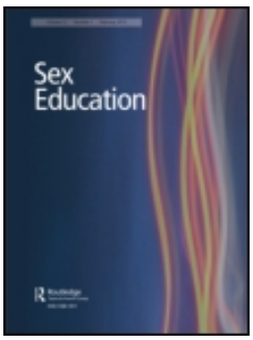

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Parental involvement in sexuality education: advancing understanding through an analysis of findings from the 2010 Irish Contraception and Crisis Pregnancy Study

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Recent research has highlighted the importance of parental involvement in sexuality education, and studies of sexuality education sometimes take place through national sexual health surveys. This paper aims to identify key parental characteristics that predict parental involvement in sexuality education while also encouraging a debate on how this topic is optimally investigated. Data used in this study comprised a subset from a nationally representative cross-sectional telephone survey of adults (18–45 years) living in Ireland ($N = 3002$). Parents (21–45 years) of a child/children aged 6 years or older at the time of the study ($n = 966$) were included in analyses. Results using propensity score analysis found that parents who reported engaging in sexuality education with their children were more likely to be women, aged 36–45 years, and also were more likely to have a larger number of children. Advancing the field of sexuality education research could be facilitated by the application of survey method and the advanced statistical techniques used here. Furthermore, a stand-alone national survey assessing parental involvement in sexuality education would be a worthy contribution to this knowledge base.

Keywords: sexuality education; parental involvement; sexual health; national surveys; propensity score analysis

Introduction

A key aim of sexuality education is to provide young people with essential knowledge and skills that will enable them to make empowered and healthy decisions about their sexual health and relationships (Loeber et al. 2010). National studies assessing the receipt of sexuality education generally embed questions within a broader assessment of sexual health. For example, both the Irish Study on Sexual Health and Relationships (Rundle, Layte, and McGee 2008) and the UK National Survey of Sexual Attitudes and Lifestyles II (National Centre for Social Research et al. 2005) included questions that asked participants about learning about sex when they were growing up. In addition, parents' involvement in sexuality education is recognised by law in some countries (e.g., UK Education Act 1993; Article 42 of the Irish Constitution) (Parker, Wellings, and Lazarus 2009).

Parental involvement in a child's education is an important factor influencing academic achievement and growth (Fan and Chen 2001). A number of key socio-demographic

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factors have been identified. Gender plays a role, with mothers more likely than fathers to be involved in school-related activities (Phares, Fields, and Kamboukos 2009). Parents who are socio-economically deprived have been found to participate less in their child's education, possibly because they tend to have fewer years in formal education or they may have had more negative experiences within the education system (Boethel 2003). Byrne and Smyth (2010) also report that the more education a parent has, the more likely they are to be involved in their own child's education.

Whereas research on factors that influence the level of parental involvement in a child's sexuality education is not as extensive, it has reached broadly similar conclusions. For example, mothers have been found to be more likely to provide sexuality education to their children than fathers (Holland, Mauthner, and Sharpe 1996; Walker 2001; Sprecher, Harris, and Meyers 2008; Turnbull, van Wersch, and van Schaik 2008). Walker (2004) suggests that this is likely because women are broadly the primary caregivers and often the main health educators at home. Walker (2004) also conducted an analysis of three key studies in this field and classified the factors that influence whether parents provided sexuality education at home under four main categories: parents' sexual health careers (e.g., parents' past sexuality education, parents' own beliefs and morals); family structure and profile (e.g., sex of the parent, socio-economic status, education); family ethos (e.g., personal and social origins of the family); and other sources of sexuality education (e.g., school, peers, etc.). Other characteristics include knowledge and comfort when talking about sexuality with their children (Byers, Sears, and Weaver 2008); and parents' own experience of sexuality education (Walker 2001; Byers, Sears, and Weaver 2008). Other research has indicated that older parents are more likely to report extensive parent–child communication in relation to sexual health topics (Byers, Sears, and Weaver 2008).

Parents largely concur with the idea that they should play a fundamental role in their children's sexuality education; indeed, 95% of parents in a national UK study felt that discussing contraception with their children was primarily their responsibility (Ingham 2002). However, only 58% of those parents had actually done so, suggesting that these beliefs are not always reflected in practice (Ingham 2002). Although family structure and profile can influence whether parents provide sexuality education at home, parents are not a homogenous group (Walker 2004). Efforts to increase parental involvement in sexuality education must be evidence-based and should move beyond the elucidation of background characteristics that identify suitable target groups for health promotion campaigns. In Ireland, these efforts are compounded by the fact that the provision of sexuality education in schools has only been mandatory since 2003 (Maycock, Kitching, and Morgan 2007). Furthermore, as is the case for many European countries, the influence of the Roman Catholic Church in Ireland is likely to affect the provision of sexuality education to children both at home and at school (Wellings and Parker 2006).

Against this backdrop, the authors aim to identify key parental characteristics that predict whether a parent reports providing sexuality education to his/her children, using data from a large national sexual health survey and the application of a novel statistical technique. In addition, we aim to encourage a debate on how information relating to parental involvement in sexuality education can best be investigated.

Method

Survey

The sampling frame was data from the 2010 Irish Contraception and Crisis Pregnancy Study (ICCP-2010; McBride, Morgan, and McGee 2012a), a nationally representative cross-

sectional telephone survey of adult men and women aged 18–45 years living in Ireland in 2010 ($N = 3002$). ICCP-2010 assessed knowledge, attitudes and behaviours in relation to sex, contraception and pregnancy. Quota sampling was used to ensure that the sample was representative of the general population. Detailed survey methodology is available elsewhere (McBride, Morgan, and McGee 2012b). Respondents were interviewed using both landline and mobile telephones. Telephone numbers were randomly generated using random digit dialling. Interviews were conducted using computer-assisted telephone interviewing. Experienced and trained female researchers carried out the interviews. The overall response rate for the survey was 69% (79% for the landline strand and 61% for the mobile telephone strand).

Sample description and variables of interest

Demographic characteristics

Only respondents who were parents to a child/children aged 6 years or older at the time of the study ($n = 966$) were included in the analyses. Key socio-demographic variables of interest were gender (men (reference category) vs. women); current age (binary coded as 21–35 years (reference category) vs. 36–45 years); education level (binary coded as pre-leaving certificate level (i.e. non-completion of second level or leaving school before aged 17) and leaving certificate level or higher (reference category, i.e., completion of second level or leaving school aged 17 or over); current relationship status (coded as married (reference category), cohabiting, steady relationship not cohabiting, casual relationship or not in a relationship); number of children; locality (binary coded as urban (reference category) or rural); and social class (coded as SC 1–2 including professional workers and managerial and technical workers (reference category); SC 3–4 including non-manual and skilled manual workers; SC 5–6 including semi-skilled and unskilled workers; and SC 7, which included all others including never worked and long-term unemployed). Religiosity was also included as a demographic variable as determined by parents indicating how important religion was to them on a five-point Likert scale, ranging from 'very important' to 'not at all important'.

History of sexuality education received and sexuality education provided

Parents were asked whether they had received sexuality education while growing up (around the ages of 10–16 years; binary coded as yes or no). Whether parents provided sexuality education to children was recorded by asking parents if they (or their partner) had ever talked to any of their children about sexual matters (binary coded as provided sexuality education vs. did not provide sexuality education). It is important to note that even though the question asked whether the respondent or their partner had spoken to any of their children about sexual matters, the demographic information presented applies specifically to the respondent.

Rationale and analytic plan

This study investigates the factors that predict whether parents provided sexuality education to their children. Ideally, the predictive effect would be assessed by randomly assigning parents to treatment (those who received sex education) and control (those who did not receive sex education) groups, so that the effect of background characteristics on the outcome variable could be controlled for. Whereas designing studies in this way is not always practical or ethical, propensity score matching offers a quasi-experimental design

that can isolate treatment effects on an outcome variable using observational data (Rosenbaum and Rubin 1985; Rudner and Peyton 2006; McCrory and Layte 2011). In summary, propensity score analysis (PSA) can be used to control for selection bias in cross-sectional studies.

Propensity score matching estimates a propensity score by combining all covariates of interest into a single (propensity) score using a binary logistic regression predicting treatment group membership. This is done on the assumption that the 'treatment group' (parents who received sex education) will differ from the 'control group' (parents who did not receive sex education) on a number of variables and that these variables may also predict the outcome variable (provided sexuality education to their child/children). These potential confounding variables (covariates) estimate a propensity score (ranging from 0 to 1) that represents each participant's probability of being assigned to the treatment group. This propensity score is then used to create a matched sample of treatment and control participants. Thus, the propensity score is a balancing score of covariates, meaning the distribution of the covariates is the same for the treatment and control groups. The covariates of interest in this study were: gender; current age; locality; education level; current relationship status; number of children; social class; and religiosity.

The first step in the PSA is to assess the differences between the two groups of interest on all covariates. Previous research strongly suggests that *t*-test scores can be misleading, due to statistical significance being partially influenced by the sample size (Rosenbaum and Rubin 1985; Austin 2008; Loughran et al. 2010). Therefore, the initial step is to determine the level of covariate imbalance by calculating the average difference in means, as a percentage of the average standard deviation (i.e., subtract the mean value of the covariate for the control group from the mean value of the covariate for the treatment group and divide that difference by the square root of the average variance across the treatment and control groups and then multiply the result by 100). Rosenbaum and Rubin (1985) suggest that a standardised absolute difference equal to or greater than 20% is an indication of imbalance. Results suggested that current age was imbalanced in the original full sample (before matching). This imbalance provided validation for the next step in this technique, propensity score matching.

After obtaining the propensity scores for each participant, a matching algorithm is used to match the treatment and control groups. In this study, full matching (Guo and Fraser 2010) was used, which minimises the total distance between treatment and control groups on their propensity scores. This allows the matching of parents who did and did not receive sexuality education, based on their propensity scores. The following formula (Rosenbaum and Rubin 1985; D'Agostino 1998) was used to determine the percentage difference in bias reduction for initially imbalanced covariates:

$$100(1 - b_m/b_i)$$

where b_i and b_m are the treatment and control covariate mean differences after matching and before matching, respectively.

With this new matched sample, logistic regression analysis was then performed to investigate which characteristics would predict whether parents provided sexuality education. The 'Match It' package in R (Version 2.14.1) was used to perform the 'full matching' for the PSA while all other analyses were carried out using PAWS Statistics 18.0.

Results

The comparison of parents who reported that they or their partner had ($n = 475$) or had not ($n = 488$) spoken to their children about sexual matters on the key socio-demographic factors is presented in Table 1. Approximately two-thirds (230/475, 67.4%) of the parents who reported providing sexuality education to their children were women. Almost 8 in every 10 parents (379/475, 79.8%) in the older age group (36–45 years) had spoken to their children about sexual matters. As shown in Table 1, both groups were broadly similar in terms of education level, those currently married and living with a spouse, locality, household social class and importance of religious beliefs. Parents who did not provide sexuality education to their children also had slightly smaller families in terms of the number of children.

Table 1. Socio-demographic characteristics of parents who did and did not provide sexuality education to their children.

	Parents who provided sexuality education ($n = 475$)		Parents who did not provide sexuality education ($n = 488$)	
	Unweighted *N* (%)	Weighted (%)	Unweighted *N* (%)	Weighted (%)
Gender				
Men	155 (32.6)	33.2	230 (47.1)	48.1
Women	230 (67.4)	66.8	258 (52.9)	51.9
Current age				
18–35 years	96 (20.2)	19.7	182 (37.3)	36.7
36–45 years	379 (79.8)	80.3	306 (62.7)	63.3
Education level				
Pre-leaving certificate	85 (17.9)	25.3	98 (20.1)	30.3
Leaving certificate or higher	390 (82.1)	74.7	390 (82.1)	69.7
Relationship status				
Married (and living with spouse)	361 (76.2)	79.0	353 (72.3)	75.9
Cohabiting	34 (7.2)	5.7	52 (10.7)	9.2
Steady relationship (not cohabiting)	19 (4.0)	3.6	18 (3.7)	2.2
Casual relationship	14 (2.9)	2.3	8 (1.6)	1.9
Not in a relationship	45 (9.5)	9.1	53 (10.9)	9.3
Number of children[a]				
1–2	219 (46.1)	45.6	283 (58.0)	56.7
3–4	230 (48.4)	47.5	190 (38.9)	39.8
5 +	23 (4.8)	6.2	15 (3.1)	3.5
Locality				
Urban	179 (37.7)	38.7	180 (36.9)	36.8
Rural	296 (62.3)	61.3	308 (63.1)	63.2
Household social class				
Social class 1–2	168 (35.4)	29.6	188 (38.5)	31.0
Social class 3–4	170 (35.8)	38.0	178 (36.5)	37.9
Social class 5–6	55 (11.6)	12.1	46 (9.4)	12.7
Social class 7	82 (17.3)	20.4	76 (15.6)	18.4
Religiosity[b]				
Important	265 (55.8)	57.2	285 (58.4)	61.2
Don't know/neither	49 (10.3)	10.3	57 (11.7)	10.8
Not important	161 (33.9)	32.5	146 (29.9)	28.0

[a] Variable contains minimal levels of missing data.
[b] For brevity, the levels of religiosity were recoded into three categories.

Propensity score analysis (PSA)

Table 2 presents characteristics of unmatched and matched samples, and balance improvement after propensity score matching. The results indicate that all variables improved their balance after matching except: casual relationship, no relationship, social class 3–4 and social class 7. (Note: the balance improvement for these variables was 0 or negative, which suggests that the difference between both groups is greater than it was before the matching procedure. However, the covariates did not exceed 20% standardised absolute difference.)

Post-matching regression model

Post-matching hierarchical binary logistic regression analysis was employed to determine which covariates could be used to identify key characteristics that predict whether a parent reports that they (or their partner) provided sexuality education to their children. The first step of regression analysis (Model 1) looked at the association between receipt of sexuality education and whether parents provided sexuality education. The results suggested that receiving sexuality education as a child does not predict whether the parents provided sexuality education (OR $= 0.91$; $p > 0.05$). The second step (Model 2) consisted of entering interaction terms coding interaction between receipt of sex education and current age. The interactions between receipt of sex education and current age were statistically significant (OR $= 1.79$; $p < 0.05$), suggesting that the older parents (age group 36–45) who received sex education, in contrast to those who did not receive sex education, were more likely to provide sex education to their children compared with younger parents (21–35 years). The final step (Model 3) consisted of entering all covariates into the model: gender,

Table 2. Characteristics of unmatched and matched sample, and balance improvement after propensity score matching.

	Means before matching			Means after matching			
	R	NR	Mean difference	R	NR	Mean difference	Balance improvement (%)
Distance (propensity score)	0.61	0.57	0.04	0.61	0.61	0.00	99.81
Gender	0.63	0.56	0.06	0.63	0.67	0.04	15.66
Current age	0.66	0.79	−0.13	0.66	0.64	0.02	91.16
Education	0.18	0.20	−0.02	0.18	0.17	0.01	49.25
Married	0.71	0.79	−0.08	0.71	0.73	0.02	78.35
Cohabiting	0.10	0.07	0.03	0.10	0.09	0.01	56.93
Steady relationship	0.05	0.03	0.02	0.05	0.05	0.00	63.21
Casual relationship	0.02	0.02	0.00	0.02	0.03	−0.01	−31.97
No relationship	0.11	0.09	0.02	0.11	0.09	0.02	0
Number of children	2.43	2.64	−0.21	2.43	2.53	−0.10	51.24
Locality	0.40	0.33	0.07	0.40	0.39	0.01	88.16
Religiosity	2.84	2.71	0.13	2.84	2.80	0.04	70.58
Social class 1–2	0.37	0.36	0.01	0.37	0.37	0.00	33.37
Social class 3–4	0.34	0.38	−0.04	0.34	0.38	−0.04	0
Social class 5–6	0.12	0.09	0.03	0.12	0.11	0.01	80.79
Social class 7	0.16	0.17	−0.01	0.16	0.14	0.02	−64.17
Sex education provided	0.48	0.51	−0.03	0.48	0.49	−0.01	49.95

Note: R, participants who received sex education; NR, participants who did not receive sex education.

education, current relationship status, number of children, locality, social class and religiosity. A test of the full model containing all predictor variables (and the interaction term between receipt of sex education and current age) against constant-only model was statistically significant, $\chi^2(15, 951) = 85.67, p < 0.001$, indicating that the model was able to distinguish between parents who reported providing sexuality education and those who did not. After controlling for all covariates, the association between receipt of sex education and whether parents provided sex education, moderated by current age, became statistically non-significant. As shown in Table 3, only three of the independent variables made a unique statistically significant contribution to the model. Results indicated current age as a significant predictor (OR $= 1.87, p < 0.05$). This indicates that older parents (aged 36–45 years) were more likely to report that either they or their partner provided sexuality education to their children than those in the younger age group (21–35 years), controlling for all other factors in the model. The second predictor identified was gender (OR $= 2.08$,

Table 3. Post-matching hierarchical binary logistic regression on the predictors of provision of sexuality education.

Model	Variables	*B*	Adjusted OR (95% CI)	SE
1	*Sexuality education received*	−0.09	0.91 (0.65–1.17)	0.13
2	*Sexuality education received*	−0.42	0.66 (0.12–1.18)	0.27
	Current age			
	21–35 years		1	
	36–45 years	0.48	1.63* (1.13–2.12)	0.25
	Sexuality education received by age	0.58	1.79* (1.18–2.40)	0.31
3	*Sexuality education received*	−0.40	0.67 (0.14–1.99)	0.27
	Current age			
	21–35 years		1	
	36–45 years	0.62	1.87* (1.34–2.36)	0.26
	Sexuality education received by age	0.53	1.70 (1.07–2.36)	0.32
	Gender			
	Men		1	
	Women	0.73	2.08*** (1.80–2.34)	0.14
	Education level			
	Leaving certificate or higher		1	
	Pre-leaving certificate	−0.12	0.88 (0.53–1.24)	0.18
	Relationship status			
	Married		1	
	Cohabiting	−0.07	0.93 (0.44–1.42)	0.25
	Steady relationship	0.34	1.41 (0.70–2.11)	0.36
	Casual relationship	0.75	2.12 (1.18–3.06)	0.48
	No relationship	−0.04	0.96 (0.49–1.43)	0.24
	Number of children	0.16	1.18** (1.06–1.29)	0.06
	Locality			
	Rural		1	
	Urban	0.17	1.18 (0.91–1.46)	0.14
	Social class			
	Social class 1–2		1	
	Social class 3–4	0.15	1.16 (0.84–1.48)	0.16
	Social class 5–6	0.30	1.35 (0.88–1.82)	0.24
	Social class 7	0.34	1.41 (0.99–1.81)	0.21
	Religiosity	−0.04	0.96 (0.86–1.06)	0.05

Notes: OR, odds ratio; CI, confidence interval; SE, standard error; SC, social class. *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

$p < 0.001$). This finding suggests that mothers were twice as likely to report that they or their partner provided sexuality education compared to fathers. The last statistically significant predictor was the number of children (OR $= 1.18$, $p < 0.05$). This suggests that the more children a parent reported having, the more likely they were to have spoken to them about sexual matters.

Discussion

This study aims to make a contribution to our knowledge of factors that predict parental involvement in sexuality education in Ireland. Our findings suggest a need to advance our knowledge in this field through the re-evaluation of appropriate research methods and analyses. Therefore, this section considers some of the key limitations of this study first, before a discussion of the main findings. A synthesis of what has been learned from this study based on its strengths and limitations, with a view to advancing methods and analyses in sexuality education research, concludes this section.

One of the key limitations of this study was the wording of the question on whether sexuality education was provided to children. Respondents were asked whether they *or their partner* had provided sexuality education to their children. Thus, the predictors of whether sexuality education was provided found in the current study may not be the predictors of the individual who provided the sexuality education per se. In addition, as the sexuality education components of this survey were part of a much broader investigation of crisis pregnancy and contraception, the analyses and suppositions we can make are limited due to lack of information (e.g. the age of the child/children at the time they received the sexuality education).

This study identified a number of demographic factors that predicted parental involvement in their child's sexuality education. First, parents who reported that they or their partner had spoken to their children about sexual matters were more likely to be female, aged 36–45 years and reported having a larger number of children. Therefore, mothers, older parents and those with increasing numbers of children are more likely to report that they (or their partner) have engaged in sexuality education with their children. These findings support previous research which has highlighted the link between parental age, gender and number of children, and the increased likelihood of engaging in sexuality education with children (Walker 2001; Byers, Sears, and Weaver 2008; Turnbull, van Wersch, and van Schaik 2008). For example, parents generally engage in more sexuality education with their older children (Weaver et al. 2002). In our sample, it is plausible to assume that some of the children of the older parents were chronologically older than those of the younger parents. Thus, it is more likely that these older parents would have provided some degree of sexuality education to their children at the time the data were collected.

Linked to this was the finding that parents who had a higher number of children were also more likely to have engaged in sexuality education. It is possible the experience of parenting more than one child may have made these parents more willing and more open to communication with their children about sexual matters; a factor that has been previously found to influence whether parents provided sexuality education (Walker 2001). Alternatively, this communication may have been child-led, as a result of subsequent pregnancies that prompted the older child/children to enquire about sexual reproduction.

Due to the health risks associated with inconsistent safe-sex practices, young people's sexuality has transitioned from the domain of the private family sphere to a pressing public health issue (Sprecher, Harris, and Meyers 2008). Parents have an enduring and

empirically supported role in influencing adolescent risk-taking behaviours (Resnick et al. 1997). More recently, a review by Yu (2010) on school-based sex education and the role of social factors in influencing teenage sexual behaviour reiterated the critical role of parents in making sex education more effective. Broadly speaking, our empirical knowledge on the involvement of parents in sexuality education is predominantly based on findings from two research sources: national health or sexual health surveys that embed items related to parents, children and sexuality education (e.g., NATSAL (UK), National Centre for Social Research et al. 2005; National Survey of Family Growth (USA), Martinez, Abma, and Copen 2010); or small-scale qualitative studies that explore parents' experiences in providing sexuality education or assessing their participation in programmes/interventions designed to increase their engagement in this activity (e.g., Weaver et al. 2002; Hyde et al. 2010; Kesterton and Coleman 2010). Given parents' integral role, sexuality education research would benefit from being developed further.

The key contributions of this paper emerge from both its strengths and its limitations. One of the strengths of this study was the large, nationally representative, cross-sectional sample. This quality is important as it is reflective of the type of individuals for whom sexual health issues and sexuality education planning for the future are most relevant (McBride, Morgan, and McGee 2012b). Pioneering recruitment strategies also demonstrated the feasibility of using mobile telephones in general population health surveys, as well as contributing to the high response rate of 69% (McBride, Morgan, and McGee 2012b). This study also benefited from the application of a novel statistical technique designed to overcome the problem of selection bias in cross-sectional studies (PSA). This meant that comparisons made between parents from the treatment (those who received sex education) and control (those who did not receive sex education) groups were as similar as possible. The application of this statistical technique appears to be a worthwhile contribution to improving statistical analyses in this field.

The limitations of the questions included on sexuality education in this survey highlight the limitations of embedding these in sexual health surveys in general. Sexuality education, including the role of parents, very often competes for space in these surveys with various other pressing public health topics (e.g., contraception use and sexual health screening behaviour). Future research should consider assessing parental involvement in sexuality education in a national stand-alone survey format that could generate novel and informative data in this area. Detailed information of this nature, on a national level, would provide a comprehensive knowledge base that could inform educational curriculum planning and health services policy in the area. For example, little is known, in a comprehensive way, about who provides sexuality education at home. Furthermore, there is a lack of information on the type and range of topics discussed, the individual or familial reasons why certain topics are discussed and others are not discussed, and the manner and media in which sexuality information is provided (i.e., 'the birds and the bees talk', books, other media, etc.).

In conclusion, the reported findings identified parental age, gender and the number of children as key predictors in the likelihood of a parent, or their partner, speaking to their children about sexual matters. These findings have also highlighted the need to advance the field of sexuality education research. The effective recruitment methodology demonstrates a successful way of securing robust sample numbers on a national level for sensitive research such as this. The application of advanced statistical methods demonstrates a technique to overcome some of the limitations presented by cross-sectional data. Future research should incorporate these factors into the design of a national assessment of parental involvement in sexuality education with a view to

elucidate a more comprehensive profile of parents and the level and nature of sexuality education they engage in.

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