Does Mother Know Best? Parental Discrepancies in Assessing Child Functioning*

Nabanita Datta Gupta†
Mette Lausten‡
Dario Pozzoli§

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Abstract:
We investigate the degree of correspondence between parents' reports on child behavioral and educational outcomes using the most recent available wave of a rich Danish longitudinal survey of children (the DALSC). All outcomes are measured at age 11 when the children are expected to be in fifth grade. Once discrepancies are detected, we analyze whether they are driven by noisy evaluations or by systematic bias, focusing on the role of parental characteristics. We then explicitly assess the relative importance of the mother's versus the father's assessments in explaining child academic performance to investigate whether one parent is systematically a better informant of their child's outcomes than the other.
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†Corresponding Author. Address: Aarhus University, Department of Economics and Business, Hermodsvej 22, DK 8230 Aabyhoej, Denmark. E-mail: ndg@asb.dk.
‡The Danish National Centre for Social Research.
§Aarhus University, Department of Economics and Business.

I. Introduction

An unusually large and extensive interdisciplinary literature has investigated the socio-economic determinants of early childhood conditions. Interest in this research area has been spurred by a growing realization that early life conditions can have a profound impact on later life. Several studies (Case, Fertig, and Paxson 2005; McLeod and Kaiser 2004; Blanden, Gregg, and Macmillan 2006) suggest that characteristics measured as of age 7 can explain a great deal of the variation in education attainment, earnings and employment probability as of early 30s. Some studies have focused on the relationship between parental income and the health of their children, i.e. the income gradient (Case, Lubotsky, and Paxson 2002; Currie and Stabile 2003; Currie, Shields, and Wheatley Price 2007). A relatively new line of research in economics focuses on the relationship between child development and non-parental care (Baker, Gruber and Milligan, 2008; Bernal and Keane, 2011; Blau and Currie 2008; Brown et al. 2006; Datta Gupta and Simonsen 2010, 2011; Havnes and Mogstad 2011). While studies from US and Canada have found negative effects of child care on children and families (Baker et al. 2008; Bernal and Keane, 2011), the evidence from Scandinavian countries tend to show positive effects: some of these studies looking at mature schemes find that early intervention programs have only short-term effects on non-cognitive skills (Datta Gupta and Simonsen 2010 and 2011), while others provide evidence of strong positive effects also on children's long run outcomes, as adult, of the introduction of universal child care (Havnes and Mogstad 2011).

Most of this work on early child development is based on subjective evaluations of a given category of child functioning –behavioral, emotional, cognitive etc.– and very often these assessments come from mothers rather than other informants. Clinicians and researchers, for example, view mothers as most accurate in reporting children's eventual behavioral and emotional problems but tend to neglect fathers as informants of children's outcomes (Treutler and Epkins 2003). However, the reliability of the assessments of child outcomes and behavior has been generally questioned. Firstly, there are concerns about the extent to which these measures of school outcomes and health are validated by more objective measures. Baker, Stabile, and Deri (2004) found, for example, very limited evidence on the correspondence between self-reported health measures and medical records. Secondly, respondents may have

different motivation for providing ratings of children and have different thresholds or perceptions of what constitutes abnormal behavior in a given child (Bago d'Uva et al. 2007; Lindeboom and van Doorslaer 2004). Finally, the very poor agreement for different informants' ratings of a given child's functioning raises concerns about the relative validity of any single source of information.

Because of this low to moderate correspondence between the information provided by different informants, the literature has tried to investigate the determinants of informant discrepancies. Some studies have examined how child characteristics – age, gender, ethnicity and problem type – are related to informant discrepancies (Achenbach, McConaughy, and Howell 1987; Kolko and Kazdin 1993; Duhig et al. 2000). Other works have focused on parental characteristics, such as socio-economic status (Treutler and Epkins 2003), levels of psychopathology (Krain and Kendall 2000), and family characteristics such as family status, sibling birth order, number of siblings and familiarity of the child to the rater (Jensen et al. 1988; Treutler and Epkins 2003). However, no clear pattern of correlation has been found between informant discrepancies and informant characteristics. The current state of the literature is marred by inconsistent findings and does not provide adequate conclusions as to the magnitude of the relations between discrepancies and associated characteristics. Interestingly the inconsistency of prior work is due to the fact that some of the relations are spurious and explained by other informant characteristics. Moreover no theoretical rationale has been provided to explain these discrepancies and, as a result, no formal tests have been conducted to examine the processes involved. Consequently, remarkably little is known about why informants' ratings of children's functioning often diverge from one and another's. However, understanding the source of these discrepancies is extremely relevant because relying on one particular informant than another, or even integrating information from multiple informants, can lead to different conclusions regarding the correlates or risk factors of child emotional, social and behavioral outcomes. Becker and Tomes (1986) were the first to develop a model in which the rate of return to parental human capital investments in their children depended positively on their endowment of abilities. Biased reports of child "ability" (behavior or academic performance) can therefore lead to an inefficient allocation of parental investments during childhood having long lasting effects, as parental responses are considered to be important in either magnifying or mitigating the effects of a shock in early childhood on

subsequent outcomes (Almond and Currie 2010).

To shed more light on these issues, the present study addresses several important research questions. First, using the most recent available wave of the Danish Longitudinal Survey of Children (DALSC), we investigate the degree of correspondence between parents' reports on child outcomes. To this purpose, we use both reported behavioral outcomes (the mother and the father versions of the Strength and Difficulties Questionnaire, SDQ) and reported educational outcomes (the mother and the father versions of a set of questions about school performance). All these outcomes are measured at age 11, when the children are expected to be in fifth grade. Second, when discrepancies are detected, we analyze whether they are driven by noisy evaluations or by systematic bias, focusing on the role of informants' characteristics. We then explicitly assess the relative importance of the mother's versus the father's assessments in explaining child functioning, to investigate whether one of the parents is systematically a better informant of children's outcomes than the other.

The paper is organized as follows. Section II highlights the main theoretical relations. Section III introduces the data set and presents main descriptive statistics. Section IV provides details on the empirical strategy. Section V explains the results of the empirical analysis and section VI offers some concluding remarks.

II. Theoretical background

Our empirical analysis on informant discrepancies is guided by a framework which is based on theories of the actor-observer phenomenon (Jones and Nisbett 1972), the influence of perspectives (Tversky and March 2000), social desirability (Silverman and Rabian 1995) and social tightness (Prendergast and Topel 1996; Prendergast 2002).

The actor-observer phenomenon posits that different informants have discrepant attributions of the causes of the child's problems. Parents are more likely than the child to attribute the cause of the child's problems to the child's disposition and disregard the context. The child is more likely, on the other hand, to attribute the cause to the environment. This implies that informants that focus on the disposition of the child when rating the child's behavior (parents)

may be more likely to provide negative information of the child's behavior than informants that focus on the context in which the behavior occurs (children). Therefore, discrepancies among informants' ratings may result, in part, from the disparities among informants' attributions of the causes of the child's behavior.

Discrepancies between a pair of observers may also rise because of a difference in perspective. Parental psychopathology frames a parent's perspective for providing information of her/his child's problems or negative behaviors, i.e. a perspective that influences parent recall of the more negative aspects of the child's problems. Mood congruent biases in recall are a possible mechanism for this type of differential reporting. Parental depression may decrease the threshold by which parents gauge whether a child's behavior is problematic or not. This lower threshold may lead to parents' perspectives diverging from the perspectives of other informants. Mothers' depression, for example, is often asserted to be a distorting variable in mother reports on child behavior, in that maternal depression is associated with reporting more negative behavior than other ratings indicate (Youngstrom, Izard, and Ackerman 1999; Youngstrom, Findling, and Calabrese 2003). This "depression-distortion hypothesis" finds support when mothers' reporting of children's symptoms or over-reporting of symptoms relative to other sources, relate to their anxiety, stress and to psychological symptoms in general (Renk, Phares, and Epps 1999).

An alternative view is that some informants may show a systematic tendency to report less negative events and behavior than others. Issues of social desirability explain why some informants have more incentives to deny or minimize socially undesirable symptoms than others. Typically, this is a concern when information relating to common societal taboos such as illicit drug use, engaging in illegal activities or sexual promiscuity is elicited. However, social desirability bias may also arise in over-reports of own or child abilities and achievements, for instance, to gain status within one's circle of peers.

Finally, the relationship between the informants and the ratee under investigation contributes to informants' reports and to the discrepancies between informants' reports. The parent-child relationship may be related to the father-mother discrepancies for two main reasons. Firstly, both quantitative (i.e. time spent taking care of the child and doing things with the child) and

qualitative (parental acceptance of the child) aspects of parental involvement may affect parents' awareness of child behavioral and emotional problems. Thus, the parent having a more intense relationship with the child may be a more accurate informant on child functioning than other sources. This is especially true for internalizing or emotional problems, e.g. child anxiety and depression, which are less observable compared to the child externalizing problems, e.g. hyperactivity and oppositional behavior. In this sense, we can reasonably expect lower levels of correspondence for informants' ratings of child internalizing problems compared with informants' rating of child externalizing problems, in case of a differential in the degree of familiarity of the child to the raters. Secondly, the degree of acquaintance between rater and ratee may affect the accuracy of the ratings. A closer social attachment between the parent and her/his child can lead to better ratings even if there is no difference in true child functioning. Prendergast and Topel (1996) and Prendergast (2002) analyze subjective appraisals in economic models assuming that supervisors, while having some intrinsic preference for accurately reporting the true performance, also care for the welfare of their ratees. This leads to a basic tradeoff between accuracy and leniency and it directly results in more lenient ratings, the stronger the supervisor's social preferences toward the evaluated subordinate. Based on this reasoning, it is possible to argue that a closer social attachment between one of the parents and the child could lead to different ratings despite both parents being observers of the same symptoms. While mothers, traditionally, due to specialization in housework over market work, have had a stronger attachment to the child, this is changing in dual earner societies as fathers participate more in child-rearing. Indeed time diary studies comparing the mid-60's to the late-90's show that married fathers participate much more actively in routine and developmental child care activities than they did in the past (Sayer, Bianchi and Robinson, 2004). For Denmark, comparing time-use data between 1987 to 2008, researchers found that Danish fathers rank second among European fathers (after Swedish fathers) in terms of the amount of time spent on children aged 7-17, and that they increased the daily time spent with their children by 15 minutes between 1987 and 2008, Rockwool Foundation Research Unit, 2010 for Denmark).

In the following section, we describe how we operationalize the theoretical concepts highlighted above and define determinants of informant discrepancies in the data.

III. Data

The data we use is drawn from a rich survey on children's outcomes, modes of care and parental background information, known as the Danish Longitudinal Survey of Children (DALSC). The DALSC is a repeated survey of the primary parent of, initially, roughly 6,000 children born between 15 September and 31 October 1995. The first wave took place when the children were 6 months old (1996), the second when they were around 3 (1999), the third at age 7 (2003) when the children are expected to have started first grade (age 7 in Denmark), and the fourth at age 11 (2007). The fathers of these children were surveyed separately in 1999 and 2007.

For the purpose of this study, we mainly focus on the last wave of the survey, as it is the only one containing both parents' reports of some of the child outcomes. We only include those "intact" households in which the male respondent is the biological father. Moreover, disabled children are excluded from our analysis. We check for potential sample selection bias by comparing means of all variable across both samples. The survey data have been merged to administrative registers holding information on parents' educational attainment, labor market status and income for the years 2000-2006. Self-reported child care enrollment status is measured in 1999 and child outcomes are all recorded in 2007, when the child is expected to be in fifth grade.

To explicitly test whether informant discrepancies are explained by the theoretical hypothesis outlined in section II, the following groups of explanatory variables are selected for our empirical analysis. First, we measure *parent psychopathology* by including a count measure of all psychological symptoms for which the parent has consulted a doctor including anxiety, nervous tension, depression, sleeping problems and stress, a dummy variable indicating whether the mother suffered from post-partum depression and whether parents argue every day or couple of times a week on a number of relevant topics. Second, we add a number of variables proxying for the *social ties* between the parent and the child: i) whether the parent has a very close relationship with the child; ii) whether the parent spends time with the child engaging in activities on a daily basis; iii) the parent labor market experience when the child was born; iv) whether the father is the breadwinner; v) whether the child was enrolled in a

municipality provided daycare program at age 3 and vi) the hours of non-parental care. Third, to control in part for social desirability bias we include information about the *parental socio-economic background*, like household disposable income and parents' educational level. We also consider the child gender and the number of older sibling. Finally, the fact that most explanatory factors are measured separately for each parent, allows for disparities in the informant's attributions.

Table 1 reports the main descriptive statistics of all the variables used in our empirical analysis, separately by child gender and by whether disabled kids and non-intact households are included or not in the sample. Aside from the outcome variables, means of the explanatory factors – parental psychopathology, social ties or parental socioeconomic background – are roughly similar by child gender and by the type of sample. A slightly larger share of mothers of girls report spending quality time with the child compared to mothers of boys (89.5% vs. 85%) and another difference is that 92% of boys were in municipality provided care at age 3 compared to 85% of girls. Furthermore, means do not differ much across the intact households sample and the non-intact sample including dissolved households and disabled children except that in the non-intact sample parents tend to report more symptoms, fathers are less close and spend less quality time and fathers and mothers have less work experience, but the educational profile of parents is similar and so are the other controls.

Our first outcome measures are the mother and the father versions of the *Strengths and Difficulties Questionnaire* (SDQ), which is a 25-item instrument for assessing social, emotional and behavioral functioning, that has become a widely used research instrument for the mental health of children (Goodman 1997). A closely related measure, the Behavior Problem Index, is used in Cunha and Heckman (2008) to investigate the production of cognitive and non-cognitive skills. Answers to the 25 questions are grouped into five scales of five items each, generating scores from 0 to 10 for emotional symptoms, conduct problems, hyperactivity, peer problems and prosocial behavior. Excluding the prosocial behavior, the five items in each subscale are then summed up to the total difficulties scores ranging from 0 to 40. Subtracting the mother ratings from the father ratings creates difference scores used to explore levels of dyadic agreement about the level of child mental problems.

From Table 1 we can see that mothers tend to report worse behavior than fathers (positive SDQ difference), with no difference according to child gender. In absolute value, the average difference in ratings is about 3 points, which is quite large considering the SDQ scale. Table 2 presents the correlations between the two informants' ratings of behavioral problems. There is clearly evidence of dissimilarity of both parents' evaluations, given that cross-respondent correlations are all below 0.7. Note that the agreement tends to be greater about externalizing behaviors, e.g. hyperactivity and conduct problems, compared to internalizing behaviors, e.g. emotional and prosocial problems. As we mentioned in section II, internalizing problems are more difficult to observe and are less disruptive to family functioning and, therefore, less likely to attract the attention of a parent. This is also evident in Figure 1, showing the distributions of both parents' SDQ evaluations. The second set of outcomes measure (reported) *child school performance*. Both parents are asked a question about overall school performance: How well do you think your child fares academically? The same question is also asked for each subject separately, i.e. Danish, Math, Science and English.[1] In Table 1, we saw that fathers tended to report worse academic performance than mothers (negative difference). This corresponds to an average difference of 0.4, in absolute value. As in the case of the SDQ ratings, there is strong evidence of dissimilarity between mother and father evaluations in the pairwise correlations between respondents' evaluations, shown in Table 3. As we can see from Figure 2, mothers are more likely to rate their child academic performance as "excellent" compared to fathers.

IV. Methodology

Our point of departure in exploring the between parent differences in reports of child outcomes, ΔCO_i, is to estimate a standard linear regression model:

$$\Delta CO_i = \beta_p PARENTAL_{PSYCHO_i} + \beta_{st} STIES_i + \beta_s SOCIO_i + \beta_o \mathbf{OTHER}_i + \varepsilon_i, \quad (1)$$

where, $PARENTAL\_PSYCHO_i$ is the information about the psychopathology of parents of the i^{th} child, $STIES_i$ is a set of proxies for social ties, $SOCIO_i$ is a vector of parental

[1] Responses range from "Excellent" (coded 1) through "Very Badly" (5).

socioeconomic characteristics and $OTHER_i$ include additional controls such as gender and the number of older siblings.[2] The coefficients generally indicate how large the contribution is of the variables included in the specification in explaining the differences between the mother's and the father's ratings. A positive (negative) coefficient for maternal psychopathology, for example, indicates that a mother with more symptoms tends to assign her child higher (lower) scores relative to the father. This is the reverse for the father, where a positive (negative) coefficient for paternal psychopathology would indicate that fathers with more symptoms tend to rate their children lower (higher) scores relative to the mother. It should be noted that in such a "change" model any unobservable common to households (shared tastes, common views on upbringing, etc.), which could be correlated with parental reporting and its observed determinants is differenced out.

After having explored which variables are associated with parent discrepancies, we assess which parent's assessment is closest to the objective measures of a specific item of child functioning. In the present study, only objective measures of the child academic performance are available, i.e. CHIPS and language scores[3] and no objective measure of say, child mental health. Therefore, we estimate the following linear factor model:

$$\begin{cases} C_i = \alpha_c + \lambda_{1c} * m_{SDQ} + \lambda_{2c} * f_{SDQ} + \lambda_{3c} * m_{ACA} + \lambda_{4c} * f_{ACA} + u_{ic} \\ L_i = \alpha_l + \lambda_{1l} * m_{SDQ} + \lambda_{2l} * f_{SDQ} + \lambda_{3l} * m_{ACA} + \lambda_{4l} * f_{ACA} + u_{il} \end{cases} \quad (2)$$

where, C_i and L_i are respectively the CHIPS and language scores, m_{SDQ} and m_{ACA} are the mother's assessments of respectively the child behavior and academic performance, f_{SDQ} and f_{ACA} are the respective father's assessments, and λ represents the vector of factor loadings (Borghans et al. 2008). (u_{ic} and u_{il}) are assumed to be jointly normal with zero means and variance matrix Σ_{CL}. The factor model (2) can be computed using maximum likelihood

[2] Given that parental perception of child behavior and school performance has been found to vary substantially by gender in the previous literature (Kolko and Kazdin 1993; Duhig et al. 2000), we have also estimated equation (1) separately for girls and boys. Results are very similar to the ones reported in the paper and are available on request from the authors.

[3]In the 2007 wave, the children were administered both a language test and a test of logical thinking (the Children's Problem Solving or CHIPS test). The CHIPS test involved completing a series of number sequences. Both tests were composed as a set of multiple choice questions. The maximum score obtainable on the language test was 34 points; on the CHIPS test 40 points.

estimation and captures the notion that parental assessments are imperfect measures of true underlying child functioning, proxied by the objective measures of academic performance. A purely misreported assessment of child functioning would be associated with a zero λ coefficient.

V. Results

This section provides a discussion of all the results obtained from the empirical analysis. The first set of results tests the theoretical hypothesis outlined in section II, by looking at whether informants' discrepancies of child behavioral and academic outcomes correlate systematically with informants' characteristics. The empirical analysis proceeds by assessing the relative importance of the mother's and the father's assessments in explaining child functioning, to investigate whether one parent is systematically a better informant of children's outcomes.

A. Correlates of informants' discrepancies

Table 4 shows the estimates of equation (1) for parents' differences in ratings of child behavior measured by the total SDQ scores. Six different models have been estimated. The first three columns include results from the most parsimonious specification, including information about parental psychopathology and child gender together with the number of older siblings, to the exhaustive one, adding respectively the variables related to social ties (column 2) and those proxying parental socioeconomic background (column 3). Comparison of the first three columns shows that there are no large differences between the different specifications. First, discrepancies in the total difficulties score of child mental problems are positively correlated with maternal psychopathology, measured by a count of all psychological symptoms for which the mother has recently consulted a doctor. Hence, mothers with poor mental health rate their children more harshly than do fathers. More specifically, an additional symptom is associated with a 0.056 standard deviation increase in the amount of discrepancy.[4] This result is consistent with the hypothesis that mothers' disorders are distorting variables in

[4] This result is obtained by standardizing the dependent variable. Not all the y-standardized coefficients are reported in the paper, but all are available on request from the authors.

mothers' reports on child behavior. The same hypothesis does not hold for fathers, as their symptoms are not statistically correlated with the level of disagreement between parents. However, fathers who declare themselves as often having arguments with their spouses tend to report more disorders compared to mothers, and the same is found for mothers' perception of arguments.

The qualitative dimension of social ties, i.e. the quality of the relationship between parent and child, works also symmetrically for mothers and fathers. Mothers with a close relationship with the child seem to downplay child behavioral problems compared to fathers, as clearly indicated by a negative correlation between a close mother-child relationship and the total SDQ scores. On average, a close mother-child relationship produces, on average, a 0.047 standard deviation decrease in the degree of disagreement. This result may be consistent with the hypothesis that a closer social attachment between mothers and their children leads to more lenient ratings of child behavior. Leniency can be explained by either the mother's social preferences being closer toward the evaluated child or by social desirability issues, i.e. the tendency to deny or minimize socially undesirable symptoms. The same is found for fathers, and as we shall see in Table 5, this occurs especially for externalizing child problems, i.e. conduct and hyperactivity disorders. Fathers having more familiarity with their child tend to report on average fewer symptoms compared to mothers (positive coefficient, which corresponds to 0.076 standard deviation increase in discrepancy). Thus, qualitative aspects of parental involvement may lead to greater leniency towards child behavioral problems. Another possible interpretation of the previous results could be that the parent, who is closer to her/his child, more accurately gauges her/his child's behavioral problems.

All in all, these results also indicate that parental involvement has strong and symmetric effects on parental ratings of child behavior. This is not, however, confirmed by other proxies of parental involvement: for example, the dummies of whether the mother or the father spends quality time with their child are never statistically significant. Furthermore, while the effect of the child being cared for in a municipality provided daycare program at age 3 is positive (i.e. mothers rating behavior worse than fathers), it is imprecisely estimated, and hours of non-parental care, though statistically significant, are not substantially related to the degree of parental disagreement, as indicated by the magnitude of the coefficient.

Our results also indicate that none of the variables related to the parents' socio-economic status is significantly associated with the level of parental discrepancies. Finally, we generally do not find that the gender of the child or the number of older siblings influence the amount of disagreement between parents.

We, then proceed by separately adding to the most complete specification, two interaction terms to check whether the proxies for social ties have heterogeneous associations with parental discrepancies according to the child gender. More specifically, the first interaction is between child gender and whether the mother or the father has a close relationship with the child (column 4) while the second one is between the child gender and whether the father is a breadwinner (column 5). None of the interactions is statistically significant, dismissing the surmise that mothers and fathers who have a close relationship with the child may differently perceive the behavior of their child or gather different amounts of information about the child, depending on child gender.

Next, we estimate equation (1) by quantile regressions to get a more complete picture of how the variables included in the main specification are associated with different quantiles of the conditional parental reporting gap distribution. Quantile regressions are estimated at three different quantiles (0.25; 0.50; 0.75) and the results are respectively reported in the last three columns of table 4. To avoid the bandwidth choice required by the kernel estimator, we decided to use a bootstrap estimator for the standard errors. For each quantile estimator, 500 bootstrap replications are performed and the standard deviations are computed. The ordinary least squares (column 3) are fairly similar to the 50^{th} quantile (median) regression (column 7), but the varying nature of the estimates at the other quantiles provides an interesting picture of how the distribution of informant discrepancies is related to the covariates. Note that mother symptoms, mother perception of arguments and whether the mother has a close relationship with the child are not statistically significant at the 25^{th} quantile. However, the magnitude and the statistical significance of the estimates for these variables improve when moving to higher quantiles. A close mother-child relationship, for example, associates with a 0.034 and a 0.053 standard deviation decrease in the amount of disagreement, respectively at the 50^{th} and the 75^{th} quantile. On the other hand, the estimates for whether the father has a close relationship with

the child are always statistically significant but decrease monotonically from the lower quantiles to the higher quantiles (from 0.065 to 0.039 standard deviation increase in parental discrepancies). This means that the greater leniency associated with the father relationship with the child seem to be more evident at lower quantiles of the discrepancies distribution. The opposite result holds for the mother-child relationship dummy, i.e. the leniency of mothers who are closer to their children seems to increase the bigger the gap in parental rating. One interpretation of this finding could be that mother closeness has a *mitigating* effect when parental differences in assessments are large, whereas father closeness has a *reinforcing* effect when discrepancies are small and parents are in agreement.

Finally, we check whether the associations between informants' characteristics and informants' discrepancies vary between item-specific SDQ scores. It is, in fact, reasonable to expect that some informant characteristics are more strongly correlated with the ratings of externalizing behaviors than with the ratings of internalizing behaviors and vice versa. Social ties, for example, may matter less for the ratings of hyperactivity and conduct problems, which are easier to observe, compared to emotional problems. Results included in Table 5, however, do not support this hypothesis, as the coefficients barely change across SDQ items. The dummies of whether the mother or the father has a close relationship with the child, the mother symptoms and both parents' perceptions of familial arguments are generally significantly associated with each of the SDQ sub-items as they were for overall SDQ. Interestingly, the symmetric associations between parental perceptions of arguments and child behavior are strongest for emotional and conduct problems, i.e. internalizing disorders. We find, moreover, that the magnitudes of the effects of mother social ties are slightly higher for the conduct and hyperactivity problems compared to the emotional ones. Whereas for fathers, we see that the effect of social ties or closeness is highest for prosocial behavior and hyperactivity. Thus, both mothers and fathers who are close to their children are more likely to report significantly *less* hyperactivity, the reverse of what was hypothesized. For mothers with mental symptoms, not surprisingly, emotional problems in children tend to be reported more. Unlike in Table 4, child gender plays a role in parental discrepancies for two of the sub-items of SDQ – mothers of girls report significantly more conduct problems but significantly less hyperactivity problems than fathers.

Table 6 includes results related to the differences in parental and child reporting of academic performance. The first three columns successively add groups of covariates to the main specification while the last two include a few interactions with child gender, as in Table 4. As mentioned in section III, child academic performance is proxied by the respondent's perception of how well the child fares academically. We see that a mother's psychopathology (number of symptoms) negatively affects her ratings of child academic performance in the fuller specifications. Specifically, an additional symptom correlates with a 0.041 standard deviation increase in the amount of disagreement. Paternal psychopathology is, however, not correlated with the pairwise discrepancies. Social ties play a relevant role here also. A mother who has a close relationship with the child is more likely to assess positively her child's academic performance than the father of the same child. The same holds for the father, who seems to judge his child more positively compared to the mother the closer he is to it. A mother (father) close relationship leads to nearly a 0.050 standard deviation decrease (increase) in discrepancies. As in case of SDQ discrepancies, we see that the quality of the relationship with the child seems to enhance the leniency of the parent's ratings. Assessments of academic performance disaggregated by subject corroborate these findings, especially for Science and Danish (see table 7). Of course another interpretation could be that parents can more accurately gauge their children's ability, the closer they are to them. We now turn to the issue of whether parents indeed can accurately assess performance, and if so, which parent is the better evaluator.

B. Linear factor model results

In this section, we assess the relative importance of the mother's and the father's assessments in explaining an objective measure of the child academic performance, measured in our case by the CHIPS and the language scores. The parameter estimates of the linear factor model (2) are given in table 8. Coefficients are also reported in standard deviation units, i.e. beta coefficients, to be able to compare the relative contributions of factors, thereby easing the comparison across magnitudes. Moreover, statistical tests of the equality of the factor loadings across parents' ratings are included at the bottom of table 8. The vector of factor loadings, λ, in the CHIPS scores equation indicates that both parents are given fairly similar weight in explaining the child academic performance, objectively measured. Hypothesis testing reveals

also that the loadings associated with the mother's assessments are not statistically different from the ones associated with the father's assessments. This is not the case for the language scores, where the mother's assessments seem to be more relevant in explaining the objective measure. A higher and statistically different λ is systematically estimated for the mother's ratings of both the child academic performance and SDQ. These results confirm, to some extent, the assumption that mothers are the most accurate in reporting and assessing child functioning (Treutler and Epkins, 2003).

As a robustness check, we then check whether this assumption holds in alternative subsamples. Table 9 includes estimations of the linear factor model for 9 different cases and indicates that the mother's assessments are not *necessarily* better than the father's assessments. This is especially evident if the mother has at least one psychological symptom, when the father or both parents have a close relationship with the child and in case the child is a boy. Not surprisingly, the father's assessments receive an even higher and statistically different weight in explaining child academic performance in the case the mother is the breadwinner in the household. This means that as the primary earner, the mother is very likely to have a less intense relationship with the child compared to the father. The latter result allows us to conclude that the quality of the relationship with the child seems to enhance the accuracy rather than the leniency of the parent's ratings.

VI. Conclusions

This study investigates the degree of correspondence between parents' reports on child cognitive and non-cognitive outcomes using the last wave of the Danish Longitudinal Survey of Children (DALSC). Descriptive analysis provides clear evidence of dissimilarity in parent evaluations of child behavior, with higher disagreement levels found for internalizing behaviors, e.g. emotional and prosocial problems. High levels of discrepancies are also found where assessments of child academic performance are concerned.

Once discrepancies are detected, we analyze whether they are driven by noisy evaluations or by systematic bias, focusing on the role of informants' characteristics. A few systematic

factors are found to drive the differences in assessments. Our results are consistent with the hypothesis that parental psychopathology measured as mothers' mental disorders, are distorting variables in their reports of child behavior. The relationship between rater and ratee which we operationalize as qualitative aspects of the parent-child relationship are correlated with discrepancies of both cognitive and non-cognitive child ratings, with aspects of parental involvement having symmetric effects on parental ratings of child behavior.

Estimates from a linear factor model reveal that the mother is generally a better informant of child academic performance compared to the father. This result, however, does not hold when the mother has at least one psychological symptom, or when the father has a more intense relationship to the child compared to the mother, or when both parents report being close to the child. In fact, when the mother is the breadwinner of the family, the father's assessments turn out to be more important for child academic performance. These results call into question the practice of clinicians or teachers to rely primarily on one parent as the better informant—as we show above, the ability of a parent to gauge their child's ability depends on their psychopathological condition, their relative attachment to the labor market and the quality of their relationship with the child. Our results also enable us to conclude that a close relationship with the child seems to enhance the accuracy rather than the leniency of the parent's ratings.
These findings give important input to child policy makers and practitioners because incorrect assessments can lead to an inefficient level of investments that can have far-reaching consequences for children's future human capital development.

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Figure 1: Distributions of SDQ scores

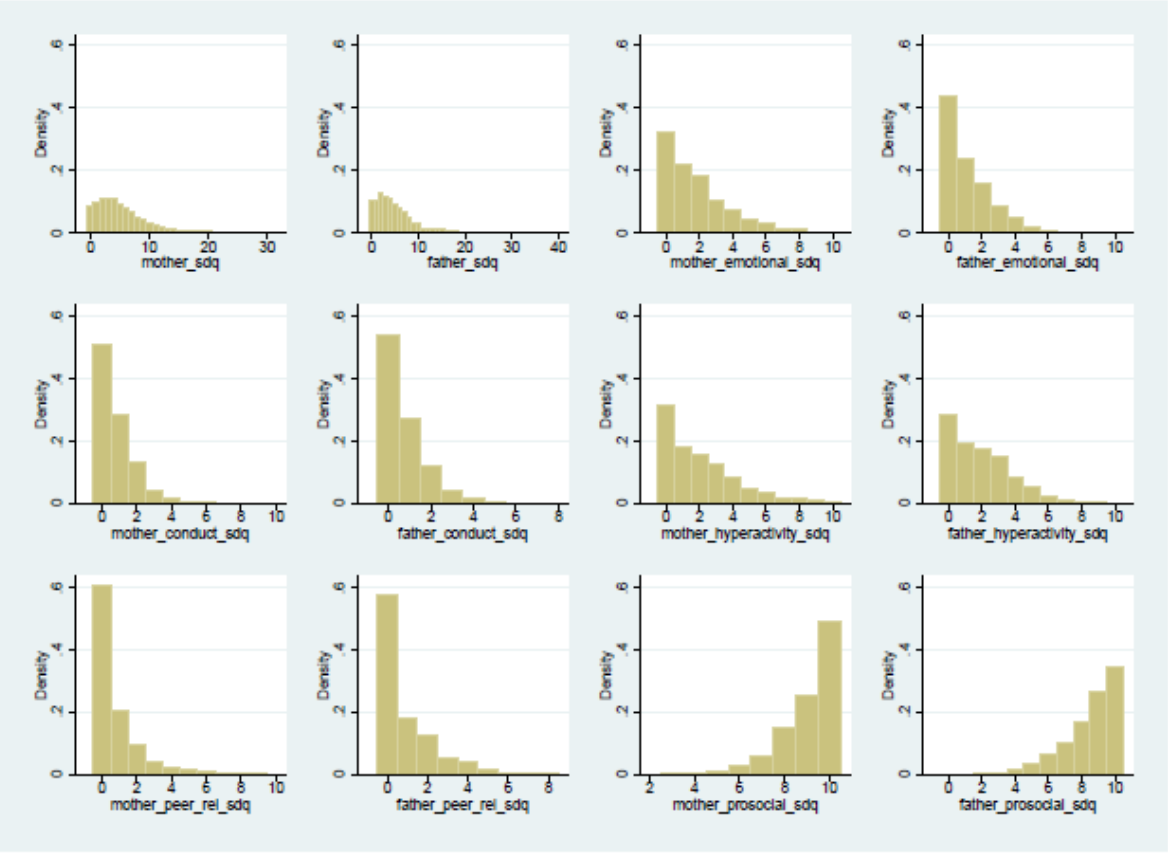

Figure 2: Distributions of subjective measures of academic performance

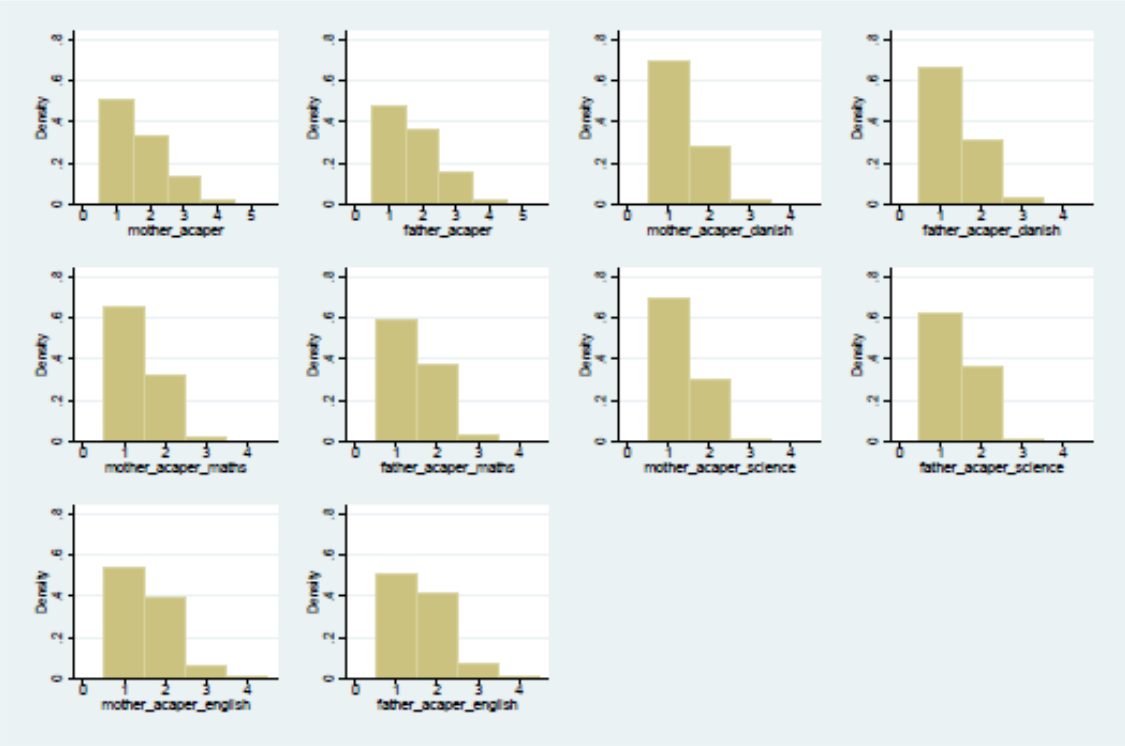

Table 1: Descriptive statistics

	Selected sample				Sample including disabled kids and non-intact households			
	Girls		Boys		Girls		Boys	
	Mean	**sd**	**Mean**	**sd**	**Mean**	**sd**	**Mean**	**sd**
Outcomes								
Sdq_diff (mother-father)	0.633	3.558	0.630	3.754	0.576	3.754	0.515	3.957
Sdq_diff (mother-father), absolute value	2.685	2.417	2.742	2.639	2.718	2.468	2.773	2.656
Acaper_diff (mother-father)	-0.029	0.675	-0.057	0.659	-0.027	0.684	-0.062	0.680
Acaper_diff (mother-father), absolute value	0.413	0.534	0.388	0.536	0.412	0.535	0.394	0.545
Parental psychopatology								
Mother symptoms	0.185	0.586	0.184	0.596	0.196	0.603	0.205	0.631
Postpartum depression	0.027	0.163	0.033	0.177	0.029	0.169	0.037	0.188
Father symptoms	0.067	0.352	0.056	0.313	0.070	0.362	0.062	0.335
Social ties								
Mother close relationship with the child	0.704	0.457	0.693	0.461	0.700	0.459	0.688	0.464
Mother spending quality time with the child	0.895	0.306	0.852	0.355	0.879	0.327	0.824	0.381
Mother work experience (2006)	14.014	7.503	13.894	7.851	13.178	8.084	13.289	7.849
Father close relationship with the child	0.474	0.500	0.478	0.500	0.438	0.496	0.452	0.498
Father spending quality time with the child	0.545	0.498	0.543	0.498	0.495	0.500	0.488	0.500
Father work experience (2006)	17.842	7.938	17.936	7.763	17.256	8.163	17.054	8.300
Father breadwinner	0.548	0.498	0.580	0.494	0.563	0.496	0.531	0.499
Municipality provided program at age 3	0.852	0.355	0.919	0.273	0.849	0.359	0.925	0.264
Hours in non parental care	30.485	11.070	31.018	10.844	30.802	11.018	31.230	10.681
Parental socioeconomic background								
Mother secondary education	0.413	0.493	0.416	0.493	0.412	0.492	0.403	0.491
Mother short tertiary education	0.288	0.453	0.286	0.452	0.279	0.449	0.274	0.446
Mother medium or long tertiary education	0.083	0.277	0.094	0.292	0.084	0.278	0.088	0.283
Father secondary education	0.443	0.497	0.475	0.500	0.414	0.493	0.450	0.498
Father short tertiary education	0.204	0.403	0.187	0.390	0.191	0.394	0.172	0.377
Father medium or long tertiary education	0.121	0.326	0.129	0.336	0.111	0.314	0.115	0.319
Parents with different education	0.551	0.498	0.542	0.498	0.547	0.498	0.545	0.498
Household disposable income (average 2000-2006)	380840.9	166079.2	379409.5	146995.9	356279.2	133484.4	353758.6	135854.7
Other controls								
Number of older siblings	1.129	1.321	1.118	1.311	1.114	1.338	1.044	1.305
Number of siblings	2.258	0.767	2.291	0.770			2.291	0.770
Parents argue frequently (mother perception)	0.096	0.295	0.085	0.280	0.092	0.289	0.084	0.277
Parents argue frequently (father perception)	0.105	0.306	0.111	0.314	0.103	0.304	0.108	0.311
N	1175		1323		1450		1671	

Table 2: Correlations between mother and father SDQ scores

		SDQ		Emotion		Conduct		Hyperac		Peer		Prosoc	
		Mother	*Father*	*Mother*	*Father*	*Mother*	*Father*	*Mother*	*Father*	*Mother*	*Father*	*Mother*	*Father*
SDQ	*Mother*	1.0000											
	Father	0.6584	1.0000										
		0.0000											
Emotion	*Mother*	0.6982	0.4042	1.0000									
		0.0000	0.0000										
	Father	0.4482	0.6698	0.5362	1.0000								
		0.0000	0.0000	0.0000									
Conduct	*Mother*	0.6728	0.4313	0.2789	0.1820	1.0000							
		0.0000	0.0000	0.0000	0.0000								
	Father	0.4597	0.7128	0.2018	0.3242	0.5219	1.0000						
		0.0000	0.0000	0.0000	0.0000	0.0000							
Hyperac	*Mother*	0.8043	0.5432	0.3010	0.2384	0.5003	0.3851	1.0000					
		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						
	Father	0.5817	0.8074	0.2325	0.3300	0.3870	0.5301	0.6664	1.0000				
		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001					
Peer	*Mother*	0.6819	0.4800	0.3992	0.3031	0.3369	0.2596	0.3376	0.2705	1.0000			
		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
	Father	0.4547	0.6741	0.2640	0.3528	0.2397	0.3652	0.2361	0.3262	0.6276	1.0000		
		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			
Prosoc	*Mother*	-0.3004	-0.1647	-0.1159	-0.0388	-0.2861	-0.1684	-0.247	-0.162	-0.25	-0.141	1.0000	
		0.0000	0.0000	0.0000	0.1316	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
	Father	-0.3108	-0.3837	-0.1535	-0.1518	-0.2894	-0.3854	-0.261	-0.373	-0.199	-0.233	0.3777	
		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000

Table 3: Correlations between mother and father assessments of academic performance

		General		Danish		Maths		Science		English	
		Mother	*Father*	*Mother*	*Father*	*Mother*	*Father*	*Mother*	*Father*	*Mother*	*Father*
General	*Mother*	1.0000									
	Father	0.6398	1.0000								
		0.0000									
Danish	*Mother*	0.6372	0.5476	1.0000							
		0.0000	0.0000								
	Father	0.5572	0.6571	0.6060	1.0000						
		0.0000	0.0000	0.0000							
Maths	*Mother*	0.4560	0.3961	0.3641	0.2380	1.0000					
		0.0000	0.0000	0.0000	0.0000						
	Father	0.4261	0.5312	0.2696	0.4085	0.5666	1.0000				
		0.0000	0.0000	0.0000	0.0000	0.0000					
Science	*Mother*	0.2806	0.1905	0.3076	0.1749	0.3679	0.2216	1.0000			
		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000				
	Father	0.3366	0.4155	0.2599	0.4408	0.2998	0.5300	0.2791	1.0000		
		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			
English	*Mother*	0.5487	0.4695	0.5911	0.4772	0.3257	0.2650	0.3273	0.2735	1.0000	
		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		
	Father	0.4927	0.5658	0.4774	0.6303	0.2331	0.3838	0.1881	0.4384	0.6118	1.0000
		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	

Table 4: Discrepancies in ratings of child behavior, main results

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	OLS	OLS	OLS	OLS	OLS	Q25	Q50	Q75
Parental psychopatology								
Mother symptoms	0.431**	0.363**	0.356**	0.355**	0.355**	0.0300	0.270**	0.400**
	(0.149)	(0.143)	(0.144)	(0.144)	(0.144)	(0.156)	(0.135)	(0.143)
Postpartum depression	0.202	0.115	0.118	0.107	0.118	-0.522	0.411	0.471
	(0.506)	(0.513)	(0.517)	(0.515)	(0.517)	(0.526)	(0.453)	(0.492)
Father symptoms	-0.151	-0.159	-0.154	-0.153	-0.157	-0.409*	-0.267	-0.243
	(0.252)	(0.256)	(0.261)	(0.261)	(0.260)	(0.251)	(0.226)	(0.253)
Parents argue frequently (mother perception)	0.729**	0.704**	0.705**	0.684**	0.708**	0.148	1.029***	0.829**
	(0.290)	(0.299)	(0.300)	(0.301)	(0.300)	(0.322)	(0.276)	(0.298)
Parents argue frequently (father perception)	-0.771**	-0.827**	-0.850***	-0.852***	-0.852***	-0.854**	-0.860***	-0.687**
	(0.253)	(0.257)	(0.257)	(0.257)	(0.257)	(0.300)	(0.256)	(0.277)
Social ties								
Mother close relationship with the child		-0.383**	-0.376**	-0.178	-0.377**	-0.249	-0.420**	-0.393**
		(0.168)	(0.168)	(0.240)	(0.168)	(0.199)	(0.170)	(0.197)
Mother spending quality time with the child		0.222	0.199	0.196	0.195	0.342	0.146	0.475*
		(0.246)	(0.248)	(0.247)	(0.248)	(0.296)	(0.250)	(0.269)
Mother work experience		-0.008	0.005	0.005	0.005	0.003	0.001	0.018
		(0.013)	(0.013)	(0.013)	(0.013)	(0.015)	(0.012)	(0.013)
Mother close relationship with the child* child is a girl				-0.418				
				(0.333)				
Father close relationship with the child		0.575***	0.561***	0.562**	0.482**	0.631***	0.477**	0.385**
		(0.150)	(0.150)	(0.215)	(0.227)	(0.185)	(0.157)	(0.169)
Father spending quality time with the child		-0.103	0.099	0.096	0.097	0.088	0.232	0.426**
		(0.153)	(0.153)	(0.153)	(0.154)	(0.188)	(0.158)	(0.170)
Father breadwinner		-0.017	-0.004	-0.006	-0.069	-0.099	-0.021	--0.011
		(0.191)	(0.194)	(0.194)	(0.245)	(0.233)	(0.196)	(0.210)
Father work experience		-0.007	-0.004	-0.005	-0.004	-0.005	-0.009	-0.006
		(0.013)	(0.013)	(0.014)	(0.014)	(0.016	(0.013)	(0.013)
Father breadwinner*child is a girl					-0.001			
					(0.300)			
Father close relationship with the child* child is a girl				0.139				
				(0.300)				
Municipality provided program at age 3		0.199	0.256	0.261	0.258	0.629	0.0210	0.147
		(0.331)	(0.333)	(0.332)	(0.333)	(0.449)	(0.380)	(0.389)
Hours in non parental care		0.022**	0.020**	0.020**	0.020**	0.005	0.020**	0.026**
		(0.008)	(0.008)	(0.008)	(0.009)	(0.011)	(0.009)	(0.010)
Parental socioeconomic background								
Mother secondary education			0.148	0.141	0.150	0.0246	0.187	0.249
			(0.214)	(0.214)	(0.214)	(0.255)	(0.216)	(0.236)
Mother short tertiary education			-0.225	-0.226	-0.220	-0.308	-0.179	-0.489*
			(0.218)	(0.218)	(0.218)	(0.277)	(0.235)	(0.254)
Mother medium or long tertiary education			0.472	0.464	0.480	0.295	0.329	-0.015
			(0.339)	(0.339)	(0.341)	(0.410)	(0.354)	(0.382)
Father secondary education			-0.300	-0.304	-0.301	-0.245	-0.144	-0.377*
			(0.206)	(0.206)	(0.206)	(0.245)	(0.206)	(0.223)
Father short tertiary education			-0.0253	-0.0295	-0.0279	-0.0758	0.0417	0.131
			(0.245)	(0.245)	(0.244)	(0.295)	(0.252)	(0.271)
Father medium or long tertiary education			0.083	0.081	0.081	0.467	0.359	-0.083
			(0.290)	(0.291)	(0.290)	(0.368)	(0.312)	(0.336)
Parents with different education			-0.191	-0.192	-0.193	-0.231	-0.220	-0.233
			(0.160)	(0.160)	(0.160)	(0.195)	(0.164)	(0.178)
Log of household disposable income			-0.297	-0.296	-0.299	-0.430	-0.191	-0.327
			(0.298)	(0.299)	(0.298)	(0.345)	(0.309)	(0.367)
Other controls								
Child is a girl	-0.007	-0.009	-0.010	0.283	-0.009	0.067	-0.205	-0.065
	(0.147)	(0.149)	(0.148)	(0.311)	(0.149)	(0.183)	(0.154)	(0.166)
Number of older siblings	0.013	0.052	0.065	0.065	0.064	0.160**	0.068	0.021
	(0.053)	(0.055)	(0.055)	(0.055)	(0.055)	(0.071)	(0.060)	(0.063)
N	2382	2382	2382	2382	2382	2382	2382	2382
R-sq	0.018	0.031	0.037	0.037	0.037	0.027	0.028	0.028

Notes: The dependent variable is the difference between the mother's and the father's ratings. Results in columns 1, 2, 3, 4 and 5 are estimates from OLS, while those in columns 6, 7 and 8 are from quantile regressions. In columns 6, 7 and 8 standard errors are bootstrapped (500 replications). All regressions include region dummies. Significance levels: ***1%, **5%, *10%.

Table 5: Discrepancies in ratings of child behavior, SDQ item-specific scores

	(1)	(2)	(3)	(4)	(5)
	SDQ_EMO	SDQ_CON	SDQ_HYPER	SDQ_PEER	SDQ_PROS
Parental psychopatology					
Mother symptoms	0.305***	0.041***	0.012	0.057***	0.093*
	(0.070)	(0.023)	(0.064)	(0.017)	(0.049)
Postpartum depression	0.166	0.009	-0.063	-0.063	-0.003
	(0.230)	(0.126)	(0.266)	(0.156)	(0.170)
Father symptoms	0.073	-0.148	0.054	-0.129	0.103
	(0.110)	(0.085)	(0.127)	(0.086)	(0.082)
Parents argue frequently (mother perception)	0.155*	0.112**	0.394**	0.061	-0.253**
	(0.076)	(0.058)	(0.134)	(0.102)	(0.113)
Parents argue frequently (father perception)	-0.194*	-0.161**	-0.324**	-0.176**	0.238**
	(0.117)	(0.081)	(0.119)	(0.088)	(0.109)
Social ties					
Mother close relationship with the child	-0.033**	-0.161**	-0.170**	-0.0230	0.121**
	(0.014)	(0.049)	(0.078)	(0.058)	(0.059)
Mother spending quality time with the child	-0.018	0.027	0.096	0.109	-0.170*
	(0.118)	(0.071)	(0.117)	(0.086)	(0.104)
Mother work experience	0.007	0.001	0.002	0.002	-0.001
	(0.006)	(0.004)	(0.005)	(0.004)	(0.005)
Father close relationship with the child	0.054***	0.158***	0.242***	0.105**	-0.519***
	(0.020)	(0.043)	(0.071)	(0.051)	(0.061)
Father spending quality time with the child	0.045	0.025	0.017	0.002	-0.121*
	(0.071)	(0.044)	(0.072)	(0.052)	(0.062)
Father breadwinner	-0.001	-0.013	-0.052	-0.044	0.055
	(0.087)	(0.055)	(0.090)	(0.065)	(0.079)
Father work experience	-0.004	-0.004	-0.001	-0.003	0.005
	(0.005)	(0.003)	(0.006)	(0.004)	(0.005)
Municipality provided program at age 3	0.046	0.004	0.137	0.153	-0.262
	(0.167)	(0.097)	(0.166)	(0.129)	(0.155)
Hours in non parental care	0.006***	0.002	0.010**	0.001	0.007*
	(0.002)	(0.002)	(0.004)	(0.003)	(0.004)
Parental socioeconomic background					
Mother secondary education	0.097	0.016	0.005	0.034	0.108
	(0.097)	(0.062)	(0.104)	(0.073)	(0.084)
Mother short tertiary education	-0.077	0.011	-0.177*	0.018	0.136
	(0.104)	(0.064)	(0.107)	(0.074)	(0.090)
Mother medium or long tertiary education	0.213	0.113	-0.065	0.197	-0.211*
	(0.156)	(0.0941)	(0.158)	(0.124)	(0.127)
Father secondary education	-0.072	-0.013	-0.121	-0.097	0.115
	(0.092)	(0.062)	(0.099)	(0.070)	(0.082)
Father short tertiary education	0.027	0.059	0.011	0.003	-0.116
	(0.114)	(0.068)	(0.119)	(0.084)	(0.101)
Father medium or long tertiary education	-0.022	0.001	-0.001	0.086	-0.195*
	(0.128)	(0.085)	(0.135)	(0.102)	(0.118)
Parents with different education	0.002	-0.025	-0.159**	-0.018	0.056
	(0.072)	(0.046)	(0.076)	(0.055)	(0.066)
Log of household disposable income	-0.139	0.002	-0.191	0.058	0.084
	(0.137)	(0.0908)	(0.144)	(0.104)	(0.111)
Other controls					
Child is a girl	0.094	0.118**	-0.150**	-0.067	-0.045
	(0.068)	(0.042)	(0.071)	(0.051)	(0.061)
Number of older siblings	-0.009	-0.004	0.050*	0.027	0.005
	(0.026)	(0.016)	(0.027)	(0.020)	(0.024)
N	2389	2390	2390	2388	2408
R-sq	0.027	0.026	0.031	0.022	0.061

Notes: The dependent variable is the difference between the mother's and the father's ratings. All regressions include region dummies. Significance levels: ***1%, **5%,*10%.

Table 6: Discrepancies in ratings of child academic performance, main results

	(1)	(2)	(3)	(4)	(5)
	ACAPER_MF	ACAPER_MF	ACAPER_MF	ACAPER_MF	ACAPER_MF
Parental psychopatology					
Mother symptoms	-0.146*	-0.143*	0.162**	0.164**	0.162**
	(0.077)	(0.077)	(0.078)	(0.078)	(0.078)
Postpartum depression	-0.020	-0.023	-0.022	-0.022	-0.022
	(0.023)	(0.024)	(0.024)	(0.024)	(0.024)
Father symptoms	0.026	0.034	0.031	0.031	0.031
	(0.055)	(0.055)	(0.055)	(0.054)	(0.055)
Parents argue frequently (mother perception)	0.048	0.053	0.052	0.048	0.053
	(0.045)	(0.047)	(0.047)	(0.047)	(0.048)
Parents argue frequently (father perception)	-0.064	-0.045	-0.046	-0.046	-0.046
	(0.045)	(0.046)	(0.046)	(0.046)	(0.046)
Social ties					
Mother close relationship with the child		-0.075**	-0.072**	-0.034***	-0.072**
		(0.030)	(0.031)	(0.013)	(0.031)
Mother spending quality time with the child		-0.060	-0.040	-0.040	-0.039
		(0.044)	(0.041)	(0.041)	(0.041)
Mother work experience		0.001	0.002	0.002	0.002
		(0.002)	(0.002)	(0.002)	(0.002)
Mother close relationship with the child* child is a girl				-0.081	
				(0.061)	
Father close relationship with the child		0.063**	0.061**	0.073**	0.052**
		(0.027)	(0.028)	(0.029)	(0.020)
Father spending quality time with the child		0.022	0.026	0.026	0.027
		(0.028)	(0.028)	(0.028)	(0.028)
Father breadwinner		-0.024	-0.018	-0.018	-0.024
		(0.033)	(0.034)	(0.033)	(0.043)
Father work experience		-0.001	-0.001	-0.001	-0.001
		(0.002)	(0.002)	(0.002)	(0.002)
Father breadwinner*child is a girl					-0.023
					(0.055)
Father close relationship with the child* child is a girl				0.012	
				(0.055)	
Municipality provided program at age 3		-0.112*	-0.086	-0.084	-0.086
		(0.064)	(0.064)	(0.064)	(0.064)
Hours in non parental care		-0.001	-0.001	-0.001	-0.001
		(0.001)	(0.002)	(0.002)	(0.002)
Parental socioeconomic background					
Mother secondary education			-0.022	-0.024	-0.022
			(0.041)	(0.041)	(0.041)
Mother short tertiary education			-0.042	-0.042	-0.041
			(0.042)	(0.042)	(0.042)
Mother medium or long tertiary education			0.074	0.073	0.075
			(0.058)	(0.058)	(0.058)
Father secondary education			-0.024	-0.025	-0.025
			(0.038)	(0.038)	(0.038)
Father short tertiary education			-0.122**	-0.122**	-0.122**
			(0.0444)	(0.0443)	(0.0444)
Father medium or long tertiary education			-0.031	-0.032	-0.032
			(0.050)	(0.050)	(0.050)
Parents with different education			-0.003	-0.004	-0.004
			(0.030)	(0.030)	(0.030)
Log of household disposable income			0.001	0.001	0.001
			(0.056)	(0.055)	(0.055)
Other controls					
Child is a girl	0.026	0.027	0.029	0.097*	0.029
	(0.027)	(0.027)	(0.027)	(0.057)	(0.027)
Number of older siblings	0.020*	0.017	0.020**	0.020**	0.020**
	(0.011)	(0.011)	(0.010)	(0.010)	(0.010)
N	2466	2394	2388	2388	2388
R-sq	0.008	0.015	0.021	0.022	0.021

Notes: The dependent variable is the difference between the mother's and the father's ratings. All regressions include region dummies. Significance levels: ***1%, **5%, *10%.

Table 7: Discrepancies in ratings of child academic performance, subject-specific assessments

	ACA_PER_DANISH	ACA_PER_MATHS	ACA_PER_SCIENCE	ACA_PER_ENGLISH
Parental psychopatology				
Mother symptoms	0.015	0.193**	0.086**	0.006
	(0.098)	(0.090)	(0.032)	(0.018)
Postpartum depression	-0.010	0.006	-0.003	0.011
	(0.031)	(0.028)	(0.017)	(0.017)
Father symptoms	0.013	-0.010	-0.005	-0.010
	(0.057)	(0.049)	(0.033)	(0.029)
Parents argue frequently (mother perception)	0.095	0.036	0.002	0.026
	(0.064)	(0.064)	(0.036)	(0.041)
Parents argue frequently (father perception)	0.015	0.046	-0.030	-0.038
	(0.057)	(0.056)	(0.034)	(0.036)
Social ties				
Mother close relationship with the child	-0.025**	0.047	-0.028**	-0.039**
	(0.011)	(0.036)	(0.011)	(0.018)
Mother spending quality time with the child	0.010	0.032	0.043	0.023
	(0.0584)	(0.0555)	(0.0317)	(0.0344)
Mother work experience	0.005**	0.003	0.007**	0.002
	(0.002)	(0.002)	(0.001)	(0.002)
Father close relationship with the child	0.017	0.078**	0.037**	0.039**
	(0.034)	(0.034)	(0.020)	(0.011)
Father spending quality time with the child	0.022	0.009	0.031	0.030
	(0.034)	(0.034)	(0.020)	(0.021)
Father breadwinner	-0.021	-0.049	-0.013	-0.014
	(0.042)	(0.041)	(0.024)	(0.027)
Father work experience	-0.003	-0.003	-0.004**	-0.002
	(0.002)	(0.002)	(0.001)	(0.002)
Municipality provided program at age 3	-0.033	0.053	-0.062	-0.026
	(0.083)	(0.082)	(0.059)	(0.047)
Hours in non parental care	-0.001	-0.001	0.001	-0.001
	(0.002)	(0.002)	(0.001)	(0.001)
Parental socioeconomic background				
Mother secondary education	0.060	0.076	0.010	-0.016
	(0.048)	(0.048)	(0.029)	(0.031)
Mother short tertiary education	-0.017	0.018	-0.003	-0.032
	(0.051)	(0.051)	(0.030)	(0.031)
Mother medium or long tertiary education	-0.033	-0.025	-0.001	0.003
	(0.047)	(0.047)	(0.027)	(0.029)
Father secondary education	-0.129**	-0.028	-0.007	0.005
	(0.055)	(0.056)	(0.032)	(0.035)
Father short tertiary education	-0.121**	-0.013	-0.014	-0.014
	(0.054)	(0.055)	(0.031)	(0.034)
Father medium or long tertiary education	-0.105*	-0.089	0.041	0.042
	(0.065)	(0.065)	(0.033)	(0.039)
Parents with different education	0.026	0.017	0.006	-0.002
	(0.035)	(0.036)	(0.021)	(0.023)
Log of household disposable income	0.037	0.030	0.030	-0.069*
	(0.072)	(0.074)	(0.042)	(0.039)
Other controls				
Child is a girl	-0.016	-0.058*	0.013	-0.016
	(0.034)	(0.034)	(0.020)	(0.021)
Number of older siblings	0.001	-0.015	-0.006	0.014*
	(0.014)	(0.013)	(0.007)	(0.008)
N	2286	2261	2402	2400
R-sq	0.016	0.021	0.014	0.014

Notes: The dependent variable is the difference between the mother's and the father's ratings. All regressions include region dummies. Significance levels: ***1%, **5%, *10%.

Table 8: Estimated coefficients for the linear factor model of child academic performance

		CHIPS SCORES	
		(S.E.); [BETA COEFF.]	
Aca mother	-0.946***		-0.867***
	(0.165)		(0.167)
	[-0.142]		[-0.132]
Aca father	-1.366***		-1.333***
	(0.165)		(0.171)
	[-0.207]		[-0.203]
Sdq mother		-0.151***	-0.0777**
		(0.0293)	(0.0287)
		[-0.136]	[-0.070]
Sdq father		-0.0610*	0.0374
		(0.0327)	(0.0324)
		[-0.049]	[0.030]
Hypothesis tests			
Aca mother=Aca father: Chi2; p-value	1.99; 0.15		2.39; 0.12
Sdq mother=Sdq father: Chi2; p-value		2.56; 0.11	1.20; 0.27
		LANGUAGE TEST SCORES	
		(S.E.); [BETA COEFF.]	
Aca mother	-1.831***		-1.745***
	(0.148)		(0.150)
	[-0.286]		[-0.275]
Aca father	-1.500***		-1.449***
	(0.148)		(0.154)
	[-0.236]		[-0.229]
Sdq mother		-0.191***	-0.0772**
		(0.0280)	(0.0258)
		[-0.177]	[-0.072]
Sdq father		-0.0816**	0.0343
		(0.0312)	(0.0291)
		[-0.068]	[0.029]
Hypothesis tests			
Aca mother=Aca father: Chi2; p-value	1.53; 0.21		4.44; 0.04
Sdq mother=Sdq father: Chi2; p-value		4.11; 0.04	5.17; 0.02
N	2413	2405	2378
Log-likelihood	-14012.2	-14214.3	-13778.3

Notes: The equations for the CHIPS and language test scores are estimated simultaneously by maximum likelihood. Significance levels: ***1%, **5%, *10%.

Table 9: Estimated coefficients for the linear factor model of child academic performance by relevant sub-samples

	MOTHER WITH SYMP	MOTHER CLOSE REL	FATHER CLOSE REL	BOTH PARENTS CLOSE REL	CHILD NOT IN CHILDCARE AT 3	MOTHER BREADW	GIRLS	BOYS
CHIPS SCORES								
				(S.E.); [BETA COEFF.]				
Aca_mother	-1.077	-1.126***	-0.869***	-1.095***	-1.252**	-0.806**	-0.778***	-0.956***
	(0.583)	(0.200)	(0.236)	(0.270)	(0.451)	(0.257)	(0.218)	(0.249)
	[-0.152]	[-0.174]	[-0.132]	[-0.173]	[-0.203]	[-0.118]	[-0.130]	[-0.137]
Aca_father	-1.282**	-1.232***	-1.419***	-1.368***	-1.210**	-1.733***	-1.048***	-1.549***
	(0.598)	(0.205)	(0.250)	(0.286)	(0.481)	(0.263)	(0.225)	(0.253)
	[-0.182]	[-0.190]	[-0.209]	[-0.207]	[-0.188]	[-0.253]	[-0.175]	[-0.224]
Sdq_mother	-0.0843	-0.0872**	-0.0544	-0.0500	-0.0160	-0.0978**	-0.0795**	-0.0632
	(0.0852)	(0.0346)	(0.0238)	(0.0213)	(0.0879)	(0.0437)	(0.0395)	(0.0309)
	[-0.082]	[-0.077]	[-0.045]	[-0.040]	[-0.014]	[-0.088]	[-0.075]	[-0.056]
Sdq_father	0.0313	0.0482	0.0140	0.0373	-0.0614	0.0859*	0.0559	0.0318
	(0.117)	(0.0388)	(0.0501)	(0.0592)	(0.0936)	(0.0486)	(0.0443)	(0.0464)
	[0.022]	[0.038]	[0.010]	[0.027]	[-0.050]	[0.069]	[0.048]	[0.025]
Hypothesis tests								
Aca_mother=Aca_father: Chi2; p-value	0.04; 0.847	0.09; 0.76	1.64; 0.20	0.30; 0.58	0.00; 0.95	4.04; 0.04	0.48; 0.48	1.74; 0.18
Sdq_mother=Sdq_father: Chi2; p-value	0.40; 0.525	4.28; 0.04	0.68; 0.41	0.81; 0.36	0.08; 0.77	4.93; 0.02	3.32; 0.07	1.47; 0.22
LANGUAGE TEST SCORES								
				(S.E.); [BETA COEFF.]				
Aca_mother	-1.308**	-1.793***	-1.780***	-1.873***	-2.592***	-1.574***	-1.626***	-1.855***
	(0.464)	(0.180)	(0.204)	(0.240)	(0.434)	(0.237)	(0.199)	(0.221)
	[-0.211]	[-0.287]	[-0.289]	[-0.304]	[-0.398]	[-0.233]	[-0.275]	[-0.279]
Aca_father	-2.255***	-1.452***	-1.668***	-1.688***	-1.034**	-2.050***	-1.202***	-1.631***
	(0.476)	(0.184)	(0.215)	(0.254)	(0.462)	(0.242)	(0.206)	(0.225)
	[-0.367]	[-0.232]	[-0.261]	[-0.262]	[-0.152]	[-0.302]	[-0.203]	[-0.247]
Sdq_mother	0.0563	-0.0821**	-0.0409	-0.0687	-0.145*	-0.0698*	-0.102**	-0.0509
	(0.0678)	(0.0311)	(0.0378)	(0.0257)	(0.0845)	(0.0404)	(0.0362)	(0.0163)
	[0.062]	[-0.075]	[-0.036]	[-0.056]	[-0.120]	[-0.063]	[-0.097]	[-0.048]
Sdq_father	-0.00859	0.0482	0.0483	0.0553	0.0956	0.0700	0.0199	0.0527
	(0.0930)	(0.0349)	(0.0432)	(0.0527)	(0.0900)	(0.0449)	(0.0405)	(0.0412)
	[-0.007]	[0.040]	[0.038]	[0.041]	[0.073]	[0.057]	[0.017]	[0.043]
Hypothesis tests								
Aca_mother=Aca_father: Chi2; p-value	1.25; 0.26	1.09; 0.29	0.09; 0.76	0.18; 0.67	3.89; 0.04	1.25; 0.26	1.40; 0.23	0.31; 0.57
Sdq_mother=Sdq_father: Chi2; p-value	0.20; 0.65	4.90; 0.02	1.55; 0.21	2.06; 0.15	2.39; 0.12	3.34; 0.06	3.19; 0.07	0.00; 0.99
N	246	1668	1125	823	265	1053	1130	1248
Log-likelihood	-1463.7	-6112.6	-6421.3	-4640.9	-1516.8	-6112.6	-6349.0	-7380.7

Notes: The equations for the CHIPS and language test scores are estimated simultaneously by maximum likelihood. Significance levels: ***1%, **5%, *10%.