

# The Effects of Parenting Environment During Pregnancy in Relation to the Child's Later Behavioral, and Emotional Characteristics

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**Abstract :** This study investigates the impact of the shared environment of pregnant women and their unborn child on the later emotional and behavioral characteristics of a child, extending into his or her adulthood. Using a sample of some 16,000 children from the National Child Development Study, the study demonstrated a positive relationship between the quality of the maternal environment and later emotional and behavioral performances during childhood and adulthood. These findings support the study hypothesis, suggesting that parenting environment such as mother's employment, husband's social class and the mother's smoking habits during pregnancy has an affection on the later emotional and behavioral development of the child. The dimensions of the child's emotional and behavioral well-being may be enhanced by therapeutic interventions and/or by helping pregnant women to develop a positive social network.

**Key Words :** Parenting environment during pregnancy, emotional & behavioral characteristics, Academic achievements, later emotional development

## I. Introduction

There are some specific variables during the period of pregnancy that have a high possibility of influence on an embryo, and it is possible that these effects influence later postnatal life. According to previous medical studies, it is known that pregnant women's smoking habits have had an impact on the development of the embryo and the child's future smoking behaviour (Griesler *et al.*, 1998; Fingerhut *et al.*, 1990; Kandel & Udry 1999; Kleinman *et al.*, 1988). Accumulated research also suggests that socio-economic disadvantages in and after pregnancy increase the probability of behaviour problems because coercive parenting produced by economic distress or

lack of time and energy invested in child nurturing are likely to have a cumulative impact upon the behavioral problems during early childhood (Corcoran *et al.*, 2000; Webster-Stratton, 1998; O'Callaghan *et al.*, 1997; Simons, *et al.*, 1994; Thomas & Forehand, 1991; Bowlby, 1977).

Children with insecure household resources tend to show poor cognitive development (Desai *et al* 1989) and lower social competence (Clarke-Stewart *et al* 1995) than those who have been brought up by parents with a secure resources. A large body of research shows that children raised in families with low socio-economic status (SES) do worse than children raised in families with high SES in terms of intellectual and social development, behavioural problems, and

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delinquency (Bolger *et al.*, 1995). According to Baydar *et al.* (1993), low income during the preschool and early school years exhibits the strongest correlation with low rates of high school completion, as compared with low income during the childhood and adolescent years. Current research shows that problematic emotional outcomes are associated with family poverty; however, the effects of poverty on emotional outcomes are not as large as its effects on cognitive outcomes (Brooks-Gunn & Duncan, 1997). Parental socioeconomic disadvantages may directly or indirectly affect on their own emotional well-being and subsequently on the child's emotional and social development including the embryo's future emotional status, although the impact of the parental socioeconomic status will be various depending on the characteristics of the family and the parenting behaviors.

Although it is difficult to find studies related to the mother's employment during pregnancy and later outcomes of her child, a limited number of studies have shown the possible relationship between having a job and negative effects on the child's later health and behavior: It is found that one of the most important determinant of delay in both motor and mental development in infants and later years was stress during pregnancy (Huizink *et al.*, 2003). And there exists strong employment security · financial matters and health concerns for pregnant women which may negatively affect her and her baby's health resulting in morning sickness, illness, preterm deliveries, low-birth-rates, and infant mortality etc (Queneau & Marmo,

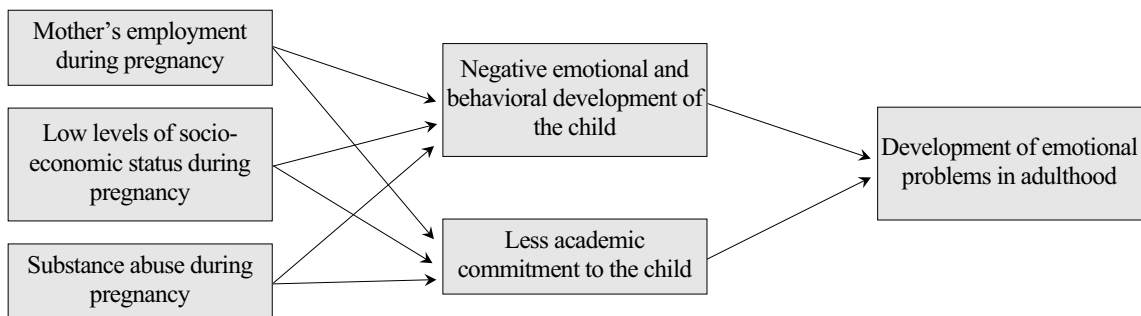
2001).

A number of previous studies have documented the relationship suggesting that emotional distress in childhood is a strong predictor in adulthood and that such emotional health problems further increase vulnerability to various levels of physical risks amongst adults (Veijola *et al.*, 1998; Stewart-Brown & Layte 1997). Indeed, given the available findings on the associations of poor resources and possible co-occurrence of emotional and behavioral problems amongst children, the impact of the prenatal experience on childhood and into adulthood could also be reasonably expected.

Drawing on the research of the shared environment of parenting on the child, we argue that the shared environment of a pregnant woman and her child is likely to be of importance in the child's later emotional and behavioral development (Figure 1). Investigation into the possible impact of shared environments during pregnancy is important for understanding the relationship between both internal and external influences of maternal behaviour and prenatal lives.

First, it is hypothesised that the mother's employment during the prenatal period would affect the later emotional, behavioral and academic characteristics of the child, increasing the likelihood of emotional problems in adulthood.

Second, it is also hypothesised that the parental socioeconomic condition during fetal development would affect the later emotional, behavioral and academic characteristics of the child, and thus triggering emotional problems in adulthood.



<Figure 1> Hypothesised Theoretical Model

Finally, it is hypothesised that the maternal smoking behaviour would exert an effect on the later emotional, behavioral and academic characteristics of the child, and affectively causing emotional problems in adulthood.

## II. Methods

NCDS: Data for this study were obtained from the National Child Development Study (1958 cohort) II and V. The NCDS II (1970) covers Sweep 2 (1969/70) and the NCDS Sweep 5 (1991) is the most recent series of longitudinal studies designed to provide the ante-natal birth history of children to their present development. The subjects of this study represent some 16,000 children born in the week from the 3<sup>rd</sup> to the 9<sup>th</sup> of March in England, Scotland and Wales. With the help of doctors and midwives, trained research staff members obtained data from each child and mother, who understood the purposes of the project, freely decided to take part in, and were compensated by government funds. Each interview survey took about 90 minutes and questionnaires designed to cover employment, unemployment, social class, pregnancy and birth, health history, preschool experience, schooling history, experience of day care, motor and social development (behaviour problems index), Maths, Reading comprehension, and mental health until the age of 33. Questionnaires were coded using established coding frames and the resulting coding was double-checked for quality.

The researcher decided to use the NCDSS survey because the data represent one of the most major social scientific undertakings in modern times with detailed planning over a period of five years and provide variable resources in finding relationships between parenting during pregnancy the later life performance of the child in the future.

Longitudinal data are vital to understanding the relationship between current variables and its effects on later life, as well as to understand the associations at the

time when the data were collected. Longitudinal data are also very important for monitoring the impact of certain conditions. The costs to conduct longitudinal research are very expensive. Therefore to reduce costs, the researcher decided to use the NCDS data set for this study, which has been recognized as a significant achievement involving the fullest consultation possible concerning design within the research community.

The SPSS 12.0 package was used to investigate the possible outcomes of the three hypotheses. The effects of selected variables on emotional, behavioral, and academic performances at age 11 were first tested and, secondly the main effects of selected variables on mental health at age 33 were examined.

*PREDICTOR VARIABLES:* Based on previous literature, since it was hypothesised that children who experienced disadvantaged parenting environments might show different characteristics of emotional or behavioral performance: a variety of demographic and risk variables were taken into account, including the husband's social class, the mother's occupation during pregnancy, any abnormalities during pregnancy and smoking prior to/during pregnancy. The variables used in this study are fully described in <Table 1>. The outcomes of interest, the dependent variables, are emotional, and behavioral problems, academic performances at the age of 11 and emotional problems at the age of 33.

<Table 2> provides detailed statistics of the variables used in this study. Multiple logistic regression analysis was used to test the hypothesis that the effects of prenatal disruption will affect emotional, behavioral and academic performances in childhood and the child's emotional status in later adulthood. Odds ratio and 95% confidence intervals were calculated for the associations between the shared environment of pregnant women and later behavioral characteristics of the child. Significance levels were set at  $p < .05$ ,  $p < .01$  and  $p < .001$ .

&lt;Table 1&gt; Variables Used in This Study

Mother's employment during pregnancy	Whether respondent's mother had paid occupation when starting pregnancy
Husband's social class	What was the husband's social class during pregnancy: classified by Socio-Economic group- G.R.O 195 classification of occupation <i>Social class I</i> : teachers, qualified nurses and midwives, accounting, costing clerks, bank clerks, shopkeepers and shop manageresses; <i>Social class II</i> : unqualified nurses, clerks, typists, and telephonists, shop assistants, hairdressers, and manicurists, garment workers (not machinists), textile workers (skilled); <i>Social class III</i> : garment workers (machinists), semi-skilled textile workers, semi-skilled personal service; <i>Social class IV</i> : textile workers (laborers), unskilled personal service; single; unemployed or sick
Smoking prior to pregnancy	Whether the respondent's mother smoked prior to pregnancy
Smoking during pregnancy	Whether the respondent's mother smoked in pregnancy
Emotional problems at the age of 11	Whether their child often worried, worries about many things (don't apply; applies somewhat or certainly applies)
Aggressive behaviours at the age of 11	Whether their child frequently fights or is extremely quarrelsome with other children (don't apply; applies somewhat or certainly applies)
Being a bully at the age of 11	The respondent's parents were asked whether their child bullies other children (don't apply; applies somewhat or certainly applies)
Math. Ability at the age of 11	To rate the respondent's ability in Math. At age 11 "Average or above average"=at least capable of obtaining a CSE pass, grades 2-4; "below average or little"= a possible CSE entrant or if any ability in this subject
English Ability at the age of 11	To rate the respondent's ability in English At age 11 "Average or above average"=at least capable of obtaining a CSE pass, grades 2-4; "below average or little"= a possible CSE entrant or if any ability in this subject
Emotional problems at the age of 33	Whether since March 1981 the respondent has suffered at all (occasionally or most of the time) from any of the sorts of problems. The emotional problems include the following: <i>feeling low/depressed, sad; Feeling generally anxious, jittery; Feeling anxious or sacred about objects or situations; Feeling overexcited, overconfident; Feeling compelled to repeat actions or thoughts; Hearing or seeing things; Problems with drink or drugs; Other feelings of worry, tension, anxiety, depression or nerves</i>

### III. Results and Discussion

The regression results for emotional and behavioral performances during childhood and adulthood are presented in <Table 2>. All selected variables were significant predictors in the regression analyses for emotional, behavioral, and academic performances at various levels. Children with a non-working mother showed significant patterns of behavioral and academic performances. They were less likely to show either aggressive behaviour, bullying or lower levels of academic achievement at the age of 11 (OR=.838,  $p<.001$ ; OR=.780,  $p<.001$ ; OR=.631,  $p<.001$ ). The

positive impact of a non-working mother may be associated with relatively increased time and energy, compared to a working mother, to quality parenting for their children. These children also appeared to have fewer emotional problems at the age of 33 (OR=.927,  $p<.05$ ). This result is consistent with a previous study that found maternal employment in the early years of a child's life has significant negative effects on children's later cognitive and behavioral outcomes (Han *et al.*, 2001). For example, pregnant women who are very busy because of employment may be less likely to have enough opportunities of taking care of their health. It is also found that working pregnant women

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<Table 2> Variables during Pregnancy and Their Effects on Emotion and Behaviour in Childhood and Adulthood

Variables	At age 11										At age 33	
	Emotional Problem		Aggressive behaviour		Bully		Math. Ability		English Ability		Emotional Problem	
	Exp( $\beta$ )	95.0% C.I.	Exp( $\beta$ )	95.0% C.I.	Exp( $\beta$ )	95.0% C.I.	Exp( $\beta$ )	95.0% C.I.	Exp( $\beta$ )	95.0% C.I.	Exp( $\beta$ )	95.0% C.I.
Mother's employment during pregnancy	1.003	.925-1.088	.838***	.761-.923	.780***	.669-.908	.682	.626-.744	.631***	.573-.696	.927*	.852-1.007
Husband's Social Class	1		1		1		1		1		1	
Class I	1.013	.812-1.264	.959	.708-1.298	1.396	.718-2.715	2.585***	1.773-3.770	3.407***	1.951-5.951	1.051	.842-1.311
Class II	1.138	.933-1.388	1.699***	1.298-2.225	3.193***	1.741-5.855	7.010***	4.920-9.980	10.495***	6.166-17.863	1.098	.900-1.338
Class III	1.176	.941-1.468	2.094***	1.566-2.799	4.570***	2.446-8.538	11.411***	7.907-16.468	17.245***	10.041-29.620	1.197	.954-1.501
Class IV	1.211	.962-1.523	2.751***	2.050-3.690	6.481***	3.471-12.101	17.742***	12.226-25.747	28.007***	16.270-48.209	1.237*	.983-1.557
Single	1.525**	1.123-2.070	2.833***	1.960-4.096	6.940***	3.463-13.909	13.737***	8.970-21.038	20.415***	11.350-36.729	1.079	.794-1.468
Unemployed or sick	1		1		1		1		1		1	
Smoking prior to pregnancy	1		1		1		1		1		1	
Non-smoker	.968	.870-1.076	1.190***	1.054-1.343	1.222*	1.014-1.473	1.311***	1.175-1.462	1.311***	1.175-1.349	1.016	.911-1.134
1-9 daily	1.075	.956-1.209	1.218***	1.065-1.393	1.223*	.996-1.503	1.509***	1.336-1.705	1.509***	1.336-1.467	.944	.835-1.068
10-19 daily	1.160	.907-1.483	1.324***	1.006-1.742	1.438*	.972-2.129	1.611***	1.246-2.083	1.611**	1.246-1.943	1.093	.861-1.389
20 and more daily	1		1		1		1		1		1	
Smoking during pregnancy	1		1		1		1		1		1	
Non-smoker	1.075	.905-1.276	1.041	.856-1.264	1.021	.757-1.378	.936	.783-1.118	1.012	.834-1.2281	1.031	.864-1.230
1-9 daily	1.039	.781-1.382	1.539**	1.138-2.081	1.744**	1.158-2.627	1.222	.910-1.640	1.278	.937-1.745	1.283	.944-1.743
10-19 daily	1.114	.942-1.317	1.155	.958-1.393	1.458**	1.1211.865	1.223*	1.030-1.452	1.181*	.984-1.419	.931	.779-1.112
20 and more daily	Chi-Square=30.8 for 13 df		Chi-Square=209.1 for 13 df		Chi-square=196.2 for 13 df		Chi-Square=932.392 for 13 df		Chi-Square=817.392 for 13 df		Chi-Square=13.186 for 13 df	

\*p<.05, \*\*p<.01, \*\*\*p<.001; Exp( $\beta$ ) = Odds ratio; 95% CI = 95% confidence intervals

are more likely to have stress because of employment concerns, financial anxiety, and health status (Queneau & Marmo, 2001). Furthermore, pregnant women in adverse working condition may be in a more hazardous environment. When considered the fact that employment related stress and anxiety caused by job security or physically demanding work may increase the risk of premature delivery (Henriksen *et al.*, 1994) and impaired cognitive development of the child (Hack *et al.*, 1991), the current study suggests that professionals need to be sensitive to the maternal needs, especially for those pregnant women that do physically demanding work of their employees.

Children with more secure social and financial family backgrounds were significantly different in the behavioral and academic performance patterns to those from socially disadvantaged families. They were at a highly increased risk of exhibiting aggressive behaviour, bullying and lower levels of academic achievement (see Table 2). These children were also significantly more likely to have emotional problems at the age of 33 (OR=1.237,  $p<.05$ ). Although it may be difficult to establish a causal relationship between the economic background itself and child behaviour problems, it is possible that the enhanced emotion and behaviour of a child from a more advantageous family may be related to the increased opportunities from better parenting. In contrast, the child with economic disadvantages may have relatively decreased opportunities of positive interaction between parent and child because of patterns arising from financial difficulties such as the lack of active parental involvement in the child's emotional/behavioral development or school adjustment and, at times, a harsh/coercive parenting style. Researchers (Ritcher, 2003; Rahman *et al.*, 2002; Dodge, 1990) have documented that having disadvantaged economic status and its related chronic stress factors negatively affect parenting, and child care resulting in poorer child outcomes. Maternal distress caused by unsolved financial problems may interfere with daily interactions between mothers and children at home (Stancin &

Palermo, 1997) and be contributing factors to increased adverse behaviours at school.

The mother's smoking habit prior to pregnancy or during pregnancy also significantly predicted poor levels of behavioral and academic performances at the age of 11, but neither was related to emotional problems at the age of 33 (aggressive behaviour/ OR=1.324,  $p<.001$ ; bully/OR=1.438,  $p<.001$ ; having below average Math. & English Ability/OR=1.611,  $p<.01$ ).

These findings may reflect those of Liberman *et al.* (1994) and Kleinman *et al.* (1988) who reported the increased infant mortality and low birth weight among maternal smokers with lower socioeconomic status. These children brought up by mothers whose life styles had a negative effect on their own lives and in disadvantaged socioeconomic environments may have difficulties managing behavioral problems and academic performances. These are common problems in families who lack parental dedication or incur socioeconomic disadvantages (Bergman & Scott, 2001; Hagell & Newburn, 1996). These literature reviews establish that parental substance misuses are linked to children's internalizing or externalizing behavior problems. In particular, pregnant women's substance misuse is associated with low birth weight and harmful nicotine levels in their unborn babies (Steyn *et al.*, 2006). The current study supports the possibility that where children experience behavioral problems and/or low levels of academic performance, mother's smoking may be linked. Although substance abuse by pregnant women has to have deteriorating effects on the child and later cognitive behavioral development, it has been found that substance abuse is less likely to be detected by clinicians (Burns *et al.*, 2006). Therefore, it is strongly recommended that health workers better understand the importance of detection and treatment of smoking by pregnant women.

#### IV. Conclusion

The purpose of this study was to examine the

relationships between the mother's employment, the levels of maternal socioeconomic resources, parenting styles (i.e. maternal smoking habit) and later emotional, behavioral and academic performances of a child in England, Wales and Scotland.

Whereas no study examined the associations of the maternal (internal and external) environment with the child's later emotional status during adulthood alongside emotional, behavioral and academic performances, this study provided valuable evidences with the possible effects of the shared environment of a pregnant woman and her child on the child's later emotional and behavioral development. In this study we found evidence that non-working mothers with higher socio-economic status, combined with an environment non-substance abuse may create better parenting environments and have beneficial effect on later internal-external behaviors and academic attainments. When all variables were taken into account, it was clear that disadvantage parenting environments of prenatal life appeared to have consistent negative impacts on the child: children with disadvantaged prenatal life appear to be exhibiting lower levels of academic achievement as well as emotional and behavioral problems. Those powerful predictors related to a disadvantaged maternal environment tend to further increase emotional problems of children during later adulthood.

These findings suggest that the negative prenatal connotations derived from maternal risky behaviours or socio-economic disadvantages appear to play an important role in the long-term psychosocial and academic performance of the child. The data reported here are compatible with the ideas of parenting environment and their impact on children, but they also imply that levels of socioeconomic resources and parenting styles (i.e. maternal smoking habits) in prenatal lives during pregnancy have an effect on later psychosocial behavioral performances. However, the generalisation of the findings may be limited to British families living in England, Scotland and Wales.

The implications of this study suggest socio-

economic and clinical intervention might be beneficial to pregnant women. Professional practitioners should seek to help pregnant women become more aware of the possible impact of insufficient socioeconomic resources and maternal smoking on prenatal lives. To inform them of the short or long term detrimental effects of behaviours that put their own health at risk during pregnancy and on the emotional, behavioral, and academic development of the child, it is essential to help promote a way of enhancing the socioeconomic resources for quality parenting and to properly guide pregnant women with smoking habits. Enabling them to find social support (Kouzis & Eaton, 1998) and alternative child care to promote the child's positive socialisation may help to ease the negative effects of possible distress or maternal employment during and after pregnancy.

Future studies may focus on investigating effective intervention methods since the findings in this study have suggested a possible impact of a disadvantaged parental environment on later negative levels of emotional and behavioral performances of postnatal lives. A further understanding of the intervention roles which contribute to a better parenting environment of prenatal lives may help promote the preventive measures necessary to overcome the negative emotional and behavioral development amongst children who com from disadvantaged parental environments.

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