Grusec JE, Kuczynski L (1980) Direction of effect in socialization: a comparison of the parent's versus the child's behavior as determinants of disciplinary techniques. *Developmental Psychology* 16:1–9
11. Holden GW, Edwards LA (1989) Parental attitudes towards child rearing: instruments, issues and implications. *Psychological Bulletin* 106:29–58
12. Hops H, Biglan A, Sherman L, Arthur J, Friedman L, Osteen V (1987) Home observations of family interactions of depressed women. *Journal of Consulting and Clinical Psychology* 55:341–346
13. Kochanska G, Kuczynski L, Radke-Yarrow M (1989) Correspondence between mothers' self-reported and observed child-rearing practices. *Child Development* 60:56–63
14. Lahey BB, Walman ID, McBurnett K (1999) Annotation: the development of antisocial behavior. An integrative causal model. *Journal of Child Psychology and Psychiatry* 5:669–682
15. Loeber R, Green SM, Lahey BB, Frick PJ, McBurnett K (2000) Findings on disruptive behavior disorders from the first decade of the Developmental Trends Study. *Clinical Child and Family Psychology Review* 3:37–60
16. Loeber R, Stouthamer-Loeber M (1986) Family factors as correlates and predictors of juvenile conduct problems and delinquency. In: Tonry M, Morris N (eds) *Crime and justice. An annual review of research. Volume 7.* The University of Chicago Press, Chicago
17. Maccoby EE, Martin JA (1983) Socialization in the context of the family: parent-child interaction. In: Hetherington EM (ed) *Socialization, personality and social development, Vol. IV. Handbook of child psychology* (4<sup>th</sup> edn). Wiley, New York, pp 1–101
18. Meltzer H, Gatward R, Goodman R, Ford T (2000) *Mental health of children and adolescents in Great Britain.* Stationery Office, London
19. Norusis MJ (1995) *SPSS for Windows Release 6.1.* SPSS Inc, Illinois
20. Osborn AF, Butler NR, Morris AC (1984) *Social life of Britain's five-year-olds.* Routledge and Kegan Paul, London
21. Rothbaum F, Weisz JR (1994) Parental caregiving and child externalizing behavior in nonclinical samples: a meta analysis. *Psychological Bulletin* 116: 55–74
22. Rutter M, Giller H (1983) *Juvenile delinquency: trends and perspectives.* Penguin, Harmondsworth, Middlesex, pp 132–148
23. Rutter M, Tizard J, Whitmore K (eds) (1970) *Education, health and behaviour.* London, Longman
24. Snyder J (1991) Discipline as a mediator of the impact of maternal stress and mood on child conduct problems. *Development and Psychopathology* 3: 263–276
25. Streiner DL, Norman GR (1995) *Health measurement scales. A practical guide to their development and use,* 2<sup>nd</sup> edn. Oxford University Press, Oxford
26. Webster-Stratton C (1990) Stress: a potential disruptor of parent perceptions and family interactions. *Journal of Clinical Child Psychology* 19:302–312