



Parental influences on young people's sexual behaviour: A longitudinal analysis

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Abstract

Both family structure and processes have been associated with young people's sexual behaviour, but most studies are cross-sectional and focus on only one outcome: age at first intercourse. This paper uses longitudinal data from a survey of Scottish teenagers ($N = 5041$) to show how low parental monitoring predicts early sexual activity for both sexes (with some reverse causation), and for females it also predicts more sexual partners and less condom use. A lot of spending money also predicts early sexual activity and, for males, having more sexual partners. Comfort talking with parents about sex, however, seems to bear little relationship to sexual behaviour.

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Introduction

In order to develop more effective sexual health interventions and policies it is important to develop a better understanding of the factors that shape young people's sexual behaviour, particularly in the light of recent evidence that school-based programmes have little impact (DiCenso, Guyatt, Willan, & Griffith, 2002; Wight et al., 2002). There is a large body of evidence from developed countries showing that both family structure (or composition) and relationships

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within families influence young people's development, well-being and behaviour (Epps, 1983; Sweeting, West, & Richards, 1998). This paper is concerned with the internal dynamics or 'processes' within families, and explores parents' influence on young people's sexual behaviour.

Family structure and sexual behaviour

There is evidence that family structure is an important influence on sexual behaviour. Not living with both biological parents at age 11 has been associated with earlier sexual activity and higher numbers of sexual partners at age 15 (Feldman & Brown, 1993), while family structure at 15 is associated with sexual behaviour at 18 (Sweeting et al., 1998). Furthermore, those who experience their parents' separation are more likely to start child bearing early (Kiernan, 1996).

However, there have been several critiques of research focussing on family structure, summarized by Sweeting et al. (1998). It often does not recognize the heterogeneity of non-intact families; the associations between family structure and adverse outcomes may result from other factors, such as poverty; and the relationship may be the reverse of that generally assumed: children with problems may contribute to their parents separating. Notwithstanding this critical perspective, Sweeting et al. (1998) concluded from their own longitudinal data that 'school achievement, heterosexual behaviour, pregnancy and experience of drugs were each related to family structure' (p. 42), but that the effects of family structure must be understood in relation to the effects of family processes, and that the latter are probably more important.

Family processes and sexual behaviour

In terms of family processes, critical and negative parenting has been associated with higher levels of sexual activity amongst boys (Feldman & Brown, 1993), while parental monitoring (Barber, Miller, Erickson, & Heaton, submitted; Dorius, 1994; Hogan & Kitagawa, 1985; Huebner & Howell, 2003; Miller, Forehand, & Kotchick, 1999; Rodgers, 1999; Small & Luster, 1994), adult supervision (Cohen, Farley, Taylor, Martin, & Schuster, 2002), time engaged in family activities (Sweeting et al., 1998), parental trust (Borawski, Ievers-Landis, Lovegreen, & Trapl, 2003) and parental support or connectedness with their children (Chewning & Koningsfeld, 1998; Feldman & Brown, 1993; Jaccard, Dittus, & Gordon, 1996; Resnick et al., 1997) have been associated with later age at first intercourse and/or less sexual risk taking.

More specifically, in Britain, parent-child communication about sexual issues (Wellings et al., 2001) and about contraception in particular (Currie, 1999), and having parents who had portrayed sex positively (Stone & Ingham, 2002), has been associated with greater use of contraception by young men, but not young women. Those who do not discuss sex easily with their parents are at much higher risk of teenage pregnancy (Wellings, Wadsworth, Johnson, & Field, 1996). However, American studies of the relationship between parent-child communication and adolescent sexual risk-taking produce conflicting results (Huebner & Howell, 2003; Shoop & Davidson, 1994).

Some further evidence of parental influence on sexual behaviour comes from the evaluation of school sex education programmes. While most seem to have little impact on behaviour (DiCenso et al., 2002), one of the few programmes demonstrated to have increased condom use involves active parental involvement, for instance, through student-parent homework activities (Coyle et al., 2001).

Given this evidence of parental influence, it is paradoxical that very few young people cite parents as their main source of information about sex, friends, school and ‘the media’ being ranked as more important (Todd, Currie, & Smith, 1999; Wellings et al., 2001).

Limitations of current literature

Although important, these studies have various limitations. Kerr and Stattin (2000) argue that ‘parental monitoring’ is poorly defined and generally confuses parents soliciting information, parents controlling behaviour, and children’s own disclosure. Their findings suggest that it is, in fact, children’s own disclosure of their activities that most closely correlates with positive behaviours, whereas parents’ control is sometimes associated with poorer outcomes (Kerr & Stattin, 2000; Stattin & Kerr, 2000).

Another limitation is that nearly all studies are cross-sectional (Borawski et al., 2003), so that it is not possible to establish clearly the direction of causation between two variables. For instance, parents’ interactions with their children might be shaped by their children’s perceived behaviour. They might impose rules in those areas where they think they can be enforced but abandon them if they are not observed and only lead to further family conflict (cf. Barber, 1994).

Third, the interaction between family structure and family processes are rarely explored. For instance, Sweeting et al. (1998) found that the association between family structure at 15 and earlier sexual activity by the age of 18 could be explained by the amount of time spent together as a family and conflict with parents (Sweeting et al., 1998).

A more fundamental problem with most studies, including ours, is that the data on family life are only reported by the young people. This makes them subject to reporting bias. For example, young people who engage in risky behaviours, or report that they do, might want to present themselves as largely independent of their parents and so under-report their parents’ monitoring.

Finally, age at first intercourse is the usual outcome in studies of family influences on sexual behaviour, yet it could be argued that, if above some minimum, age should not, in itself, be a policy concern. The influences of the family on contraceptive and condom use are rarely investigated, Huebner and Howell (2003) being a recent exception.

The SHARE study

This paper will explore some of these issues using longitudinal data collected as part of a randomized trial of a school sex education programme (*SHARE*) (Wight et al., 2002). In a cross-sectional analysis of these data to identify social factors predicting sexual experience at age 13/14, family composition, parental monitoring, spending money and religiosity were found to be more important than parents’ social class, housing tenure or age of mother (Henderson et al., 2002). A cross-sectional analysis of predictors of sexual experience at age 15/16 produced similar findings (Wight and Henderson, 2004). This paper will develop these initial findings by using longitudinal data to pursue the following objectives:

1. to explore how parental monitoring, spending money and ease of communication about sex are socially patterned, and whether they are patterned in the same way;

2. to investigate whether family composition and each parenting variable at time one predict age at first intercourse, number of sexual partners and condom and other contraceptive use as reported at time two;
3. to establish the relative importance of each parenting variable when analysed together, and
4. to investigate the possibility of reverse causation between parental monitoring and sexual behaviour, namely that sexual behaviour might influence parental monitoring.

Since the primary purpose of this research was to evaluate the impact of the SHARE programme on young people, data were not collected from parents. However, despite this limitation, having longitudinal data on parenting and sexual behaviour from a very large and representative sample makes these analyses worthwhile.

Methods

Twenty-five non-Roman Catholic state schools in the east of Scotland were recruited to participate in a randomized trial of sex education (Wight et al., 2002). Two successive cohorts of third-year secondary pupils were recruited in 1996 and 1997 (aged 13/14, time one) and followed up until the start of fifth year (age 15/16, time two). Pupils and their parents were given the opportunity to withdraw themselves or their children, respectively. Pupils were also told to omit any questions that they did not wish to answer.

A self-completion questionnaire, administered by trained researchers, included the following topics: family background, lifestyle, sex education, attitudes and cognitions regarding sexual relationships and experience of relationships. Questionnaires had identity numbers to allow pre–post matching.

Three measures relating to parenting are examined in this paper: parental monitoring, available spending money, and ease of communication with parents about sex.

Respondents were asked about rules for going out in the evening: ‘do you have to ask permission to go out every evening?’, ‘do you have to be back by a certain time in the evening?’, ‘does anybody stay up until you get home?’, and ‘do you have to tell anybody where you are going in the evening?’. Answers were given on a four-point scale of “always”, “usually”, “sometimes” and “never”.¹ The Cronbach Alpha score for the four parental monitoring variables was 0.67. The parental monitoring score is the mean of the four questions combined (scale of 1–4). This paper dichotomizes respondents according to whether they experienced high (≥ 2.5) or low (< 2.5) parental monitoring. In Kerr and Stattin’s terms (2000), three of these four questions relate directly to parents’ control, and none relate to children’s disclosure or parents’ soliciting of information.

An indirect indicator of parent–child relationships is young people’s available spending money. Respondents were asked: ‘how much of your own money do you have on average to spend as you like each week?’ This was dichotomized into high and low spending (time one: high \geq £8; time two: high \geq £15). Although this variable does not address a specific dimension of parenting, it was found to be strongly predictive of early sexual activity (Henderson et al., 2002) and so warrants

¹This scale was adapted from one designed by the Department of Child Health, University of Exeter.

further analysis. It may relate to family processes in two ways: first, reflecting parents' cultural values around consumption and second, children's autonomy to get employment. The SHARE questionnaire did not clarify what proportion of disposable income was earned or given by parents, but we can learn from 1999 data from 15-year-olds in *The 11–16 Study* conducted in the west of Scotland (Sweeting & West, 2003). This found that a similar proportion of young people in each social class were given money by parents, had external employment or had paid jobs around the house. However, while pocket money did not vary by class, for children of non-manual parents compared with unskilled manual parents, more of their income came from jobs around the house and less from external employment (West, pers. comm.). This suggests that variations in spending money reflect young people's autonomy more than parents' consumer values.

For ease of communication with parents about sex, respondents reported how comfortable they were talking about sex with their mothers and fathers (six-point scale: "never have/ does not apply", "very uncomfortable", "uncomfortable", "in between", "comfortable", and "very comfortable").

Parenting effects were assessed on five reported outcome measures: whether had had sexual intercourse by time two; age at first sexual intercourse (before or after 15th birthday); number of sexual partners ('1 or 2' vs. '3 or more'); consistent condom use ('always' vs. 'not always'), and consistent contraceptive use (which included condom use) ('always' vs. 'not always').

At time one 7616 pupils participated, of average age 14 years and 2 months. One school considered the survey to be too sensitive at this age, but took part at time two. The 6% non-responders at time one in the other schools were mainly persistent absentees. At time two 5854 completed the questionnaire, of average age 16 years and 1 month. The response rate was lower because the 27% who had left school were less likely to complete the questionnaire (40% vs. 81% of those at school) (Wight et al., 2002).

The time one sample was representative of Scottish 14-year-olds in terms of social class and family structure, though Roman Catholics were under represented (Henderson et al., 2002). However, at time two differential attrition meant a bias towards more advantaged social groups (Wight et al., 2002). The eligible samples for this paper were those for whom we had baseline and follow-up data, and no missing data on sexual experience or parental monitoring ($N = 5041$). Separate analyses were conducted for males ($N = 2345$) and females ($N = 2696$).

The Pearson χ^2 test was used for bivariate comparisons, unless otherwise stated. Multivariate logistic regressions were run to produce adjusted odds ratios; the parenting variables were always included, plus those variables that were significantly associated with the outcomes in the bivariate analysis.

Results

Bivariate relationships are shown in Tables 1 and 2; only the main ones are highlighted here.

Social patterning of parental monitoring

High parental monitoring was reported by 60% of males and 73% of females at time one (Table 1). For both sexes greater parental monitoring was associated with both parents' higher

Table 1
Social patterning of parental monitoring, spending money and talking with parents about sex (time one)

| | % with high parental monitoring | | % with high spending money | | % talked to mother about sex | | % talked to father about sex | |
|-------------------------------------|---------------------------------|--------|----------------------------|--------|------------------------------|--------|------------------------------|--------|
| | Male | Female | Male | Female | Male | Female | Male | Female |
| <i>Housing type</i> | | | | | | | | |
| Rented | 52 | 63 | 45 | 46 | 77 | 93 | 74 | 73 |
| Owner occupied | 62*** | 76*** | 49 | 39** | 86*** | 95 | 84*** | 81*** |
| <i>Mother's age</i> | | | | | | | | |
| < 40 | 56 | 71 | 52 | 44 | 85 | 94 | 81 | 78 |
| > 39 | 64*** | 75* | 47* | 38** | 86 | 94 | 82 | 80 |
| <i>Mother's social class</i> | | | | | | | | |
| Non-manual | 64 | 76 | 46 | 38 | 86 | 94 | 83 | 80 |
| Manual | 56*** | 69*** | 51 | 42 | 85 | 93 | 81 | 77 |
| <i>Father's social class</i> | | | | | | | | |
| Non-manual | 66 | 78 | 46 | 38 | 86 | 95 | 84 | 82 |
| Manual | 56*** | 69*** | 50 | 42* | 82* | 93 | 81 | 81 |
| <i>Mother's qualifications</i> | | | | | | | | |
| Don't know/ none of the above | 52 | 64 | 54 | 45 | 70 | 87 | 72 | 70 |
| Left school at age 16 or younger | 49 | 61 | 52 | 41 | 82 | 91 | 78 | 76 |
| 'O' grades | 55 | 74 | 42 | 43 | 85 | 95 | 82 | 78 |
| Highers | 68 | 80 | 48 | 43 | 79 | 97 | 79 | 83 |
| Attended college | 59 | 75 | 49 | 42 | 86 | 94 | 82 | 79 |
| Attended university | 72 | 68 | 59 | 27 | 81 | 88 | 75 | 72 |
| Advanced qualification | 62 | 78 | 51 | 40 | 90 | 95 | 87 | 80 |
| Degree | 68*** | 78*** | 42** | 35* | 89*** | 96*** | 84*** | 82* |
| <i>Father's qualifications</i> | | | | | | | | |
| Don't know/ none of the above | 53 | 67 | 50 | 42 | 75 | 90 | 68 | 60 |
| Left school at age 16 or younger | 52 | 68 | 50 | 46 | 81 | 93 | 79 | 77 |
| 'O' grades | 57 | 73 | 44 | 41 | 81 | 95 | 78 | 80 |
| Highers | 70 | 80 | 47 | 40 | 86 | 97 | 83 | 85 |
| Attended college | 61 | 72 | 47 | 41 | 84 | 95 | 84 | 80 |
| Attended university | 55 | 71 | 50 | 42 | 91 | 94 | 87 | 83 |
| Advanced qualification | 61 | 75 | 53 | 42 | 90 | 95 | 88 | 87 |
| Degree | 66*** | 78** | 45 | 34* | 88*** | 94 | 85*** | 81*** |
| <i>Ethnicity</i> | | | | | | | | |
| Indian subcontinent | 48 | 78 | 56 | 50 | 60 | 84 | 65 | 60 |

Table 1 (continued)

| | % with high parental monitoring | | % with high spending money | | % talked to mother about sex | | % talked to father about sex | |
|----------------------------------|---------------------------------|-------------|----------------------------|--------|------------------------------|------------|------------------------------|--------|
| | Male | Female | Male | Female | Male | Female | Male | Female |
| White | 61 | 73 | 48 | 40 | 85 | 94 | 82 | 79 |
| Other | 57 | 73 | 56 | 51 | 74*** | 94* | 70** | 73** |
| <i>Religion</i> | | | | | | | | |
| None | 60 | 70 | 47 | 41 | 83 | 93 | 79 | 78 |
| Catholic | 61 | 73 | 46 | 41 | 86 | 96 | 84 | 79 |
| Protestant | 59 | 75 | 52 | 37 | 86 | 95 | 84 | 79 |
| Muslim | 60 | 75 | 47 | 40 | 83 | 95 | 81 | 78 |
| Other | 58 | 77 | 45 | 47 | 80 | 92 | 77 | 76 |
| <i>Religiosity</i> | | | | | | | | |
| Very religious | 54 | 91 | 48 | 14 | 73 | 96 | 73 | 77 |
| Religious | 69 | 85 | 41 | 34 | 89 | 96 | 88 | 81 |
| Unsure | 67 | 76 | 44 | 40 | 83 | 93 | 82 | 76 |
| Not religious | 60 | 74 | 45 | 37 | 86 | 96 | 82 | 82 |
| Not at all religious | 54*** | 64*** | 54*** | 47*** | 82** | 92** | 78* | 77 |
| <i>Friends at other schools</i> | | | | | | | | |
| | | $p < 0.001$ | | | | $p < 0.01$ | | |
| None | 63 | 73 | 43 | 36 | 79 | 90 | 78 | 74 |
| A few | 60 | 75 | 48 | 41 | 85 | 95 | 82 | 79 |
| Half | 54 | 66 | 52 | 44 | 86 | 95 | 82 | 81 |
| Most | 61 | 66 | 54 | 42 | 83 | 90 | 82 | 76 |
| All | 44 | 62 | 47 | 39 | 73 | 85 | 63 | 77 |
| <i>Friends left school</i> | | | | | | | | |
| None | 65 | 77 | 42 | 33 | 83 | 93 | 79 | 77 |
| A few | 57 | 70 | 52 | 44 | 85 | 95 | 84 | 80 |
| Half | 44 | 65 | 63 | 45 | 74 | 88 | 68 | 72 |
| Most/All | 29*** | 63*** | 71*** | 66*** | 74* | 93* | 65*** | 83 |
| <i>Friends smoke^a</i> | | | | | | | | |
| None | 69 | 83 | 42 | 32 | 80 | 91 | 79 | 78 |
| A few | 58 | 72 | 52 | 39 | 81 | 94 | 79 | 82 |
| Half | 53 | 59 | 57 | 47 | 75 | 93 | 74 | 77 |
| Most | 43 | 61 | 65 | 56 | 75 | 92 | 75 | 76 |
| All | 52*** | 55*** | 67*** | 67*** | 73 | 81 | 82 | 63* |
| <i>Parents live with</i> | | | | | | | | |
| Both parents | 61 | 75 | 47 | 39 | 86 | 94 | 84 | 83 |
| Mother only | 55 | 69 | 52 | 45 | 82 | 93 | 67 | 65 |
| Father only | 54 | 53 | 61 | 50 | 62 | 79 | 81 | 79 |
| Neither parents | 67 | 52*** | 71** | 41* | 47*** | 83*** | 64*** | 77*** |
| <i>No. older brothers</i> | | | | | | | | |
| 0 | 61 | 74 | 47 | 39 | 85 | 94 | 82 | 80 |
| 1 | 58 | 71 | 51 | 41 | 83 | 93 | 79 | 78 |
| 2 | 59 | 67 | 52 | 45 | 78 | 92 | 76 | 76 |

Table 1 (continued)

| | % with high parental monitoring | | % with high spending money | | % talked to mother about sex | | % talked to father about sex | |
|--|---------------------------------|-----------------|----------------------------|-----------------|------------------------------|-----------------|------------------------------|-----------------|
| | Male | Female | Male | Female | Male | Female | Male | Female |
| 3+ | 41 | 65 | 32 | 51 | 69* | 83* | 68* | 63* |
| <i>No. older sisters</i> | | | | | | | | |
| 0 | 62 | 74 | 48 | 40 | 85 | 94 | 82 | 79 |
| 1 | 58 | 72 | 48 | 41 | 83 | 92 | 80 | 78 |
| 2 | 49 | 63 | 52 | 38 | 82 | 92 | 82 | 75 |
| 3+ | 39** | 71* | 46 | 47 | 69 | 91 | 68 | 77 |
| <i>No. younger brothers</i> | | | | | | | | |
| | | | | <i>p</i> < 0.05 | | | | <i>p</i> < 0.05 |
| 0 | 60 | 73 | 48 | 40 | 84 | 94 | 81 | 79 |
| 1 | 60 | 73 | 49 | 38 | 85 | 93 | 82 | 78 |
| 2 | 59 | 74 | 42 | 53 | 83 | 93 | 80 | 79 |
| 3+ | 43 | 71 | 50 | 44* | 75 | 90 | 55* | 68 |
| <i>No. younger sisters</i> | | | | | | | | |
| 0 | 59 | 72 | 48 | 41 | 85 | 93 | 81 | 78 |
| 1 | 61 | 74 | 50 | 38 | 83 | 95 | 81 | 79 |
| 2 | 70 | 77 | 43 | 40 | 80 | 97 | 79 | 78 |
| 3+ | 47 | 69 | 50 | 40 | 80 | 91 | 80 | 85 |
| <i>Position in family</i> | | | | | | | | |
| | <i>p</i> < 0.05 | <i>p</i> < 0.05 | | | | <i>p</i> < 0.01 | | |
| Only child | 61 | 77 | 50 | 43 | 85 | 94 | 81 | 75 |
| Youngest | 57 | 71 | 49 | 43 | 84 | 93 | 81 | 78 |
| Middle | 57 | 70 | 50 | 38 | 80 | 91 | 78 | 76 |
| Eldest | 64* | 76* | 46 | 39 | 86 | 96** | 83 | 81 |
| <i>First born of own sex</i> | | | | | | | | |
| Yes | 61 | 74 | 47 | 40 | 85 | 94 | 82 | 79 |
| No | 57 | 70* | 50 | 41 | 82* | 92* | 78* | 78 |
| <i>Siblings gender composition</i> | | | | | | | | |
| Mixed | 59 | 72 | 49 | 41 | 83 | 93 | 80 | 78 |
| All same sex | 61 | 74 | 47 | 39 | 86* | 95 | 82 | 80 |
| <i>Spending money</i> | | | | | | | | |
| High | 52 | 64 | | | | | | |
| Low | 63*** | 78*** | | | | | | |
| <i>Talked to mother about sex</i> | | | | | | | | |
| Yes | 61 | 74 | 48 | 40 | | | | |
| No | 52*** | 63** | 50 | 38 | | | | |
| <i>Talked to father about sex</i> | | | | | | | | |
| | | <i>p</i> < 0.05 | | | | | | |
| Yes | 60 | 74 | 48 | 40 | | | | |
| No | 57 | 69 | 48 | 39 | | | | |
| <i>Comfort talking to mother about sex</i> | | | | | | | | |
| Very comfortable | 70 | 78 | 50 | 42 | | | | |

Table 1 (continued)

| | % with high parental monitoring | | % with high spending money | | % talked to mother about sex | | % talked to father about sex | |
|--|---------------------------------|-----------|----------------------------|-----------|------------------------------|-----------|------------------------------|-----------|
| | Male | Female | Male | Female | Male | Female | Male | Female |
| Comfortable | 63 | 76 | 50 | 40 | | | | |
| In between | 59 | 71 | 44 | 40 | | | | |
| Uncomfortable | 60 | 73 | 51 | 40 | | | | |
| Very uncomfortable | 60 | 66 | 49 | 43 | | | | |
| Never have/does not apply | 52** | 63** | 50 | 38 | | | | |
| <i>Comfort talking to father about sex</i> | | | | | | | | |
| Very comfortable | 67 | 71 | 47 | 43 | | | | |
| Comfortable | 62 | 77 | 51 | 40 | | | | |
| In between | 59 | 75 | 47 | 43 | | | | |
| Uncomfortable | 60 | 74 | 47 | 38 | | | | |
| Very uncomfortable | 58 | 72 | 52 | 40 | | | | |
| Never have/does not apply | 57 | 69 | 48 | 39 | | | | |
| Total | 1402 (60) | 1963 (73) | 1053 (48) | 1003 (40) | 1975 (84) | 2525 (94) | 1911 (81) | 2130 (79) |

N = male: 2345, female: 2696.

^aProportion of friends who smoke was only asked in cohort 2.

* $p < 0.05$.

** $p < 0.01$.

*** $p < 0.001$.

social class and educational qualifications, owner occupation, older mothers, and religiosity, though this was likely to be strongly related to the parents' religious beliefs (Abbott, 2003). Parental monitoring was also greater for only children and eldest children, and for those with a higher proportion of friends who were still at school and who did not smoke. Having older sisters (but not brothers) seems to reduce monitoring. For young women, monitoring was greatest if living with both parents and least if living only with one's father.

While high parental monitoring fell to 37% for males and 55% for females at time two, the social patterning was similar for both ages (data not shown). However, for females (but not males) high monitoring was less likely if they had reached their 16th birthday (53% vs. 57% < 16, $p < 0.05$).

Social patterning of spending money

High spending money, reported by 48% of males and 40% of females ($p < 0.001$) at time one, was inversely related to parental monitoring for both sexes, the social patterning being similar to that of low parental monitoring (Table 1). For both sexes, high spending money was associated with younger mothers, parents' lower educational level, living with only one parent, being less religious, and having a high proportion of friends who had left school and who smoked.

Table 2
Percentages reporting sexual behaviours (time two) by parenting variables (time one)

| | Males | | | | | Females | | | | |
|--|-------------------------------|---------------------------|--------------------------|-------------------------|--------------------------------|-------------------------------|---------------------------|--------------------------|-------------------------|--------------------------------|
| | Sexual experience (age 15/16) | Age of sexual debut (<15) | No. of sex partners (3+) | Inconsistent condom use | Inconsistent contraceptive use | Sexual experience (age 15/16) | Age of sexual debut (<15) | No. of sex partners (3+) | Inconsistent condom use | Inconsistent contraceptive use |
| <i>Parental monitoring</i> | | | | | | | | | | |
| High | 26 | 42 | 29 | 40 | 41 | 35 | 43 | 26 | 50 | 47 |
| Low | 40** | 50 | 32 | 42 | 41 | 54*** | 55*** | 40*** | 62*** | 54* |
| <i>Spending money</i> | | | | | | | | | | |
| High | 42 | 48 | 35 | 42 | 41 | 51.5 | 51 | 36 | 56 | 49 |
| Low | 23*** | 42 | 24** | 39 | 41 | 34*** | 43* | 27.5** | 52 | 49 |
| <i>Comfort talking to mother about sex</i> | | | | | | | | | | |
| Very comfortable | 36 | 46 | 38 | 46 | 46 | 41 | 41 | 24 | 52 | 47.5 |
| Comfortable | 32 | 43 | 32 | 36 | 39 | 39 | 40 | 30 | 51 | 46 |
| In between | 26 | 41 | 26 | 44 | 40 | 39 | 52 | 33 | 55 | 49.5 |
| Uncomfortable | 33 | 55 | 31 | 37 | 36 | 39 | 57 | 36 | 54.5 | 50 |
| Very uncomfortable | 31 | 44 | 24.5 | 49 | 45.5 | 54 | 60 | 42 | 69 | 61 |
| Never have/does not apply | 38** | 48 | 33 | 42 | 46 | 46* | 51** | 34 | 59 | 58 |
| <i>Comfort talking to father about sex</i> | | | | | | | | | | |
| Very comfortable | 35 | 45.5 | 36 | 51 | 52 | 48 | 31 | 25 | 50 | 45 |
| Comfortable | 30 | 43 | 26 | 37 | 39 | 40.5 | 45 | 28 | 44 | 40 |
| In between | 29 | 48.5 | 31 | 40 | 38 | 36 | 39 | 30 | 49.5 | 47 |
| Uncomfortable | 30.5 | 51 | 34 | 31 | 32 | 35 | 49 | 27 | 53 | 48 |
| Very uncomfortable | 34 | 41 | 24 | 49 | 45 | 47.5 | 54 | 35 | 65 | 56 |
| Never have/does not apply | 36 | 47 | 33 | 45 | 48* | 43*** | 49* | 34 | 54** | 50 |

* $p < 0.05$.
 ** $p < 0.01$.
 *** $p < 0.001$.

At time two high spending money was more likely among females than males (49% vs. 43%, $p < 0.001$) and there were similar variations in its social patterning (data not shown).

Social patterning of talking about sex with parents

Table 1 shows the proportions of young people who reported having talked to each parent about sex. For the majority who had done so, their level of comfort was analysed in terms of mean scores: these can be found on the web (www.msoc-mrc.gla.ac.uk/share/SHARE.html).

Both sexes had talked more to their mothers about sex than their fathers. Daughters were more likely than sons to have talked to their mothers about sex, and vice-a-versa for fathers (Table 1). This reflects comfort talking with each parent, 16% of girls reporting that they were very comfortable talking with their mothers compared with 7% of boys ($p < 0.001$), while talking with fathers was very comfortable for 7% of boys and 3% of girls ($p < 0.001$).

Owner occupation and higher parental educational level were both associated with greater likelihood of talking with parents (Table 1), but there was little other pattern by social class. Unsurprisingly, children were less likely to have talked to a parent about sex if they did not live with them, while those who lived with both parents were most likely to have talked to either of them (Table 1). However, family composition did not seem to affect comfort.

Ethnicity was more clearly related to communication about sex than was religiosity (Table 1). Pakistanis and Indians were much less likely to talk with their parents about sex than whites, and Pakistani and Indian sons felt less comfortable in doing so.

Having a higher proportion of friends who had left school was, for males, associated with never having talked to either parent about sex (Table 1) and, for females, with less comfort talking with mothers. Comfort talking to one's mother about sex was associated with greater parental monitoring, but it was not associated with spending money (Table 1).

At time two there was little change in the social patterning of having talked with parents about sex, or of level of comfort in doing so (data not shown).

Parenting, time one, and sexual behaviour, time two

Associations between these parenting variables and sexual experience, age at sexual debut, number of sexual partners, condom use, and contraceptive use were explored (Table 2). For males greater parental monitoring and lower spending money at time one were associated with less sexual experience and lower number of sexual partners (spending money only). For females higher parental monitoring was associated with less sexual experience and an older age of sexual debut, lower numbers of sexual partners, and greater condom and contraceptive use. This pattern was similar for low spending money with the exceptions of contraception and condom use.

For males, there was a U-shaped relationship between comfort talking to either parent about sex at time one and subsequent sexual experience, although this was only significant for talking to mothers. Those 'very comfortable' or 'very uncomfortable' talking to parents were more likely to report sexual intercourse than those 'in between'.

For young women this U-shaped relationship only existed for ease of communication with fathers and reported intercourse. In general, ease of communication about sex was associated with

later age of sexual debut, but there was little association with number of sexual partners, condom or contraceptive use.

While parental monitoring and spending money at time two displayed similar associations to the sexual experience outcomes (data not shown), there were some differences for ease of communication about sex. Males' greater comfort talking about sex with either parent at time two was associated with a higher likelihood of sexual experience (rather than the U-shaped relationship described above), and greater comfort talking with one's father was associated with younger age at sexual debut. For females, comfort talking to mothers was not associated with any of the outcomes while comfort talking to fathers retained the same U-shaped relationship with sexual experience and a positive relationship with contraceptive use.

Parenting and sexual behaviour: multivariate analyses

We used multivariate logistic regression to explore the effects of parenting on the outcome variables, controlling for the previously identified mediating factors associated with parenting. The adjusted odds ratios are shown in [Tables 3–5](#).

For both sexes low parental monitoring and high spending money remained significant predictors of sexual experience by time two, and for females, low parental monitoring predicted earlier age of sexual debut ([Table 3](#)). The likelihood of having three or more sexual partners was also significantly higher for females reporting low parental monitoring and for males reporting high spending money ([Table 4](#)). Low parental monitoring was associated with less consistent condom and contraceptive use by females, but not males, while high spending money was not associated with either outcome ([Table 5](#)).

Degree of comfort in talking with parents about sex only had limited predictive power. Boys who were 'uncomfortable' talking with their fathers about sex were more likely to use condoms and contraceptives consistently than those who were 'very comfortable' or 'very uncomfortable' talking with their fathers ([Table 5](#)). The only other significant association was that girls who reported being less than 'very comfortable' talking with their fathers (even those who were 'comfortable') had an earlier age of sexual debut ([Table 3](#)). The regressions were re-run with this variable dichotomized into having talked and never having talked with each parent, but this did not predict any outcomes for either sex. The regressions were also re-run using a mean score for comfort, excluding those who had not talked to their parents. Again this variable did not predict the outcomes, with one exception. For girls, comfort talking to fathers about sex was a significant predictor of always using condoms (OR = 1.23, 95% CI 1.05–1.44).

The confounding factors found to be significant predictors of the sexual behaviour outcomes are indicated in the tables. It is striking that, apart from living with neither parent for males, the proportion of friends who smoke is the most powerful predictor of sexual experience for both sexes.

We checked for interaction effects of the parenting variables on the sexual behaviour outcomes. In most cases the interaction odds are in the same direction as those for the original variables, suggesting that the interactions strengthen the individual effects as opposed to weakening them. For instance, younger sexual debut was more likely among females who reported both low parental monitoring and high spending money (OR = 2.11, 95% CI 1.06–4.22).

Table 3
Parenting effects on sexual experience and age of sexual debut (multivariate logistic regression)

| | Sexual experience | | | | Age of sexual debut (<15) | | | |
|-------------------------------------|-------------------|-----------|----------|-----------|---------------------------|-----------|---------|-----------|
| | Males | | Females | | Males | | Females | |
| | N = 2253 | | N = 2635 | | N = 531 | | N = 812 | |
| | OR | 95% CI | OR | 95% CI | OR | 95% CI | OR | 95% CI |
| <i>Low parental monitoring</i> | 1.34** | 1.09–1.65 | 1.48*** | 1.21–1.82 | 1.12 | 0.76–1.65 | 1.54* | 1.12–2.11 |
| <i>High spending money</i> | 2.00*** | 1.62–2.46 | 1.64*** | 1.35–1.98 | 1.19 | 0.79–1.79 | 1.34 | 0.98–1.83 |
| <i>Talk about sex with mother</i> | | | | | | | | |
| Very comfortable | 1 | | 1 | | 1 | | 1 | |
| Comfortable | 1.11 | 0.65–1.87 | 1.09 | 0.82–1.44 | 0.98 | 0.43–2.24 | 0.89 | 0.55–1.43 |
| In between | 0.81 | 0.48–1.39 | 1.13 | 0.84–1.52 | 0.78 | 0.32–1.90 | 1.26 | 0.77–2.03 |
| Uncomfortable | 1.02 | 0.57–1.83 | 0.95 | 0.64–1.42 | 1.56 | 0.59–4.11 | 1.37 | 0.72–2.61 |
| Very uncomfortable | 0.87 | 0.44–1.72 | 1.53 | 0.92–2.54 | 1.24 | 0.37–4.12 | 1.79 | 0.82–3.88 |
| Never have/does not apply | 1.33 | 0.71–2.48 | 1.25 | 0.77–2.03 | 1.18 | 0.45–3.08 | 1.10 | 0.53–2.30 |
| <i>Talk about sex with father</i> | | | | | | | | |
| Very comfortable | 1 | | 1 | | 1 | | 1 | |
| Comfortable | 0.71 | 0.41–1.21 | 1.02 | 0.57–1.83 | 0.83 | 0.34–2.07 | 2.74* | 1.02–7.36 |
| In between | 0.88 | 0.51–1.50 | 0.80 | 0.46–1.38 | 1.01 | 0.40–2.56 | 2.05 | 0.83–5.09 |
| Uncomfortable | 0.84 | 0.47–1.50 | 0.80 | 0.46–1.40 | 0.85 | 0.31–2.36 | 2.65* | 1.06–6.60 |
| Very uncomfortable | 1.03 | 0.53–2.02 | 1.17 | 0.66–2.07 | 0.54 | 0.17–1.76 | 2.75* | 1.09–6.92 |
| Never have/does not apply | 0.80 | 0.44–1.46 | 0.98 | 0.55–1.73 | 0.79 | 0.30–2.09 | 2.46 | 0.97–6.24 |
| <i>Age at interview</i> | 1.04** | 1.01–1.07 | 1.05*** | 1.02–1.08 | 0.87*** | 0.82–0.92 | 0.92*** | 0.88–0.96 |
| <i>Live in rented housing</i> | 0.88 | 0.67–1.16 | 1.13 | 0.89–1.44 | 1.53 | 0.98–2.40 | 1.28 | 0.92–1.78 |
| <i>Mother aged less than 40</i> | 1.64*** | 1.30–2.09 | 1.53*** | 1.23–1.90 | 1.71* | 1.09–2.68 | | |
| <i>Mother's social class—manual</i> | 1.06 | 0.83–1.36 | 1.06 | 0.85–1.32 | 1.71* | 1.09–2.68 | | |
| <i>Father's social class—manual</i> | 1.07 | 0.84–1.36 | 1.04 | 0.83–1.30 | | | | |
| <i>Mother's qualifications</i> | | | | | | | | |
| Degree | | | 1 | | | | | |
| Advanced qualification | | | 1.11 | 0.80–1.56 | | | | |
| Attended university | | | 2.01* | 1.06–3.79 | | | | |
| Attended college | | | 1.30 | 0.94–1.80 | | | | |
| Highers | | | 1.18 | 0.77–1.79 | | | | |
| 'O' grades | | | 1.22 | 0.87–1.70 | | | | |
| Left school at age 16 or younger | | | 1.43* | 1.02–2.02 | | | | |
| Don't know/none of the above | | | 1.07 | 0.68–1.66 | | | | |
| <i>Father's qualifications</i> | | | | | | | | |
| Degree | 1 | | 1 | | | | | |
| Advanced qualification | 1.14 | 0.78–1.67 | 1.23 | 0.86–1.75 | | | | |
| Attended university | 1.28 | 0.75–2.17 | 1.13 | 0.67–1.88 | | | | |
| Attended college | 0.94 | 0.66–1.36 | 0.94 | 0.66–1.32 | | | | |
| Highers | 0.97 | 0.62–1.51 | 1.18 | 0.76–1.81 | | | | |
| 'O' grades | 1.25 | 0.88–1.76 | 0.97 | 0.69–1.35 | | | | |
| Left school at age 16 or younger | 1.12 | 0.79–1.58 | 1.24 | 0.90–1.72 | | | | |
| Don't know/none of the above | 0.81 | 0.56–1.19 | 1.05 | 0.72–1.53 | | | | |
| <i>Ethnicity</i> | | | | | | | | |
| White | | | 1 | | | | | |

Table 3 (continued)

| | Sexual experience | | | | Age of sexual debut (<15) | | | |
|--|-------------------|------------|----------|------------|---------------------------|------------|---------|-----------|
| | Males | | Females | | Males | | Females | |
| | N = 2253 | | N = 2635 | | N = 531 | | N = 812 | |
| | OR | 95% CI | OR | 95% CI | OR | 95% CI | OR | 95% CI |
| Asian | | | 0.31* | 0.12–0.80 | | | | |
| Other | | | 0.67 | 0.36–1.23 | | | | |
| <i>Religiosity</i> | 1.17** | 1.06–1.29 | 1.25*** | 1.14–1.37 | | | | |
| <i>Parents live with</i> | | | | | | | | |
| Both parents | 1 | | 1 | | | | | |
| Mother only | 1.41* | 1.07–1.85 | 1.62*** | 1.29–2.03 | | | | |
| Father only | 1.66 | 0.97–2.84 | 3.06*** | 1.63–5.75 | | | | |
| Neither parents | 5.95* | 1.48–23.90 | 2.26 | 0.84–6.09 | | | | |
| <i>No. older brothers</i> | | | | | | | | |
| 0 | | | 1 | | 1 | | | |
| 1 | | | 1.17 | 0.83–1.65 | 0.99 | 0.64–1.54 | | |
| 2 | | | 1.66* | 1.04–2.65 | 5.13** | 1.92–13.72 | | |
| 3+ | | | 1.03 | 0.48–2.25 | 2.84 | 0.69–11.60 | | |
| <i>No. younger brothers</i> | | | | | | | | |
| 0 | 1 | | | | | | 1 | |
| 1 | 0.93 | 0.74–1.17 | | | | | 0.99 | 0.71–1.40 |
| 2 | 1.81* | 1.09–3.02 | | | | | 0.34** | 0.17–0.71 |
| 3+ | 0.55 | 0.16–1.94 | | | | | 0.23* | 0.06–0.93 |
| <i>No. younger sisters</i> | | | | | | | | |
| 0 | | | 1 | | | | | |
| 1 | | | 0.76* | 0.59–0.99 | | | | |
| 2 | | | 0.93 | 0.59–1.44 | | | | |
| 3+ | | | 0.70 | 0.31–1.58 | | | | |
| <i>Proportion of friends at other schools</i> | 1.09 | 0.95–1.25 | 1.07 | 0.94–1.21 | | | | |
| <i>Proportion of friends left school</i> | 1.58*** | 1.34–1.87 | 1.73*** | 1.48–2.02 | | | 1.45** | 1.15–1.83 |
| <i>Proportion of friends who smoke^a</i> | | | | | | | | |
| None | 1 | | 1 | | 1 | | 1 | |
| A few | 1.82*** | 1.30–2.55 | 1.96*** | 1.40–2.76 | 1.55 | 0.79–3.04 | 1.44 | 0.74–2.79 |
| Half | 3.07*** | 1.75–5.39 | 3.01*** | 1.85–4.87 | 1.37 | 0.47–4.01 | 1.77 | 0.79–3.95 |
| Most | 4.02*** | 2.31–6.98 | 4.18*** | 2.55–6.83 | 3.22* | 1.31–7.92 | 2.35* | 1.11–4.96 |
| All | 3.79** | 1.47–9.80 | 8.97*** | 3.01–26.74 | 5.26* | 1.28–21.61 | 3.20* | 1.05–9.74 |
| <i>Cohort 1</i> | 1.55** | 1.14–2.09 | 1.97*** | 1.45–2.69 | 2.25* | 1.18–4.30 | 2.35** | 1.27–4.33 |

For males, sex experience analysis included school, which remained significant.

For females, sex experience analysis included position in family and first born of own sex, which were not significant, and school, which remained significant.

* $p < 0.05$.

** $p < 0.01$.

*** $p < 0.001$.

^aProportion of friends who smoke was not asked in the questionnaire for cohort 1.

Table 4
Parenting effects on number of sexual partners (multivariate logistic regression)

| | Males | | Females | |
|--|----------------|-----------|-----------------|-----------|
| | <i>N</i> = 668 | | <i>N</i> = 1043 | |
| | OR | 95% CI | OR | 95% CI |
| <i>Low parental monitoring</i> | 1.01 | 0.70–1.46 | 1.75*** | 1.32–2.33 |
| <i>High spending money</i> | 1.81** | 1.23–2.69 | 1.32 | 0.99–1.77 |
| <i>Talk about sex with mother</i> | | | | |
| Very comfortable | 1 | | 1 | |
| Comfortable | 1.04 | 0.44–2.46 | 1.27 | 0.80–2.02 |
| In between | 0.62 | 0.25–1.54 | 1.47 | 0.92–2.36 |
| Uncomfortable | 0.60 | 0.23–1.53 | 1.69 | 0.92–3.09 |
| Very uncomfortable | 0.72 | 0.22–2.33 | 2.00 | 0.99–4.03 |
| Never have/does not apply | 1.00 | 0.37–2.70 | 1.49 | 0.73–3.04 |
| <i>Talk about sex with father</i> | | | | |
| Very comfortable | 1 | | 1 | |
| Comfortable | 0.58 | 0.24–1.45 | 1.34 | 0.54–3.33 |
| In between | 1.04 | 0.42–2.58 | 1.35 | 0.59–3.08 |
| Uncomfortable | 1.38 | 0.54–3.55 | 1.11 | 0.48–2.57 |
| Very uncomfortable | 0.75 | 0.24–2.34 | 1.37 | 0.59–3.17 |
| Never have/does not apply | 0.91 | 0.34–2.42 | 1.25 | 0.54–2.92 |
| <i>Age at interview</i> | 0.98 | 0.93–1.02 | 0.99 | 0.96–1.03 |
| <i>Live in rented housing</i> | 1.22 | 0.79–1.88 | 1.20 | 0.86–1.68 |
| <i>Mother aged less than 40</i> | 1.26 | 0.83–1.92 | 1.16 | 0.85–1.57 |
| <i>Mother's social class—manual</i> | 1.56* | 1.03–2.38 | 0.81 | 0.59–1.12 |
| <i>Father's social class—manual</i> | 1.56* | 1.02–2.38 | 0.86 | 0.62–1.20 |
| <i>Parents live with</i> | | | | |
| Both parents | 1 | | 1 | |
| Mother only | 1.45 | 0.92–2.27 | 1.20 | 0.88–1.65 |
| Father only | 0.50 | 0.19–1.30 | 0.97 | 0.45–2.10 |
| Neither parents | 1.71 | 0.44–6.66 | 1.49 | 0.44–5.06 |
| <i>No. younger brothers</i> | | | | |
| 0 | 1 | | 1 | |
| 1 | 0.63* | 0.41–0.97 | 1.31 | 0.95–1.81 |
| 2 | 1.66 | 0.81–3.40 | 0.68 | 0.36–1.29 |
| 3+ | 0.43 | 0.08–2.38 | 2.24 | 0.71–7.04 |
| <i>Proportion of friends left school</i> | 1.38* | 1.05–1.81 | 1.23* | 1.00–1.51 |
| <i>Proportion of friends who smoke^a</i> | | | | |
| None | 1 | | 1 | |
| A few | 1.06 | 0.53–2.10 | 1.09 | 0.55–2.14 |
| Half | 0.80 | 0.29–2.21 | 2.02 | 0.92–4.43 |
| Most | 1.65 | 0.72–3.81 | 2.62* | 1.26–5.46 |
| All | 2.30 | 0.65–8.19 | 2.60 | 0.91–7.46 |
| <i>Cohort 1</i> | 1.64 | 0.87–3.07 | 1.81 | 0.97–3.36 |

* $p < 0.05$.

** $p < 0.01$.

*** $p < 0.001$.

^aProportion of friends who smoke was not asked in the questionnaire for cohort 1.

Table 5
Parenting effects on consistent condom and contraceptive use (multivariate logistic regression)

| | Condom use (always) | | | | Contraceptive use (always) | | | |
|-------------------------------------|---------------------|-----------|-----------------|-----------|----------------------------|-----------|-----------------|-----------|
| | Males | | Females | | Males | | Females | |
| | <i>N</i> = 693 | | <i>N</i> = 1047 | | <i>N</i> = 739 | | <i>N</i> = 1074 | |
| | OR | 95% CI | OR | 95% CI | OR | 95% CI | OR | 95% CI |
| <i>Low parental monitoring</i> | 1.04 | 0.75–1.44 | 0.67** | 0.50–0.89 | 1.02 | 0.75–1.39 | 0.74* | 0.57–0.97 |
| <i>High spending money</i> | 0.81 | 0.58–1.15 | 0.92 | 0.69–1.23 | 0.95 | 0.69–1.30 | 1.13 | 0.86–1.47 |
| <i>Talk about sex with mother</i> | | | | | | | | |
| Very comfortable | 1 | | 1 | | 1 | | 1 | |
| Comfortable | 0.98 | 0.46–2.07 | 0.93 | 0.61–1.43 | 0.96 | 0.47–1.95 | 1.09 | 0.73–1.62 |
| In between | 0.66 | 0.30–1.45 | 0.87 | 0.56–1.36 | 0.83 | 0.39–1.75 | 0.97 | 0.64–1.47 |
| Uncomfortable | 0.83 | 0.35–1.93 | 1.10 | 0.61–1.96 | 0.92 | 0.41–2.04 | 1.01 | 0.59–1.74 |
| Very uncomfortable | 0.75 | 0.28–2.00 | 0.69 | 0.34–1.42 | 0.80 | 0.31–2.04 | 0.74 | 0.38–1.42 |
| Never have/does not apply | 1.10 | 0.47–2.59 | 0.84 | 0.43–1.67 | 0.96 | 0.43–2.15 | 0.70 | 0.37–1.32 |
| <i>Talk about sex with father</i> | | | | | | | | |
| Very comfortable | 1 | | 1 | | 1 | | 1 | |
| Comfortable | 1.85 | 0.84–4.09 | 1.07 | 0.47–2.47 | 1.67 | 0.79–3.54 | 0.98 | 0.44–2.17 |
| In between | 1.92 | 0.86–4.30 | 0.94 | 0.44–2.01 | 1.92 | 0.90–4.09 | 0.75 | 0.37–1.55 |
| Uncomfortable | 2.73* | 1.15–6.47 | 0.73 | 0.34–1.56 | 2.43* | 1.08–5.45 | 0.71 | 0.34–1.46 |
| Very uncomfortable | 1.35 | 0.51–3.55 | 0.54 | 0.25–1.18 | 1.51 | 0.61–3.76 | 0.60 | 0.29–1.25 |
| Never have/does not apply | 1.17 | 0.51–2.73 | 0.82 | 0.38–1.79 | 1.20 | 0.54–2.65 | 0.91 | 0.43–1.91 |
| <i>Age at interview</i> | | | | | | | | |
| Very comfortable | 1.02 | 0.98–1.06 | 0.97 | 0.94–1.01 | 1.03 | 0.99–1.07 | 0.99 | 0.96–1.02 |
| <i>Live in rented housing</i> | 0.84 | 0.57–1.24 | 0.82 | 0.59–1.14 | 0.69* | 0.49–0.99 | 0.87 | 0.64–1.17 |
| <i>Mother aged less than 40</i> | 0.80 | 0.55–1.15 | 0.80 | 0.58–1.10 | | | 0.80 | 0.59–1.07 |
| <i>Mother's social class—manual</i> | 0.72 | 0.49–1.06 | 1.01 | 0.73–1.39 | | | 0.91 | 0.67–1.23 |
| <i>Father's social class—manual</i> | | | | | | | | |
| <i>Mother's qualifications</i> | | | | | | | | |
| Degree | 1 | | 1 | | | | 1 | |
| Advanced qualification | 0.80 | 0.43–1.48 | 0.98 | 0.58–1.64 | | | 1.17 | 0.71–1.91 |
| Attended university | 0.69 | 0.29–1.69 | 0.68 | 0.25–1.80 | | | 0.61 | 0.25–1.50 |
| Attended college | 0.56* | 0.32–0.97 | 0.69 | 0.42–1.14 | | | 0.84 | 0.53–1.33 |
| Highers | 0.79 | 0.39–1.61 | 1.35 | 0.68–2.71 | | | 1.36 | 0.71–2.61 |
| 'O' grades | 0.48* | 0.27–0.85 | 0.80 | 0.48–1.34 | | | 0.87 | 0.54–1.41 |
| Left school at age 16 or younger | 0.62 | 0.33–1.15 | 0.85 | 0.51–1.41 | | | 0.90 | 0.56–1.44 |
| Don't know/none of the above | 0.92 | 0.48–1.74 | 0.67 | 0.34–1.34 | | | 0.68 | 0.36–1.26 |
| <i>Father's qualifications</i> | | | | | | | | |
| Degree | | | 1 | | | | 1 | |
| Advanced qualification | | | 0.81 | 0.47–1.41 | | | 0.59* | 0.35–0.99 |
| Attended university | | | 0.34* | 0.15–0.79 | | | 0.43* | 0.20–0.93 |
| Attended college | | | 0.56* | 0.33–0.97 | | | 0.53* | 0.32–0.88 |
| Highers | | | 0.76 | 0.39–1.50 | | | 0.65 | 0.34–1.22 |
| 'O' grades | | | 0.59* | 0.35–0.99 | | | 0.58* | 0.35–0.95 |
| Left school at age 16 or younger | | | 0.54* | 0.33–0.87 | | | 0.46*** | 0.29–0.72 |
| Don't know/none of the above | | | 0.51* | 0.29–0.88 | | | 0.39*** | 0.23–0.65 |

Table 5 (continued)

| | Condom use (always) | | | | Contraceptive use (always) | | | |
|--|---------------------|--------|-----------------|-----------|----------------------------|--------|-----------------|-----------|
| | Males | | Females | | Males | | Females | |
| | <i>N</i> = 693 | | <i>N</i> = 1047 | | <i>N</i> = 739 | | <i>N</i> = 1074 | |
| | OR | 95% CI | OR | 95% CI | OR | 95% CI | OR | 95% CI |
| <i>First born of own sex</i> | | | 1.50* | 1.05–2.15 | | | | |
| <i>Proportion of friends left school</i> | | | 0.74** | 0.59–0.91 | | | 0.81* | 0.67–0.97 |
| <i>Proportion of friends who smoke^a</i> | | | | | | | | |
| None | | | 1 | | | | | |
| A few | | | 1.08 | 0.60–1.93 | | | | |
| Half | | | 0.72 | 0.35–1.51 | | | | |
| Most | | | 0.54 | 0.26–1.11 | | | | |
| All | | | 1.05 | 0.37–2.99 | | | | |
| <i>Cohort 1</i> | | | 1.03 | 0.60–1.76 | | | | |

For females, condom use analysis included position in family and school, which were not significant.

For females, contraceptive use analysis included position in family, which was not significant.

* $p < 0.05$.

** $p < 0.01$.

*** $p < 0.001$.

^aProportion of friends who smoke was not asked in the questionnaire for cohort 1.

Effects of behaviour on parental monitoring

Could parental monitoring be a response to behaviour, rather than the other way around? If sexual activity resulted in reduced monitoring we would expect that those reporting high monitoring plus sexual experience at time one to have low monitoring at time two. To test this hypothesis we calculated adjusted odds ratios (controlling for confounding factors as above) to assess the interaction effect of sexual experience and high parental monitoring at time one on parental monitoring at time two.

For both sexes, high parental monitoring at time one was a significant predictor of high monitoring at time two (males: OR = 5.12, 95% CI 4.09–6.41; females: OR = 5.36, 95% CI 4.32–6.65). The likelihood of high parental monitoring at time two was only significantly lower for females reporting sexual experience at time one (males: 0.85, 95% CI 0.59–1.24; females: OR = 0.51, 95% CI 0.37–0.70). The interaction between high parental monitoring and sexual experience at time one was not significant for females but was for males (OR = 0.48, 95% CI 0.24–0.97). While low monitoring at time one led to low monitoring at time two regardless of sexual experience, the likelihood of high monitoring at time two was reduced for males who reported sexual experience at time one. It is possible that knowledge of their sexual activity led to a change in monitoring by parents. This interaction was not significant if sexual experience reported at time two, instead of time one, was used, suggesting that only early sexual activity resulted in a reduction in monitoring. It should be noted that we have no information as to whether or not parents were aware of their children's sexual behaviour.

Discussion

In this large sample of Scottish young people greater parental monitoring and having less spending money were socially patterned in much the same way, being associated with parents' higher educational level, living with both parents, having older mothers, being more religious and having a high proportion of friends who were still at school and who did not smoke. Data from 15-year-olds in the west of Scotland suggest that variations in sources of spending money reflect young people's autonomy to earn (West, pers. comm.), and can therefore be seen as another measure of parental control. Ease of communication about sex, however, was not strongly patterned socially, other than owner occupiers and parents with higher education being more likely to talk with their children about sex, and Indians and Pakistanis being less likely to do so.

With respect to our second objective, these longitudinal data confirm the importance of both family structure and family processes in shaping young people's sexual behaviour. Both sexes were more likely to have sexual intercourse in their early teens if living with only one biological parent, and males were far more likely to do so if living with neither. Having older brothers made early sexual activity more likely for both sexes. However, these aspects of family structure were not associated with condom or contraceptive use. The associations between family structure and sexual behaviour remained, although attenuated, after controlling for our measures of processes within the family, which demonstrates the limitation of these process measures in explaining the mechanisms that relate family structure to outcomes. Since other researchers' process measures also do not fully account for the influence of family structure (e.g. Sweeting et al., 1998), clearly more research is needed in this area.

Family processes seemed to have a wider influence on young people's sexual behaviour than did family structure. Our data allowed us to explore three interrelated dimensions of parent–child relationships. Low parental monitoring predicted early sexual activity for both sexes, but for females it also predicted more sexual partners and not using a condom or other contraceptives. Having a lot of spending money also predicted early sexual activity for both sexes and, for males, having more sexual partners. The third dimension, comfort talking with parents about sex, seemed to bear little relationship to sexual behaviour. In multivariate logistic regression the main associations were that those boys who felt uncomfortable talking with their fathers were most likely to use condoms consistently, whilst girls' comfort talking with their fathers predicted condom use.

These findings suggest that the relationship between parent–child communication about sex and sexual behaviour is rather more complex than being positive (for males) or non-existent, as reported in British research (Currie, 1999; Stone & Ingham, 2002; Wellings et al., 1996, 2001). In multivariate logistic regression the significant associations were a U-shaped relationship for boys between comfort talking to fathers and consistent condom and contraceptive use (most consistent use if 'uncomfortable'), and for girls the greater likelihood of later sexual debut and consistent condom use for those more comfortable talking with their fathers. The persistent U-shaped relationship for boys might suggest that being very relaxed in communicating about sex with their parents might legitimate sexual activity and/or not taking precautions, though causation could plausibly be in either direction, while being very uncomfortable talking with them might reflect poor communication in general and a rejection of parental values. The discrepancy with other British findings might be due to differences in question wording, the longitudinal analysis or, in

contrast to Wellings et al. (2001) and Stone and Ingham (2002), questioning a younger sample about current communication with parents, rather than previous communication, which possibly suggests less recall bias. The findings reported here, however, are in line with some from the USA (Huebner & Howell, 2003; Miller, Benson, & Galbraith, 2001).

In terms of Objective 3, to establish the relative importance of each parenting variable, ease of communication with parents about sex seems less important than either parental monitoring or level of spending money. Parental monitoring was the variable with greatest influence on the widest number of sexual outcomes examined.

The term ‘parental monitoring’ has been criticized as too vague and usually referring to parental knowledge, rather than parental action (Kerr & Stattin, 2000; Stattin & Kerr, 2000). In this study all four parental monitoring items relate to parental action, three are about parental tracking or limit setting, and the fourth about parental surveillance. Somewhat contrary to Stattin and Kerr, but in line with Barber et al. (submitted), our results show that parental control, specifically, is associated with less risky behaviour, but we do not have measures of parental solicitation or child disclosure of information with which to compare it. In a further contrast with Kerr and Stattin (2000), in which they argue that parental control leads to lower self esteem, in this study self esteem for young women was positively associated with parental monitoring at both age 14 and 16, while there was no relationship for males (data not shown).

Beyond the simple interpretation of these findings, that more restrictive parenting reduces risky sexual behaviour, there are three alternative possibilities that must be considered. First, we lack a lot of important data on child–parent relationships, such as parental support or time spent in family activities, since this was not the original focus of the study. It might well be that parental monitoring and spending money are proxies for some other, more important, aspect of family processes, and it is not restrictiveness, per se, which is protective. Parental monitoring has been correlated with parental trust (Borawski et al., 2003), and parental control, parental solicitation and child disclosure have all been correlated with each other (Kerr & Stattin, 2000). Furthermore, parental monitoring might express interest in one’s children’s activities, most studies using both measures having shown that parental monitoring is correlated with parental support. However, Barber et al. (submitted) specifically explored this and found that parental control still strongly predicted age of first sex after controlling for teenagers’ perceptions of parental support. Another possibility is that monitoring could be primarily a means by which parents try to transmit their values to their children, rather than protect them from physical or emotional risks, for instance, by shaping their children’s peer groups (Seaman, 2002). This latter interpretation is supported by the correlation between higher parental monitoring and ‘safer’ friendship groups, i.e. without people who smoked or had left school.

Second, the findings could result from a systematic reporting bias, whereby those having sex early do not want to acknowledge parental control of their lives. All our data on parenting were reported by young people; we have none from the parents themselves. Further research would be required to explore this possibility.

The third alternative interpretation is that of reverse causation, that is that it is the young person’s behaviour that influences style of parenting. Examining this possibility was the final objective of this paper. Perceiving one’s child to engage in risky activities clearly does not, in general, lead parents to monitor that child more carefully. However, parents whose children have high-risk lifestyles might resign themselves to this and abandon restrictive monitoring in order to

avoid repeated conflict with their children. Our analysis showed that for males who reported sexual experience at time one there was, indeed, a reduced likelihood of high monitoring at time two, suggesting an element of reverse causation. However, overall the relationship from monitoring to behaviour was much stronger, confirming that parental monitoring does seem to influence subsequent behaviour. We must remember that we have no evidence of parents' awareness of their children's sexual behaviour, and other studies suggest this is limited (Stanton, Li, & Galbraith, 2000), so again these findings may reflect relationships between broader aspects of family life, both in terms of what 'parental monitoring' and 'reported sexual behaviour' represent.

There is a long-running debate about whether parents or peers have more influence on teenagers' behaviour (Harris, 1999). Although this paper has focussed on parental influences, multivariate logistic regression suggests that the proportion of friends who smoke at time one is the strongest predictor of early sexual activity for both sexes, and, for females, higher numbers of sexual partners. Proportion of friends who smoke was asked as a proxy for proportion of friends who have had sex, since reported smoking and sexual experience are correlated ($r = 0.4$, $p < 0.000$, both time points, also Poulin & Graham, 2001) and it would have been considered too intrusive to ask about friends' sexual experiences. These results seem to confirm American findings that having sexually active friends predicts a young person's own sexual activity (East, Felice, & Morgan, 1993; Miller et al., 1997; Rodgers & Rowe, 1990), and support the view that peers are more influential than parents (Harris, 1999). However, our data also suggest that the formation of friendship groups is itself influenced by parents. For both sexes the proportion of their friends who had left school or who smoked was associated with parental monitoring and spending money, while the proportion of females' friends who were at a different school was associated with parental monitoring and ease of communication with mothers. Thus although our measures of family processes were fairly limited, they suggest a degree of 'intergenerational closure' (Coleman, 1988) between parents' and peers' influences (Seaman, 2002).

Overall, these data from a large longitudinal study of young Scots suggest that some dimension of parenting, represented by levels of parental monitoring and spending money in early teens, influences subsequent sexual risk taking. This strengthens the rationale for the government's interventions to try and modify parenting practices. It is probably marginally less difficult to influence parenting styles than family structure, and there are now various initiatives to support early parent-child relationships, such as 'Sure Start' and 'Starting Well'. This study suggests the need to extend the focus to parents of teenagers, and, in particular, single parents. There are already some pioneering programmes to help parents talk to their children about sex, such as 'Parentline Plus' in the UK and, in the USA, programmes to increase parental monitoring (e.g. Stanton et al., 2000). However, there is scope for further, particularly qualitative, research on the exact processes within families that underlie the link between parental monitoring and health outcomes. The findings of such research should inform the design of future parenting interventions.

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