Growing Up in Scotland: Parental service use and informal networks in the early years

TECHNICAL APPENDIX

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Contents

1 LIST OF TABLES

2 TECHNICAL TERMS AND PROCEDURES

2.1 Statistical modelling

Many of the factors we are interested in are related to each other as well as being related to service use. For example, younger mothers are more likely to have lower qualifications, to be lone parents, and to live in areas of high deprivation. Simple analysis may identify a relationship between income and service use. However, this relationship may be occuring because of the underlying association between maternal level of education and household income. Thus, it is actually the lower education level amongst mothers on lower incomes which is associated with a greater likelihood of lower service use rather than the level of their income. To avoid this difficulty, multivariate regression analysis was used. This analysis allows the examination of the relationships between an outcome variable and multiple explanatory variables whilst controlling for the inter-relationships between each of the explanatory variables. This means it is possible to identify an *independent* relationship between any single explanatory variable and the outcome variable; to show, for example, that there is a relationship between maternal age and cognitive ability that does not simply occur because both education and maternal age are related.

Logistic regression analysis is used in this report to examine the background variables associated with service use, while controlling for other predictors. A range of possible predictor variables were tested in each model using a forward stepwise procedure, and any that were significant were included in the final model. This gives an estimate of the independent effect of each predictor variable on the outcome when all the other independent variables were included in the model.

The results of the regression analyses are presented in tables in this appendix showing odds ratios for the final models, together with the probability that the association is statistically significant. The predictor variable is significantly associated with the outcome variable if $p<0.1$. The models show the odds of being in the particular category of the outcome variable (e.g. being in income poverty in sweep 5) for each category of the independent variable (e.g. parental separation categories). Odds are expressed relative to a reference category, which has a given value of 1. Odds ratios greater than 1 indicate higher odds, and odds ratios less than 1 indicate lower odds. Also shown are the 95% confidence intervals for the odds ratios. Where the interval does not include 1, this category is significantly different from the reference category.

2.2 Understanding odds ratios

To understand an odds ratio we first need to describe the meaning of odds. The definition of odds is similar but significantly different to that of probability. This is best explained in the form of an example. If 200 individuals out of a population of 1000 experienced persistent poverty, the probability (p) of experiencing persistent poverty is 200/1000, thus p=0.2. The probability of not experiencing persistent poverty is therefore 1-p = 0.8. The odds of experiencing persistent poverty are calculated as the quotient of these two mutually exclusive events. So, the odds in favour of experiencing persistent poverty to not experiencing persistent poverty, is therefore 0.2/0.8=0.25. Suppose that 150 out of 300 people living in social rented housing experience persistent poverty compared to 50 out of 150 who live in owner occupied housing. The odds of a person living in social rented housing of experiencing persistent poverty are 0.5/0.5=1.0. The odds of a person living in owner occupied housing of experiencing persistent poverty is 0.3333/0.6666=0.5. The odds ratio of experiencing persistent poverty is the ratio of these odds, 1.0/0.5=2.0. Thus the odds of experiencing persistent poverty are twice as high among people who live in social

rented housing (compared to people who live in owner occupied housing – the 'reference category').

3 REGRESSION TABLES

Table 3.1   Model output for low service users at sweep 1

	Odds ratio	95% Conf. Interval	P value for each variable
Maternal Education (reference category: Higher or above)			0.000
Standard grade or other	1.87	1.54-2.27	
No qualifications	2.16	1.61-2.90	
Household incomes (reference category:£44,000 and over)			0.000
Less than £14,999	1.59	1.23-2.04	
£15,000-£25,999	1.45	1.12-1.87	
£26,000-£43,999	0.94	0.76-1.18	

Table 3.2   Model output for low service users at sweep 5

	Odds ratio	95% Conf. Interval	P value for each variable
Maternal Education (reference category: Higher or above)			0.013
Standard grade or other	1.07	0.84-1.36	
No qualifications	1.50	1.15-1.95	
Mother's NS-SEC (reference category: Managerial and professional occupations)			0.000
Intermediate occupations	1.40	1.13-1.73	
Small employers and own account workers	1.70	1.26-2.29	
Lower supervisory and technical operations	1.68	1.19-2.36	
Semi-routine and routine occupations	2.07	1.66-2.58	
Never worked	3.20	1.83-5.59	
Whether child is mother's first born (reference category: Yes, first born)			0.002
No-other children	1.29	1.10-1.51	
Mother's employment status (reference category: Working full-time)			0.000
Working part-time	1.18	0.93-1.50	
Not working	1.60	1.31-1.97	
Long-standing illness/disability (reference category: child has long-standing illness or disability)			0.000
No long-standing illness/disability	9.20	6.62-12.80	

6

Table 3.3   Model output for repeated low service users

	Odds ratio	95% Conf. Interval	P value for each variable
Maternal Education (reference category: Higher or above)			0.000
Standard grade or other	1.67	1.32-2.12	
No qualifications	2.59	1.92-3.50	
Mother's NS-SEC (reference category: Managerial and professional occupations)			0.000
Intermediate occupations	1.62	1.24-2.10	
Small employers and own account workers	1.49	1.01-2.19	
Lower supervisory and technical operations	1.31	0.81-1.98	
Semi-routine and routine occupations	1.86	1.42-2.44	
Never worked	2.65	1.52-4.63	
Whether child is mother's first born (reference category: Yes, first born)			0.005
No-other children	1.32	1.09-1.61	
Mother's employment status (reference category: Working full-time)			0.060
Working part-time	1.05	0.75-1.47	
Not working	1.33	1.05-1.68	
Long-standing illness/disability (reference category: child has long-standing illness or disability)			0.000
No long-standing illness/disability	5.57	3.51-8.84	

Table 3.4   Model output for reluctant service users at year 1

	Odds ratio	95% Conf. Interval	P value for each variable
Household incomes			
(reference category: Less than £14,999)			0.000
£15,000-£25,999	0.61	0.47 – 0.79	
£26,000-£43,999	0.48	0.36 – 0.63	
£44,000 and over	0.44	0.32 – 0.61	
Mother's NS-SEC (reference category: Managerial and professional occupations)			0.011
Intermediate occupations	1.33	1.05 – 1.68	
Small employers and own account workers	0.81	0.50 – 1.32	
Lower supervisory and technical operations	1.09	0.72 – 1.65	
Semi-routine and routine occupations	1.61	1.21 - 2.15	
Never worked	2.46	1.33 – 4.53	
Maternal Education (reference category: Higher or above)			0.005
Standard grade or other	1.27	0.97 – 1.65	
No qualifications	1.90	1.29 – 2.81	
Service Use at 10 months (reference category: Low use)			0.002
Medium use	0.74	0.58 – 0.94	
High use	0.55	0.40 – 0.76	
Parental confidence (reference category: Not a very good mother)			0.000
Average mother	0.46	0.27 – 0.79	
Better than average mother	0.35	0.20 – 0.60	
Very good mother	0.34	0.20 – 0.59	

Table 3.5   Model output for reluctant service users at year 4

	Odds ratio	95% Conf. Interval	P value for each variable
Household incomes (reference category: Less than £14,999)			0.000
£15,000-£25,999	0.74	0.57 – 0.95	
£26,000-£43,999	0.46	0.36 – 0.59	
£44,000 and over	0.43	0.32 – 0.58	
Urban/rural classification (reference category: Large urban)			0.007
Other urban	0.88	0.73 – 1.06	
Small accessible	0.91	0.66 – 1.26	
Small remote towns	0.89	0.46 – 1.71	
Accessible rural	0.75	0.59 – 0.96	
Remote rural	0.48	0.34 – 0.68	
Maternal Education (reference category: Higher or above)			0.001
Standard grade or other	1.37	1.11 – 1.71	
No qualifications	1.89	1.34 – 2.65	
Service Use at 10 months (reference category: Low use)			0.001
Medium use	0.81	0.66 – 1.00	
High use	0.62	0.48 – 0.79	
Parental confidence (reference category: Not a very good mother)			0.004
Average mother	0.54	0.31 – 0.92	
Better than average mother	0.42	0.25 – 0.70	
Very good mother	0.45	0.27 – 0.75	

Table 3.6   Model output for respondents agreeing with the statement that there is "not enough support for parents" at Year 4

	Odds ratio	95% Conf. Interval	P value for each variable
Service Use at 10 months (reference category: Low use)			0.002
Medium use	0.88	0.65 – 1.18	
High use	0.60	0.44 – 0.81	
Mother's NS-SEC (reference category: Managerial and professional occupations)			0.000
Intermediate occupations	0.74	0.53 – 1.02	
Small employers and own account workers	1.14	0.71 – 1.81	
Lower supervisory and technical operations	1.52	1.01 – 2.27	
Semi-routine and routine occupations	1.56	1.20 – 2.02	
Never worked	1.27	0.68 – 2.35	
Urban/rural classification (reference category: Large urban)			0.017
Other urban	1.03	0.81 – 1.30	
Small accessible	0.67	0.43 – 1.06	
Small remote towns	0.64	0.34 – 1.19	
Accessible rural	0.67	0.45 – 1.00	
Remote rural	0.44	0.25 – 0.76	

Table 3.7   Model output for respondents agreeing with the statement that "If other people knew you were getting professional advice or support with parenting they would probably think you were a bad parent" at Year 4

	Odds ratio	95% Conf. Interval	P value for each variable
Family Type (reference category: Couple family)			0.000
Lone Parent family	1.48	1.22 – 1.79	
Mother's NS-SEC (reference category: Managerial and professional occupations)			0.046
Intermediate occupations	1.13	0.86 – 1.49	
Small employers and own account workers	1.11	0.80 – 1.55	
Lower supervisory and technical operations	1.46	0.99 – 2.15	
Semi-routine and routine occupations	1.38	1.10 – 1.74	
Never worked	1.78	0.99 – 3.19	
Service Use at 10 months (reference category: Low use)			0.000
Medium use	0.77	0.62 – 0.95	
High use	0.62	0.51 – 0.77	

Table 3.8   **Model output for respondents with overall low (formal and informal) support at Year 1**

	Odds ratio	95% Conf. Interval	P value for each variable
Age of mother at birth of cohort child (reference category: Under 25's)			0.018
25 to 29	1.27	0.92 – 1.75	
30 to 34	1.36	0.99 – 1.87	
35 and older	1.66	1.22 – 2.26	
Mother's NS-SEC (reference category: Managerial and professional occupations)			0.001
Intermediate occupations	1.38	1.01 – 1.88	
Small employers and own account workers	2.25	1.28 – 3.97	
Lower supervisory and technical operations	1.77	1.08 – 2.90	
Semi-routine and routine occupations	1.67	1.26 – 2.22	
Never worked	1.96	1.12 – 3.43	
Maternal Education (reference category: Higher or above)			0.002
Standard grade or other	1.26	0.92 – 1.73	
No qualifications	1.98	1.37 – 2.87	
Urban/rural classification (reference category: Large urban)			0.024
Other urban	0.93	0.67 – 1.27	
Small accessible	0.81	0.57 – 1.14	
Small remote towns	0.71	0.47 – 1.07	
Accessible rural	0.67	0.49 – 0.93	
Remote rural	0.56	0.31 – 1.02	
Birth order (Reference category: First-born)			0.000
Older siblings	1.99	1.58 – 2.50	