Starting School

The effect of early childhood factors on child well-being

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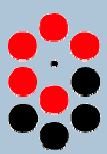
Programme area 4:
The effects of welfare policy
Working Paper 2:2007



Working Paper
Socialforskningsinstituttet
The Danish National Institute of Social Research

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March 2007

Children's well-being around the age when they start school is crucial for their future success in the educational system. Factors in the first 3 years of a child's life matter for the child's well-being when he or she starts school. This article analyzes the relationship between early childhood factors–such as maternal employment, family structure, and family life–and future child well-being. The analysis uses the psychosocial SDQ-scale and the number of problems experienced around starting school as measures of well-being. Results show that family factors in particular are important, while the effect of maternal employment–if any–is positive. In addition, the results differ markedly between girls and boys.

Keywords: child well-being, maternal employment, family structure, family life

The issue of child well-being is a concern for every society. The children of today are the adults of tomorrow, and their circumstances as children are related to their circumstances as adolescents and adults–in terms of educational attainment, labor market attachment and income opportunities, among others (e.g., Blau & Grossberg, 1992; Ermisch & Francesconi, 2002; Fronstin, Greenberg & Robins, 2005; Haveman & Wolfe, 1995). Therefore, we need to understand whether and, if so, how different aspects of childhood life have permanent effects on a child's well-being.

A crucial period in a child's life is the one around the start of first grade (Shonkoff & Philips, 2000). While a smooth school start is central for whether children do well later on in school, many children find the transition from kindergarten to first grade difficult. Therefore, studying child well-being at that age and linking it to family factors related to the first years of the child's life is important because it can yield critical information. A better understanding of the determinants of child well-being upon starting first grade may help parents and teachers avoid or mitigate some of the potential problems.

The first years of a child's life are very important for the child's development (Balter & Tamis-LeMonda, 1999). By nursing and stimulating the child, the parents influence its well-being. But how well the parents perform this task depends on a number of factors such as family structure, employment, and education. Furthermore, children are also influenced by factors outside the family, e.g., childcare arrangements. The question here, however, is whether family factors relating to the first years of children's lives have a significant effect on the children when they start school.

The purpose of this paper is to investigate whether family factors in early childhood–defined as factors relating to the 0-3-year-old child–are important for the child on a medium-term basis, i.e., when the child is 7 years old. We use two different well-being indicators: a psychosocial scale called SDQ (the Strength and Difficulties Questionnaire) and the number of problems when starting first grade. The data used are two waves of the Danish Longitudinal Survey of Children (children born in 1995) and register data from Statistics Denmark.

EXISTING EVIDENCE

Child well-being

Child well-being is a commonly used term in the study of child development and the relationship between child development and family factors (see Pollard & Lee, 2003, for a systematic review of the literature on child well-being). However, the term is by no means well-defined–the exact definition depends on the specific research question and the data available. In particular, the definition depends upon whether studies of child well-being focus on the short term or the longer term.

Short-term outcomes used as indicators of child well-being in previous research are, for instance, infant mortality, health (e.g., Starfield et al., 1991; or Scholer, Hickson, & Ray, 1999), and various psychosocial scales. The most used psychosocial scales are CBCL (Child Behaviour Checklist) used, e.g., by Duncan, Brooks-Gunn & Klebanov, 1994, and Fuller et al., 2002; and PPVT (Peabody Picture Vocabulary Test score) used, e.g., by Baum, 2003; Blau & Grossberg, 1992; Gagné, 2003; Lefebvre & Merrigan, 1998b; Ruhm, 2005; and Waldfogel, Han & Brooks-Gunn, 2002.

Another psychosocial measure is the SDQ-scale, from the Strength and Difficulties Questionnaire (see Goodman, 1997; Goodman & Scott, 1999; Mathai, Anderson, & Bourne, 2002). The SDQ-scale is relatively new (from the mid-1990s) and thus not yet as analyzed as the CBCL and PPVT measures. Almost all studies of the SDQ focus on validating the SDQ-scale and comparing it to the other well-known measures (e.g., Hawes & Dadds, 2004; Klasen et al., 2000; Koskelainen, Sourander & Kaljonen, 2000). An exception is Woerner, Becker & Rothenberger (2004), who analyze the relationship between SDQ scores and the family's socioeconomic status and find a strong negative relationship (i.e., children with less favorable socioeconomic backgrounds score significantly worse on the SDQ-scale).

A different research perspective is to look at long-term outcomes, i.e., outcomes for children when they reach adolescence or adulthood. These long-term outcomes include educational attainment (e.g., Anguiano, 2004; Ermisch & Francesconi, 2002, 2005; Ginther & Pollak, 2004; Joshi & Verropoulou, 2000); employment or unemployment (e.g., Ermisch & Francesconi, 2001; Ermisch, Francesconi, & Pevalin, 2004; Kiernan, 1997), and different types of risk behavior such as crime, smoking, or teenage motherhood (e.g., Ermisch & Francesconi, 2001; Ermisch, Francesconi, & Pevalin, 2004; Joshi & Verropoulou, 2000; Kiernan, 1997).

Starting school and well-being in the long term

Several studies have established a link between a good start in school and the child's overall success in the educational system (Entwisle, Alexander & Olson, 2005; McLeod & Kaiser, 2004). The reason for this link is evident. Both cognitive and non-cognitive skills–like work habits and positive attitude towards school and learning–at first grade, are positively related to later outcome in school (Entwisle, Alexander & Olson, 2005). Furthermore, a clear link exists between how well children do in primary school and long-term outcomes, such as highest level of education or risky behavior– (see e.g., Currie & Thomas, 1999; and Krueger, 2003).

Other factors also link childhood outcomes and long-term outcomes. Most of the studies on child well-being assume that factors from early childhood–especially during the first year–are crucial to the development of cognitive skills and to development in general (Harris, 1983). In addition, children's scores in cognitive and developmental tests (measured in childhood and early adolescence) are considered strong predictors of later outcomes (Ermisch & Francesconi, 2005).

Relationship between early childhood and child well-being

A vast amount of papers have provided us with a lot of empirical evidence on investment in children and child well-being (e.g., Ermisch & Francesconi, 2005; and Haveman & Wolfe, 1995,

for comprehensive reviews of earlier findings). Many of them are based on Becker's framework on household preferences and child "quality" (Becker, 1981), using household production functions to explain child outcomes (Baum, 2004, and Ermisch & Francesconi, 2005).

Many papers in the area of research on child well-being focus on the impact of parental work, in particular the *mother's employment*. Lefebvre & Merrigan (1998a) state that "[w]orking parents are probably finding the correct substitutes for their absence, making their children's intellectual development adequate," as they cannot conclude that maternal work in itself is harmful for children. Although conclusions are contradictory, Ermisch & Francesconi (2005) claim that "[c]hildhood parental employment can provide one of the links between long-term factors that promote cognitive and non-cognitive ability and child outcomes measures later in life."

A large amount of analyses consider additional parental factors and decisions about maternal employment, e.g., family background, family structure and family life. *Parents' educational level*, and especially the mother's educational level, indeed is positively related to children's educational level (Behrman & Rosenzweig, 2002). Results are biased upward because of the bias between mother's own schooling and ability. In addition, assortative mating further raises the children's educational level. A growing literature shows the positive role of school input and parental input on child well-being (see, e.g., Liu, Mroz & Van der Klaauw, 2004). By choosing *a particular residential area*, the parents choose both school quality for their children and labor market conditions for themselves. Maternal employment usually leads to early child care, which can lead to increased behavioral problems (e.g., Magnuson, Ruhm & Waldfogel, 2007). Luckily, high quality childcare is linked to increased school readiness and improved cognitive skills, which are more lasting for disadvantaged children (e.g., Magnuson, Meyers, Ruhm & Waldfogel, 2004). *Number of siblings* is found to have a negative effect on child well-being, presumably resulting from the mother's limited time per child (e.g., Hill & O'Neill, 1994). That *parental conflicts* negatively influence children's well-being is empirically evident (e.g., Jekielek, 1998), and this effect is still

present even after the parents split up, though on a smaller scale. In addition, children of parents who divorce during their childhood are more likely to experience divorce as adults (e.g., Kiernan & Cherlin, 1999). Children growing up with a *single parent* or in a *split family* are disadvantaged compared to children growing up with both parents (e.g., Ermisch, Francesconi, & Pevalin, 2004; and Thomson, Hanson & McLanahan, 1994). *Economic deprivation* in the family also influences child well-being, both in the short- and in the long-term (Duncan, Yeung, Brooks-Gunn & Smith, 1998).

CURRENT STUDY

This study contributes to our knowledge about whether early childhood factors have lasting effects. Contrary to the existing literature, which focuses primarily on either short-term effects or long-term effects, we study the medium-term effect of early childhood factors, i.e., the relationship between the children's well-being at the age of 7 and early family background such as maternal employment, family structure, and family life in the first 3 years of a child's life. By the time children are 7 years old, they have recently started first grade. Existing evidence show that a good start in school is very important for educational attainment later in life; therefore, this period is critical in the children's lives. We analyze two outcome measures that are essential for a good start: The first is a psychosocial categorization of the children with the SDQ-scale, where children are categorized as: normal, borderline, or abnormal, depending on their level of psycho-social problems. The second is the number of problems children experience when they start school ranging from 0 to 6 and including such problems as inability to concentrate or conflicts with classmates or teachers.

DATA

The data we use in the analysis are from the Danish Longitudinal Survey of Children (DLSC). This survey follows children born between September 15 and October 31 1995, representatively drawn

from children born in that period. The survey data has been merged with register data covering the period 1995-2002 from Statistics Denmark. The DLSC study is mainly concerned with the children's physical and mental development, along with the need for basic information on the children's development, their family background and their daily family life. The mother completed the questionnaire (in a few cases, where the mother was not present, the father answered the questions). The register data gives us information about the parents' educational level and employment status and enables us to determine with whom the child is living each year, i.e., whether the child lives with its biological parents, with a single parent, or with a stepparent.

A total of 6,040 children were randomly drawn for the DLSC in 1995. The first wave of the DLSC was carried out in 1996, when the children were about 6 months old, and it included interviews with 5,428 mothers. Of these, 5,288 mothers participated in the second wave in 1999 when the children were 3½ years old, and 4,971 mothers took part in the third wave in 2003, when the children were 7½ years old. The response rate in 2003 was 82% of the original sample. Although this response rate is very high, analyses have shown that families with low socioeconomic status (e.g., single mothers) are under-represented in the 2003 sample. This finding means that the prevalence of children in less-privileged circumstances is lower in the survey than in the entire population.

In the present analysis, we use data from the second and the third waves merged with register data from Statistics Denmark. More specifically, the two measures of child well-being come from the 2003 survey (when the children's age are 7½ years), while the early childhood factors are from the 1999 survey (when the children's age are 3½ years) and register data from the period 1995-1999. Only children with complete information on the outcome variables and the explanatory variables are included in the analysis. Children with severe handicaps such as Down's syndrome are excluded. These adjustments reduce the sample to 4,651 children: 2,235 girls and 2,416 boys.

OUTCOME MEASURES

As mentioned earlier, we use two different outcome measures: (1) a categorization of the psychosocial SDQ-scale and (2) the number of problems at the start of first grade. Both of these measures identify children who have more problems than what is considered normal for 7-year-old children. While the majority of 7-year-olds do well in terms of these measures, we are looking for factors determining whether a child has more than the usual number of problems.

SDQ-scale. The SDQ-scale is a psychosocial measure based on the Strength and Difficulties Questionnaire. The SDQ-scale is based on 25 internationally certified questions to parents about their child (see Goodman, 1999). Researchers use the answers to describe children's behavior in five areas: emotional symptoms, misconduct symptoms, hyperactivity, peer problems, and pro-social behavior. The first four areas indicate difficulties, while the fifth area indicates strengths. All answers have the same scoring: 0, 1, and 2, and based on the answers of the 20 questions that indicate difficulties, the researchers calculate the total SDQ-score as the sum of the scores. The SDQ-scale thus ranges from 0-40, where a higher score indicates more difficulties (see www.sdqinfo.com for a more thorough description).

Although the Strengths and Difficulties Questionnaire is a relatively new instrument, it has already seen widespread use in psychiatric screening of children and adolescents (Goodman, 1997; Goodman, 1999; Goodman & Scott, 1999; Mathai, Anderson, & Bourne, 2002). Psychologists use the SDQ-scale to categorize children according to difficulties. They work with two thresholds: a score below 14 (0-13) is considered normal; and a score above 16 (17-40), abnormal. Children with a score of 14-16 are placed in the borderline group; see Obel et al; 2004. The thresholds are placed relatively high, because psychologists do not want uncertainty about the children labeled 'abnormal'. In the analyses in this paper, we use the three SDQ-categories rather than the

continuous scale, thereby focusing on the boundaries where psychologists have judged the children to be so burdened by problems that they need special attention.

Table 1 shows the distribution of the 7-year-old children in the three categories. The majority of both girls and boys do not have more difficulties than what psychologists consider normal for their age group, while relatively few are categorized as abnormal or borderline. More boys than girls have more difficulties that normal–about 1 percentage point both for the abnormal and borderline group. This finding is in line with other findings, suggesting that boys are worse off in terms of emotional and behavioral difficulties than girls (e.g., Fuller et al., 2002; and Waldfogel, Han & Brooks-Gunn, 2002).

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Table 1

SDQ-categories and number of problems at start of first grade, in percentages

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Problems at start of first grade. The second outcome measure that we use is the number of problems at start of first grade. A bad start in school is likely to lead to more problems later in school life and therefore poorer chances of doing well in school (Entwisle, Alexander & Olson, 2005). This measure derives from the answers to six questions in the 2003 questionnaire, where the mother is asked if the child has experienced problems related to the start of first grade in any of the following categories: mental problems, attention problems, speech disorder, conflicts with classmates, conflicts with the teachers, or any other kind of serious problems. The child can have from 0 to 6 problems. As with the SDQ-scale, this measure focuses on problems. Table 1 shows the frequency of the number of problems at start of first grade. The majority of the children do well, with 60% of the boys and 68% of the girls having no problems and only a small fraction (less than

10%) experiencing more than 2 problems. As for the SDQ-scale, the boys are doing worse than the girls.

COVARIATES

This section describes the covariates in the analysis. We discuss them in 5 groups: maternal employment, family background, childcare, family structure, and family life. The means of the covariates appear in Table 2 separately for girls and for boys.

Maternal employment. According to the literature, the mother's employment may be an important factor for the child's future well-being. However, the expected effect of maternal employment depends upon when it takes place: One hypothesis is that the child's being away from its mother in its first year of life is more detrimental than later on (e.g., Blau & Grossberg, 1992; and Waldfogel, Han & Brooks-Gunn, 2002). Therefore, we divide this variable into two and examine maternal employment during the first year of the child's life and maternal employment when the child is aged 1-3 years. Unfortunately, although knowing whether the mother works part-time or full-time would be highly relevant, no information about the mother's weekly working hours is available. We do not include paternal employment for the following two reasons: First, the employment rate among fathers in Denmark is so high that identifying any effects of paternal employment is difficult (i.e., there is hardly any variation). Second, we want to avoid problems stemming from divorce and new families; for example, when a child lives first with the biological father and then with a stepfather, studying the paternal employment rate makes no sense.

The maternal employment rate is defined as months employed during the year. Thus, the two variables indicate the number of months that the mother was employed during the first year of the child's life (ranging from 0-12 months) and during the time the child was aged 1-3 years (ranging from 0-36 months). As monthly employment information is not directly available, neither from the

questionnaires nor from the register data, we therefore construct the variables from three register variables: (1) monthly information about public transfers (e.g., unemployment benefits), (2) information about start and end dates for full-time education, and (3) the yearly socioeconomic status.[1] For each month we employ an algorithm that classifies a person as non-employed if she receives public transfers or is enrolled in full-time education. If a person is not receiving public transfers or is enrolled in full-time education, she is categorized as employed this month if the main socioeconomic status for the year is "employed" and as non-employed if the main socioeconomic status of the year is "non-employed". Using this algorithm, we were able to construct monthly employment histories for about 98% of the mothers.

On average, the mothers were employed for two months during the first year of the child's life (see table 2). The reason for this relatively low employment rate is primarily the maternal leave scheme: In 1995, Danish parents were entitled to 24 weeks of maternity leave (either at full pay or relatively high benefits), as well as 52 weeks of childcare leave (at a relatively low benefit level). If we look at the distribution of employment during the first year, we find that about 55% of the mothers do not work at all, while only 2% work 7-12 months. The remaining share work 1-6 months (not shown in the table).

For the succeeding 3 years–when the child is aged 1-3 years–the average maternal employment is 24 months, i.e., 2/3 of the time. This average is composed of about 1/3 of the mothers working the entire 36 months, about 1/10 of the mothers not working at all during the period, and the remaining percentage working part of the time.

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Table 2

Means of explanatory variables

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[1] Defined as the socioeconomic status that applies to the main part of the year.

Family background. We label the parents' education and the residential area in early childhood as family background covariates. The parents' educational level is a main determinant of socioeconomic status while residential area (i.e., the level of urbanization) may impact child's well-being because, for instance, of neighborhood effects such as a higher or lower concentration of persons with low socioeconomic status.

The parents' educational level is defined as years of education in 1996, i.e., just after the child is born. The average for both mothers and fathers is about 13 years (high school constitutes 12 years), a little more for mothers than for fathers. The urbanization of the residential area uses information about the 1999 residence and is defined in three categories: the metropolitan area, urban areas, and rural areas. In the absence of school quality information in our data, we use *residential area*–metropolitan, urban, and rural–as proxy for school quality in the area. We define the metropolitan area as the capital of Denmark, including the boroughs surrounding the capital; the urban areas as the boroughs with larger cities; and rural areas as other boroughs in Denmark. This definition splits the sample into three almost equal-sized parts.

The family background covariates do not change much over time. Although some parents get more education or move from one area to another, such changes apply only to a minority of families. Thus, for most children these background covariates also apply when they reach the age of 7.

Childcare. Most children are in childcare if their mothers are employed. In Denmark, almost all childcare is publicly provided. Children aged 0-3 years typically attend either day nurseries or public childcare in private homes, while children aged 3-6 years attend kindergarten. About half of the staff in the day nurseries and kindergartens are educated, while the childcare providers that care for children in their own homes are not (although they take childcare courses and are under municipality supervision). On the other hand, one advantage of private home childcare is that the

children are cared for in smaller groups and therefore get more individual attention. In general, however, the reputation of the quality of day nurseries and kindergartens is higher than that of private childcare.

The data allows for three variables concerning childcare attendance. First, the mothers are asked how many hours per week the child usually attends childcare at the age of 3½. The average is 30 hours per week. Second, we use information on how many times the child has changed childcare arrangements before the age of 3½. Although such changes can occur for many reasons, they always create a new situation with which the child has to cope. On average, the children experienced 2½ changes in childcare arrangements, including the almost mandatory change from day nursery or private home care to kindergarten.[2] Third, we include a dummy for a child's having attended childcare in a private home at some point of time during his or her first 3½ years. Although we cannot identify the length of time that the child attended private childcare, the dummy captures the information that the child at some point has experienced this type of childcare. About 70% of the children have attended childcare in private homes at some early point.

Family structure. As discussed in the literature section, family structure is important for children's well-being. In this analysis, we include 3 types of family structure covariates: (1) birth order and number of siblings; (2) family type; and (3) the age of the parents. For the first type of covariates, we include a dummy for the child's being the firstborn and a variable indicating the number of siblings in 1999. On average 40% of the children are firstborn and have one sibling by the age of 3 (January 1999).

We also define two dummy variables for family type: the child living with a single mother in 1999, and the child living with the mother and a stepfather in 1999. Almost all children begin their life living with both parents. Thus, living with a single mother at the age of 3 implies that the

[2] A few 'integrated institutions' provide childcare for children aged 0-6 years. A child attending this type of institution does not have to change arrangements at the age of 3.

parents have divorced, and living with the mother and a stepfather implies that the parents have divorced and that the mother has remarried.[3] About 8% of the children live with a single mother in 1999, and about 2% of the children live with their mother and a stepfather. The remaining 90% of the children live with both biological parents.

The last type of covariates concerning family structure is the parents' age. We include the mother's age at birth and the age difference between the parents. The mothers are close to 30 years old in 1995 when the child is born and the average difference in age between the parents is 2½ years.

Family life. The final group of covariates come from the 1999 questionnaire and describes the daily living and functioning of the families. In addition, they are subjective, reflecting the mother's assessments to a larger extent than the other more objective covariates.

The first family life covariates concern the upbringing of the child. About 20% of the mothers feel that it is *hard to raise the child*, either during certain periods or most of the time. About 20-25% of the mothers use some kind of *punishment of the child*, such as a slap over the fingers, grabbing the child hard, or sending the child to his or her room when he or she has done something wrong. That mothers have difficulties with boys more often than with girls is noteworthy here.

Second, we include covariates about family functioning: In about 10% of the families, the adults quarrel every week, whether about the upbringing of the children, the distribution of childcare and housework, the financial situation, or other things. In almost 30% of the families, the mother judges the financial situation to be tolerable or poor (as opposed to very good or good). Finally, in 40% of the families, one or more members of the family smoked indoors daily in 1999.

The third group of family life covariates concern health. In the 1999 questionnaire, 12% of the mothers report that they have suffered some kind of mental problems during the previous 3 years. In

[3] We do not distinguish between marriage and cohabitation but treat them as the same category.

addition, in about 5% of the families, the biological father or stepfather has had mental problems. The dummies for mental problems are defined by an affirmative answer to one of the following questions: seeing a doctor for anxiety or depression, being hospitalized for mental problems, or seeing a psychiatrist or psychologist. The time span is the 3-year period preceding the interview. About 3% of the children, according to their mothers' reports, had poor health in 1999, defined from a list of chronic diseases (e.g., asthma) and physical or mental disabilities (e.g., deafness).

PROCEDURE

As previously mentioned, we analyze two different outcome measures for the 7-year-old children: the categorization based on the psychosocial SDQ-scale and the number of problems starting first grade. Both analyses use an ordered probit model, because the outcome measures are ordered from 'good' to 'bad'. Thus, the lowest category for the SDQ variable is the 'normal' group, the middle category is the 'borderline' group, and the highest category is the 'abnormal' group. The number of problems starting first grade (ranging from 0 problems to 6) is similarly organized. Thus, for both measures a higher ordered outcome is associated with the child being worse off.

The probit model estimates the relationship between the covariates and the probability of a higher outcome. A significant coefficient to a covariate implies that–after taking all the other covariates into account–this covariate has a significant impact on the child's well-being as a 7-year-old. All covariates relate to when the child is aged 0-3 years. A positive coefficient indicates a higher probability that the child is worse off while a negative coefficient indicates a higher probability that the child is better off.

As stated earlier, boys and girls develop differently (e.g., Fuller et al., 2002; and Waldfogel, Han & Brooks-Gunn, 2002). Therefore, we estimate the models separately for boys and girls.

RESULTS

SDQ-CATEGORIES

Table 3 presents the ordered probit estimates for the SDQ-categories where the covariates are grouped in factors regarding maternal employment, family background, childcare, family structure, and family life. For simplicity, the table does not show the intercepts.

After controlling for the other factors, maternal employment in the first years of the child's life does not affect the probability that the child is in the borderline or abnormal SDQ-categories. This finding is in line with the findings in e.g., Lefebre & Merrigan, 1998a; and Gagné, 2003, but not with the findings in Waldfogel, Han & Brooks-Gunn, 2002. If only the maternal employment variables are included in the model, we find a significant negative effect of maternal employment when the child is aged 1-3, both for boys and for girls. This effect, however, becomes insignificant as soon as other covariates are included. This finding suggests that although maternal employment in early childhood is not a very important factor in itself, it is nonetheless correlated with other important factors.

The family background covariates are more important for boys than for girls. The longer the education of a boy's mother or father, the less likely for the boy to be in the borderline or abnormal SDQ-categories. For girls, there is a positive effect (a lower SDQ-category) from the father's education, while the effects of the mother's education and urbanization are insignificant. This finding supports the hypothesis that more educated parents are more resourceful and better at cognitively stimulating their children (e.g., Ermisch & Francesconi, 2005). The fathers' education matters more for the girls than the mothers', a finding in contrast with other studies that find that maternal education is more important than the paternal education (e.g., Behrman & Rosenzweig, 2002; and Deding & Hussain, 2005). However, a reason may be that mothers' educational level has risen in Denmark to a higher level than the fathers and the effect then comes from the parent with the lowest level of education.

The area of residence is important for boys but not for girls. Compared to boys who lived in the metropolitan area in 1999, boys who lived in rural or urban areas do better on the SDQ-scale in 2003. This finding indicates that boys are more vulnerable than girls to the negative aspects of metropolitan life.

The childcare covariates play only a minor role in determining the child's outcome on the SDQ-scale in 2003. Neither weekly hours in childcare for the 3½-year-olds nor number of changes in childcare arrangements before the age of 3½ have a significant effect on the SDQ for the 7-year-olds. Furthermore, the dummy for having attended childcare in a private home at some point before the age of 3½ is significant only for boys. This finding suggests that the private childcare providers are not as good dealing with boys as with girls. Along with the finding that the family background covariates are more important for boys, this one indicates that boys in general are more vulnerable than girls in the early years.

Only one of the family structure variables is significant for the SDQ outcome of the 7-year-old child: Children with older mothers have a lower probability of being in the abnormal or borderline SDQ group. If a woman is very young when she becomes a mother, her circumstances are often less stable; she may be uneducated and unemployed, and her resources may be poorer. These factors affect both girls and boys. On the other hand, we do not find an effect from birth order, living with a single mother or stepfather in 1999, or the age difference between the mother and father. This finding contrasts with other studies that find that not living with the biological parents has a negative effect (e.g., Ermisch, Francesconi & Pevalin, 2004). Those studies, however, do not look at the medium-term effects.

The final group of covariates in the analysis is the family life covariates, which are relatively important for the children. If the mother felt that raising the 3½-year-old was difficult or sometimes used punishment as a child-rearing method, both girls and boys are worse off in terms of SDQ four years later. Of course, these covariates are problematic in terms of the direction of causality. The

question is whether the child is worse off because its mother finds it difficult, or whether the mother finds the child difficult because the child has more problems than other children–and already did by the age of 3½. As the covariates and the outcome measure are four years apart in calendar time, at least some of the children have outgrown their problems by the age of 7. The results thus indicate a relationship between the mother's attitudes towards the child and the child's outcome on the SDQ-scale four years later.

On the other hand, the parents showing sign of mental instability from 1996-1999 does not appear to have a lasting effect on the children. One reason could be that our measure of mental instability is relatively broad, including mild incidences of "mental problems" that the child never notices. We find that the child's own health matters more for boys than for girls. If a boy's health is bad when he is 3½ years old, then his probability of being in the abnormal or borderline SDQ group increases, whereas this effect is insignificant for girls. One explanation for this finding can be that boys react more strongly than girls and thus are at a higher risk of developing the problems that the SDQ-scale identifies.

Finally, quarrels in the household, a poor financial situation and smoking in the household affect both girls and boys negatively later in life (the poor financial situation appear significant only for boys). Quarrels and a poor financial situation may be interpreted as stress-factors in the family, whereas daily smoking in the house is bad for the children's health and is also correlated with a low socioeconomic status.

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Table 3

Ordered Probit Estimation of SDQ for 7-year olds

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PROBLEMS WHEN STARTING FIRST GRADE

The second measure of the children's well-being at the age of 7 is the number of problems they have experienced when starting school. The result of this analysis is shown in Table 4. As with the analysis of the SDQ-categories, this is an ordered probit estimation. Again, for simplicity, the table does not show the intercepts.

Contrary to the finding for the SDQ-categories, we find that the mother's employment has a positive effect on the children when they start school. The more the mother worked before the child was 1 year old, the fewer problems the girls are likely to have when starting first grade. Moreover, the more the mother worked when the child was aged 1-3 years, the fewer problems the boys are likely to have. This finding corresponds to Ermisch & Francesconi, 2005, and indicates that employed mothers have more resources available for the children.

Similarly to the SDQ-scale findings, the family background variables are important for the number of problems at start of first grade: The more educated the father, the fewer problems both girls and boys are likely to have, reflecting the educated parents' ability to help the children. On the other hand, we find no significant effect of mother's education. Furthermore, we find a significant effect of the geographical residence indicators–girls and boys who lived in urban or rural areas when they were 3½ years old have fewer problems at starting school than girls and boys who lived in the metropolitan area.

As with the SDQ-analysis, we find a negative effect from attending childcare in a private home in early childhood for boys but not for girls. Boys who attended childcare in a private home at some point between the age of 0 and 3½ years are likely to experience more problems at start of first grade than other boys. Again, this finding suggests that the private childcare providers are less able to meet boys' needs than their educated counterparts. On the other hand, we find that the more hours the girls spend in childcare at the age of 3½, the more problems they are likely to experience

when they start at first grade 4 years later. Thus, the girls show some vulnerability to the amount of childcare in early life.

The family structure covariates are insignificant to the girls' probability of experiencing problems when they start at first grade. Thus, in the medium-term, family structure does not affect the girls' probability of a good start in school. For boys, we find that living with a single mother at age 3½ and mother's age at birth matters. Boys who lived with a single mother when they were 3½ years old have a higher probability of experiencing problems when they start school, while boys who have an older mother are less likely to experience problems. Girls and boys are thus noticeably different with respect to these covariates.

Turning to the family life covariates, we find that these are important for the probability of experiencing problems when starting first grade, especially for boys. When the mother finds it difficult to raise the child when it is 3½, the child is more likely to experience problems at starting school. Furthermore, for boys we find an effect of punishment; if the mothers sometimes used punishment at age 3½, the boys are more likely to experience problems when starting school. Likewise, we find that that quarrels in the household, a poor financial situation, and smoking in the house all have negative impacts for the boys four years later. Finally, in contrast to the analysis of the SDQ-categories, we find a negative effect of parents' mental instability both for girls and for boys, concerning both the mother's and the father's mental health. Apparently parents' mental problems matter more for the experience of problems when starting first grade than for the score on the SDQ-scale.

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Table 4

Ordered Probit Estimation of number of problems when starting first grade

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DISCUSSION AND CONCLUSION

In this article, we have presented results from analyses of the SDQ-categories and the number of problems when starting first grade. Naturally, the two sets of results are not identical, but they clearly show that early childhood factors matter for children in the medium-term, in this case when they are 7 years old and have recently started school. In this section, we discuss the similarities and dissimilarities between the two analyses and consider the implications for the children.

If we consider the first group of covariates–maternal employment when the child is aged 0-3 years–our findings are somewhat mixed. Maternal employment in the first years of a child's life does not affect the SDQ-categorization for the 7-year-old, whereas maternal employment in the first year decreases girls' probability of experiencing problems when starting first grade, and maternal employment when the child is aged 1-3 decreases boys' probability of experiencing problems when starting first grade. Thus, rather than finding a negative effect, we find that the effect–if there at all–is positive. Consequently, our findings do not support the hypothesis that maternal employment in early life is detrimental for the children later on, and especially not the hypothesis that maternal employment is more detrimental in the first year of the child's life than later on.

In Denmark, the labor force participation of women–and also mothers–is very high, and employment for mothers of very young children is the norm. In this context, having an employed mother does not make the child different from other children. Furthermore, that most children are cared for in good-quality arrangements implies that the children are not negatively affected by their mothers' employment. On the contrary, having a non-working mother can be stigmatizing to some extent, as shown by the positive effects of maternal employment on the number of problems when starting school.

Concerning the family background covariates, we find that both the parents' education and the area of residence matter–especially for boys and especially for the number of problems when starting first grade. For both girls and boys, the father's education is more important than the

mother's education for both outcome measures. The importance of parental education–both in the short-, medium-, and long-term–is found in many studies, although the effect of the mother's education usually is the strongest. All these findings, including ours, indicate that children of less educated parents are a potentially vulnerable group in need of special attention.

Additionally, the area of residence–urban, rural, or metropolitan–when the child is aged 3½ years matters for both outcome measures, especially for boys. The findings indicate that it is more difficult for children to grow up in the metropolitan area relative to growing up in an urban or rural area. Several explanations are possible. As mentioned earlier, there is a higher concentration of individuals with relatively low socioeconomic status in the metropolitan area, and, despite controlling for socioeconomic factors, the socioeconomic composition of the neighborhood is nonetheless important. In addition, the housing stock in the metropolitan area includes more apartments and more public housing. Consequently, many childcare institutions in the metropolitan area are situated in apartments whereas in other areas they are more often in buildings with outdoor areas. While this analysis cannot distinguish between these different explanations, the findings nevertheless suggest that possible negative factors related to a child's living in a metropolitan area need future research.

Childcare is not very influential in the analyses. The only significant effects are having attended private home childcare (negative for boys for both outcomes) and weekly hours in childcare (negative for girls for number of problems when starting first grade). Overall, however, this group of covariates does not seem very important. Most Danish children are in public childcare from an early age (typically from the end of the mother's maternal leave) so that childcare is the norm–there are no playmates in the street during weekdays. Furthermore, the reputation of the childcare institutions is generally very good. Consequently, the trade-off between care in the children's own homes and in public childcare, do not in general have a major effect for the children.

The family structure covariates likewise matter surprisingly little for the 7-year-old children. Being the oldest and having siblings does not seem to matter neither for girls nor boys, for any of the outcome measures. In addition, whether the child lives with the biological parents, a single mother, or the mother and a stepfather at the age of 3½ has hardly any effect on the child four years later. This finding is surprising because a child living with either a single mother or with a mother and stepfather at age 3½ typically has experienced parental divorce. But the results suggest that any effect is not permanent. The most important family structure covariate is the mother's age at birth– the older the mother, the better off the child. This finding indicates that older mothers are better than younger mothers at meeting the needs of their children.

The most important group of covariates in the analyses is the family life covariates, which in general are very important for the children's well-being at the age of 7. Although different covariates are significant depending on the outcome measure and whether we look at girls or boys, the general conclusion is that "family life" for the 3-year-old is very important and has effects in the medium-term. Naturally, the specific covariates included in the analysis depend upon the information available in the questionnaires, and other characteristics of family life could also be important. However, we find it striking in this analysis that most significant medium-term effects stem from the family life and the family background covariates, while maternal employment, childcare and family structure play a minor role.

These results show that a bad start matters and that research into the well-being of children should increasingly focus on what is going on within the family.

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Table 1

SDQ-categories and number of problems at start of first grade, in percentages

	Boys	Girls
SDQ-categories		
Normal	90.48	92.80
Borderline	4.93	3.49
Abnormal	4.59	3.71
Number of problems at start of first grade		
0	60.36	68.46
1	21.05	19.35
2	10.96	8.02
3	4.94	3.36
4	2.20	0.63
5	0.46	0.13
6	0.04	0.04

Table 2

Means of explanatory variables

	Girls		Boys	
Variable	Mean	*SD*	Mean	*SD*
Maternal employment				
Mother's employment when the child is aged 0 years (months)	1.99	*2.61*	2.09	*2.63*
Mother's employment when the child is aged 1-3 years (months)	24.32	*13.36*	24.55	*13.46*
Family background				
Mother's years of education, 1996	13.37	*2.69*	13.36	*2.63*
Father's years of education, 1996	13.04	*3.58*	12.87	*3.74*
Living in the metropolitan area, 1999	0.29	*0.45*	0.30	*0.46*
Living in urban area, 1999	0.35	*0.48*	0.35	*0.48*
Living in rural area, 1999	0.36	*0.48*	0.34	*0.47*
Childcare				
Weekly hours in childcare, 1999	30.59	*11.50*	30.26	*11.41*
Number of changes in childcare arrangements, 1996-1999	2.54	*0.88*	2.51	*0.85*
Dummy for attending childcare in private homes, 1996-1999	0.70	*0.46*	0.69	*0.46*
Family structure				
Firstborn	0.40	*0.49*	0.41	*0.49*
Number of siblings, 1999	1.09	*0.83*	1.05	*0.81*
Child living with mother and father, 1999	0.89	*0.31*	0.89	*0.31*
Child living with single mother, 1999	0.09	*0.28*	0.08	*0.28*
Child living with mother and stepfather, 1999	0.02	*0.15*	0.02	*0.15*
Mother's age at birth	29.34	*4.61*	29.50	*4.46*
Age difference between mother and father	2.37	*4.10*	2.35	*4.08*
Family life				
Hard raising the child, 1999	0.19	*0.40*	0.22	*0.42*
Punishing the child, 1999	0.20	*0.40*	0.25	*0.43*
Mother mentally unstable, 1996-1999	0.12	*0.33*	0.13	*0.33*
Father mentally unstable, 1996-1999	0.05	*0.21*	0.04	*0.19*
Child's bad health, 1996-1999	0.03	*0.16*	0.04	*0.18*
Quarrels in the household, 1999	0.10	*0.30*	0.11	*0.31*
Poor financial circumstances, 1999	0.28	*0.45*	0.28	*0.45*
Smoking indoors in the household, 1999	0.40	*0.49*	0.40	*0.49*
Number of observations	2235		2416	

Table 3

Ordered Probit Estimation of SDQ for 7-year olds

	Girls	Boys
Maternal employment		
Mother's employment when the child is aged 0 years (months)	-0.012	0.004
Mother's employment when the child is aged 1-3 years (months)	0.000	-0.004
Family background		
Mother's years of education, 1996	-0.012	-0.039 **
Father's years of education, 1996	-0.029 **	-0.023 **
Living in the metropolitan area, 1999 (reference)	–	–
Living in urban area, 1999	-0.021	-0.225 **
Living in rural area, 1999	-0.094	-0.326 ***
Childcare		
Weekly hours in childcare, 1999	0.003	0.003
Number of changes in childcare arrangements, 1996-1999	0.053	-0.009
Dummy for attending childcare in private homes, 1996-1999	0.124	0.175 *
Family structure		
Firstborn	0.105	0.080
Number of siblings, 1999	-0.007	0.035
Child living with mother and father, 1999	–	–
Child living with single mother, 1999	0.198	0.117
Child living with mother and stepfather, 1999	-0.400	-0.207
Mother's age at birth	-0.022 *	-0.024 **
Age difference between mother and father	-0.003	0.005
Family life		
Hard raising the child, 1999	0.314 ***	0.370 ***
Punishing the child, 1999	0.201 **	0.436 ***
Mother mentally unstable, 1996-1999	0.162	0.127
Father mentally unstable, 1996-1999	0.048	0.182
Child's bad health, 1996-1999	-0.244	0.387 **
Quarrels in the household, 1999	0.305 **	0.225 **
Poor financial circumstances, 1999	0.144	0.204 **
Smoking indoors in the household, 1999	0.173 **	0.255 ***
Log L	-643.8	-822.0
Pseudo R2	0.066	0.105

**p<.10. **p<.05. ***p<.01. Intercepts not shown.*

Table 4

Ordered Probit Estimation of number of problems when starting first grade

	Girls	Boys
Maternal employment		
Mother's employment when the child is aged 0 years (months)	-0.022 *	0.001
Mother's employment when the child is aged 1-3 years (months)	0.000	-0.004 *
Family background		
Mother's years of education, 1996	-0.008	-0.016
Father's years of education, 1996	-0.016 *	-0.018 **
Living in the metropolitan area, 1999 (reference)	–	–
Living in urban area, 1999	-0.153 **	-0.181 ***
Living in rural area, 1999	-0.124 *	-0.176 ***
Childcare		
Weekly hours in childcare, 1999	0.005 **	0.003
Number of changes in childcare arrangements, 1996-1999	0.026	0.036
Dummy for attending childcare in private homes, 1996-1999	-0.011	0.148 **
Family structure		
Firstborn	-0.025	-0.045
Number of siblings, 1999	-0.023	0.009
Child living with mother and father, 1999	–	–
Child living with single mother, 1999	0.048	0.177 *
Child living with mother and stepfather, 1999	0.079	0.198
Mother's age at birth	-0.008	-0.016 **
Age difference between mother and father	-0.007	0.003
Family life		
Hard raising the child, 1999	0.256 ***	0.220 ***
Punishing the child, 1999	0.025	0.258 ***
Mother mentally unstable, 1996-1999	0.153 *	0.143 *
Father mentally unstable, 1996-1999	0.207 *	0.228 *
Child's bad health, 1996-1999	0.255	0.103
Quarrels in the household, 1999	0.089	0.221 ***
Poor financial circumstances, 1999	0.095	0.151 ***
Smoking indoors in the household, 1999	-0.010	0.094 *
Log L	-2047.7	-2625.1
Pseudo R2	0.018	0.035

**p<.10. **p<.05. ***p<.01. Intercepts not shown.*