# Marriage or Cohabitation: The Consequences of a Separation on School Performance of Girls and Boys

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Since the end of the 1960s, the institution of family faces important transformations in most western countries. Parents' conjugal trajectories become more complex and by consequence children grow up in more diversified environments than in the past. We observe the increase of the proportion of marriages that end in a divorce or a separation, the increase of single families, and the emergence of new forms of unions. In the past, cohabitation corresponded to a trial period for couples before marriage or separation but it has become, in contemporary Quebec, a family form in which it is socially acceptable to raise children. Cohabitation has become an alternative to marriage but the two types of unions are distinct, and are associated to different durations of union. Because cohabiting unions are more fragile than marriages, children born to unmarried parents are more susceptible than children of married parents to experience the separation of their parents.

Children born at the end of the 20th century live in more diversified family environments than previous generations. Separation of parents and other parental conjugal transitions are more frequent. In this context, it is legitimate to wonder how those transformations influence the development of children in general and more precisely their school performance. In particular, we are interested in the differences that exist between the children born within marriage and cohabitation, as well as the differences between children who have experienced the separation of their parents, and those who have always lived in the same household with both parents since birth. Moreover we are interested in measuring the possible differences between girls and boys

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in this process. Thus, we analyze the school performance of a cohort of 1188 children that were followed in the Quebec Longitudinal Study of Child Development (QLSCD) until the end of the first year in primary school.

## CONTEXT AND RESEARCH QUESTIONS

### Divorce

Research, in the United States in particular, has studied the consequences of disruptive events such as the separation and divorce of biological or adoptive parents on the school performance of children. In longitudinal analyses, divorce of parents is one family transition within the life course of children, among other family transformations. Longitudinal studies showed that children of divorced parents faced more difficulties at various levels (emotional, behavioral, social, academic and health) than children whose parents stayed married (Amato, 2000; Frisco et al., 2007; McLanahan, 2004; Sun and Li, 2002). In cross-sectional studies, the family structure in which the child lives at a specific moment is what matters and children with married parents constitute the reference category. Authors of those studies found that children living with biological or adoptive parents had less emotional, behavioral and school problems than children in blended or single families (Artis, 2007; Brown, 2004, 2010; Carlson and Corcoran, 2001; Manning and Lamb, 2003; Teachman, 2008).

Longitudinal data are sometimes analyzed with cross-sectional approaches, such as studies that measure the effects of fixed factors controlling for unobserved characteristics of the children and the parents, in relation to selection effects (Cherlin et al., 1998). Other authors focus on the period before and after a separation and note the existence of behavioural problems previous to the separation (Strohschein, 2005; Sun and Li, 2001, 2007). Recent work takes into account the multiple transitions to explain the variable effects of a separation on children (Capaldi and Patterson, 1991), more precisely on their behavioral problems (Cavanagh and Huston, 2006; Osborne and McLanahan, 2007), their school performance (Martinez and Forgatch, 2002) or both (Fomby and Cherlin, 2007).

The introduction of socioeconomic variables as controls within models considerably reduces, and sometimes even cancels, the differences between children whose parents

divorced and those in intact families. For instance, Aughinbaugh et al (2005) use multilevel models and find no effect of parents' separation on the behavior and the reading skills of adolescents. Neill et al (2006), using the QLSCD data, the dataset that we use in the present study, find that there is no significant difference in the acquisition of vocabulary at three and a half years between children who experienced changes in their family structures since birth and the others. Socioeconomic differences between disrupted and intact families explain most of the differences in the bivariate analyses; however a net effect of divorce often remains. In those models, the number of control variables is small and they are often limited to the characteristics of the mother.

**Cohabitation**

Past research generally agrees on the relative stability of the links between divorce and child wellbeing across generations (Amato, 2010), but we know little on the relationship between consensual union and child wellbeing. Juby and Marcil-Gratton (2002), on Quebec, estimate the consequences of a birth of unmarried parents on the child wellbeing with demographic indicators, such as the probability that a child experiences a parents' separation. In the United States and in the rest of Canada, research concerns more the effects of consensual unions on indicators of wellbeing such as school performance and social behavior of children. A few studies examine cohabitation in blended family after a divorce (Manning and Lamb, 2003; Raley et al., 2005). Recent research on families composed of biological parents living in cohabiting unions is diverse in terms of the variables that define the wellbeing of children, but also the definition and characterization of families and birth cohorts (Brown, 2004; Hofferth, 2006; Bulanda and Manning, 2008; Wu et al., 2010).

Bulanda and Manning (2008) use retrospective data and study the consequences of the type of union at birth on adolescents' wellbeing. For instance, women born in a consensual union between 1965 and 1977 are two times more susceptible of having sexual relationships before 15 and childbearing as teenager. They are twice less likely to have a secondary level than women born within marriage. Those differences remain significant after controlling for the higher number of family transitions of women born in a cohabiting union. Using cross-sectional data and the family type at the date of the

survey, Brown (2004) finds a negative effect of cohabitation on school involvement of children aged 6 to 11 (born between 1988 and 1993). However, the author finds that cohabitation is not associated to the child emotional and behavioral scale; results for children aged 12 to 17 (born between 1982 and 1987) show the contrary.

The study by Hofferth (2006) is particularly interesting to us since it differentiates cohabitation and marriage. The author uses longitudinal data but the family categories are cross-sectional. Within the sample of children born between 1984 and 1994, results show no difference in the mathematics and behavioral tests, between children in married biological families and in cohabiting families. Using the Canadian National Longitudinal Survey of Children and Youth (NLSCY), Wu et al (2010) study a cohort of children born between 1984 and 1990; within a two-year period, they find no difference in school involvement trajectories between children of biological cohabiting families and children of biological married families. In contrast, children's perception of their school performance significantly decreases.

In general, studies show that children from unmarried biological families experience more difficulties than those of married families. But that may be because data reflect the situations of generations that were socialized at times when cohabitation was a more marginal form of union. The situation in the province of Quebec is different since cohabitation is more frequent than in the rest of Canada, the United-States and most European countries except Scandinavian countries like Island and Sweden (Beaupré et al., 2005; Sardon, 2006). Results of the 2006 Canadian census show that 34,6% of couples lived in a consensual union in Quebec while they were only 13,4% in the rest of Canada (Milan et al., 2007). The growth of this type of union is five times more rapid than for marriages, but it varies across provinces; in between the 2001 and 2006 censuses, the number of couples in consensual unions increased more rapidly in Quebec (20,3%) than in Canada (18,6%) therefore widening even more the gap. The first consequence of the popularity of cohabitation is the increase of birth from unmarried parents. While in 1975, 91% of children were born to married parents the proportion was of 50% in 1995 and 37% today (ISQ, 2011) –this includes single mothers at birth too. To contrast the situations even more, comparable data for the cohorts of the early 1990s show that in Quebec, for generations born in 1991-92, about 53% of children were born within

marriage, 41% within cohabitation and 6% of a single mother (Marcil-Gratton, 1998). In contrast, in the US cohort of children born between 1990 and 1994, 72% were born within marriage, 17% within a consensual union and 11% of single mothers (Bumpass and Lu, 2000).

Research shows that cohabiting unions, with or without children, are unstable in comparison to marriages; children are thus more likely to experience the separation of their parents (Le Bourdais et al., 2000; Marcil-Gratton et al., 2002). In this Canadian province, however, consensual unions last longer and their duration is close to those of marriages (Beaupré et al., 2005). But the mean duration of cohabiting union decreases in the United States (Kennedy and Bumpass, 2011). Independently of their values, individuals who choose to live in cohabiting unions may have socioeconomic characteristics that differ form married ones. Bélanger and Turcotte (1999) show that among women of the older generations, the more educated cohabited more, the contrary seems to occur among the recent generations.

**Interaction between cohabitation and separation**

Consequences of family transformations have been mainly studied for children of married parents (Steele et al., 2009) or of parents in union, regardless of whether they were married or cohabiting (Fomby and Cherlin, 2007). While the risk of a disruption is particularly high among cohabiting unions, only a few authors examine the consequences of cohabiting unions' disruptions (Beaupré et al., 2005; Wu and Balakrishman, 1995). Marcil-Gratton et al (2002) find that 16% of children who were born in a cohabiting union in 1997-98, in Quebec, experienced the separation of their parents before the age of 2, whereas only 3.4% of children of married parents experienced it.

Harknett (2009) introduces, in her study, the disctinction between the separation of married or cohabiting parents and examines the consequences on the physical wellbeing of children, born between 1998 and 2000. First, the author concludes that the health advantage of children born within marriage can be explained by socioeconomic differences between married and cohabiting parents. Second, her transition analyses show that the probability of suffering from asthma is higher for children whose married parents separated while it is not the case for children after the separation of cohabiting parents.

To our knowledge very few studies examine the interaction of marital status and separation. Marcil-Gratton et al (2002) underline that demographic research should care more about those interactions. In particular, it is not because children of cohabiting parents are more likely to experience a separation that their development will be necessarily negatively affected. We know no study that verifies if children who experience the separation of a marriage perform differently at school than those whose cohabiting parents separate.

**Difference according to gender**

The rare studies that consider gender differences in the consequences of a parental separation find that, in general, boys have more difficulties to adapt (Amato, 2010; Krein and Beller 1988). However, this difference is not always significant (Sun and Li, 2001). Here again, research refers mainly to the experience of a divorce, we do not know of a study on the differential effect of a separation in a cohabiting union by gender.

**Individual and parental resources**

The measurement of the numerous factors that can moderate the effects of parental type of union and of the occurrence of a separation, on school performance of children, contributes to better understand the variable impact of divorce (Amato, 2010). Among those factors are the characteristics of the social, economic and family environments such as the level of education and employment status of the father and the mother, the quality of the couple relationship, and individual characteristics such as gender of the child. As regards to parental investment, it depends on the parents' education, skills and knowledge (Sun and Li, 2001); Mandemakers and Kalmijn (2011) show that the effect of divorce is smaller for children whose mothers are educated because they offer a more stable environment. In contrast, the role of the father's education is less clear.

Dooley and Stewart (2004, 2007) use the Canadian National Longitudinal Survey of Children and Youth (NLSCY) and find that the income can be positively associated with children's behavior but the effect is, however, small. Guo and Harris (2000) argue that poverty does not have a direct effect on the cognitive development of children, rather it acts through intermediate factors. Another important aspect is the cognitive stimulation of

the child and it can be evaluated with the number of books, magazines, videos available in the house as well as the frequency of the reading done by a parent, the visits to museum, for instance. Research in the United States showed that poverty and depression of the mother were associated to problems of children emotional and cognitive development (Downey and Coyne, 1990; Kiernan and Mensah, 2009; Petterson and Alison Burke, 2001; Shonkoff and Phillips, 2000). Finally, authors of recent studies showed the importance of parents' ethnic origin in multicultural societies (Harknett and McLanahan, 2004; McLanahan and Garfinkel, 2009).

We have several objectives for the present research. First, we want to examine if the marital status of parents at birth (married or cohabiting) is associated to the school performance at the end of the first year. Because cohabitation is particularly common in Quebec, we hypothesize that the difference between the school performance of children of married and of cohabiting parents can be explained by the socioeconomic differences, such as parents' education. Second, we test whether separation impacts on the school performance of children. We assume that the differences between children of separated and still married parents can be explained by socioeconomic differences but that a separation has a net negative impact. Third, we hypothesize that, in Quebec, there is no difference on the school success of children, between a separation of a married couple and one of a cohabiting couple. Finally, we test if there are differences between girls and boys; we assume that the effect of a separation is more important for boys but that the effect of cohabitation is identical for children of both sexes.

## DATA AND METHOD

The Quebec Longitudinal Study of Child Development (QLSCD) is an ongoing survey that is following a representative sample of a cohort of children born in Quebec in 1997-98. Every year the household composition is registered and every two years, the recent conjugal history of parents is examined. In the sample, out of 1188 children, 536 (45 %) are born from married parents and 652 (55 %) from cohabiting parents. Within the first group, 83 (15 %) experienced the separation of their parents and 209 (32 %) within the latter group. Our sample contains a slightly higher proportion of girls (52 %).

Teachers evaluated the school performance with four questions. The first three were on specific subjects (reading, writing and mathematics) while the last question was on all areas of instruction. The question was the following:

*How would you rate this child's current academic achievement in across all areas of instruction [reading, writing, mathematics]?*
*Circle only one answer*

- *Near the top of the class*
- *Above the middle of the class, but not at the top*
- *In the middle of the class*
- *Below the middle of the class, but above the bottom*
- *Near the bottom of the class*

We use logistic regressions to estimate the probability that a child is near the top of the class, considering the individual characteristics. Teachers did not answer to all four questions because they did not teach the four subjects, thus the sample of children varies a little from one question to the other. Among the 1188 children, 1141 were evaluated in the four subjects, 22 in three subjects and 25 in one and two subjects.

## RESULTS

### Descriptive statistics

The distribution of children of both sexes according to the control variables is presented in Table 1. We note that the children born in a cohabiting union, in comparison to those born from married parents, are less often near the top of the class in reading (30,7 % vs 36,4 %) and across all areas of instruction (24,7 % vs 30 %). The proportion of children whose parents separated after birth is higher among children born of cohabiting parents (33,9 % vs 13,8 %). They are also more often the elder among all siblings and live in a blended family from a former union of one of the biological parents. Children born in a cohabiting union grew up with an adult who started to do the reading at an older age than children of married parents; moreover they experienced a greater number of periods under the level of low income. In addition, their mother is less often an immigrant and both of their parents are on average less educated and had their child at a younger age.

In comparison to children of parents who are still married or cohabiting, the proportion of children who are near the top of the class is smaller among children whose parents separated, and the proportion of children born in a cohabiting union is higher (73,8 % vs 46,8 %). They received a lower cognitive stimulation (i.e. the reading by an adult started later, the number of books at home is smaller and the mother uses less verbal communication). In addition, they lived in more difficult environment (i.e. lower income, lower health, lower family functioning and more frequent mother depression). Both of their parents are on average less educated and had their child at a younger age.

***[Table 1]***

**Multivariate analyses**

Logistic regressions models allow us to analyze how marital status and separation are associated to the probability to be near the top of the class. Tables 2 and 3 present the results of those models separately for both sexes in each of the three subjects and in all areas. Therefore, we can compare the estimates of the models that take into account the interaction between marital status and separation, and those that do not.

In the models with no interaction, the marital status of parents at birth and the separation are independent; they allow us to estimate the net effect of each of the two variables. In the models with interaction, we combine the modalities of each of the two variables and create four categories of family. We can thus compare the children born from married and from cohabiting stable couples, those whose parents married but later separated and those of cohabiting but later separated couples. In total 32 different models were estimated.

In Table 2, 16 models predict the probability of being near the top of the class controlling for marital status and separation. In the version with no interaction of marital status and separation, we find that being a child of a cohabiting couple is not associated to a lower probability of being near the top of the class. It is only in reading, for boys, that a slight negative effect of cohabitation can be observed (hazard ratio of 0.70). The negative effect of separation is stronger: children of separated couples are, in three subjects, up to two times less likely to be near the top of the class in comparison to children of non separated couples.

The models with interaction between marital status and separation moderate those results: for boys, the probabilities that children with cohabiting parents who separated, are near the top of class are significantly lower than the probabilities of children of married parents who stayed together (reference category). In reading, for instance, the first are only 37% as likely as the second to be near the top of the class. The negative impact of separation is not statistically significant among sons of married parents. Among girls, this impact is quite uniform regardless of the marital status, except in mathematics where the results follow the same pattern as for boys. Girls who experienced the separation of their cohabiting parents are disadvantaged in comparison to girls whose parents are still married.

***[Table 2]***

However, as mentioned earlier, the characteristics of the populations under study are unequal. In order to guarantee that the results presented above in Table 2 are not due to compositional differences only, we introduce models with all control variables that describe the demographic characteristics of children, cognitive stimulation, family environment and characteristics of parents (Table 3).

In the model with no interaction (the top section of Table 3), we note that the net effects of marital status and of separation are quite different from their gross effect in Table 2. In reading and writing, girls born to cohabiting parents are about 50% more likely than girls born to married parents to be near the top of the class. This is not true for boys since the hazard ratios of the category “cohabiting” are all below one, even is they are not significant. Another result is that separation, after controlling for all the variables, does not have any more a negative impact. Only one hazard ratio remains significant at the level of 5%: boys of separated couples are two times more likely to be near the top of the class across all areas of instruction, like in the initial model.

In the models with interaction, where the children of married and never separated couples are the group of reference, we find that girls of cohabiting couples who did not separate are slightly more likely to be near the top in writing; the effect is small but significant. Girls of the category “cohabiting, separated” and those in the reference group do not differ in their probability to be near the top of the class. Only those born of

married couples seem to experience the negative effect of the separation, in particular in reading (HR=0.44). In contrast, for boys the pattern in the initial models remains in the complete models: only boys of "cohabiting, separated" parents have significant lower probabilities than those of "married, non separated" parents. The hazard ratios for the category "married, separated" are all below 1.00 but they are non significant (maybe because of the small number).

About the covariant of school performance, we find that the variables that have a significant impact for girls are not always the same for boys, and vice versa. For instance, several variables seem to be more important for boys, such as the effects of a strong verbal communication from the mother, bad health, rank of birth, presence of children from a previous union, a younger mother or father at birth. On the contrary, the age of the child, a younger father at birth or an immigrant mother, more children's books at home or reading done by an adult to the child, are more important for girls.

Strikingly, the number of periods spent with a low income does not have a negative influence for both sexes. This absence of effect does not seem to be related to the construction of the variables since alternative variables were tested and the results were the same. Guo and Harris (2000), however, showed that a lower cognitive stimulation mediates the effect of poverty on children development. In our models, we include the variables of cognitive stimulation, as well as mother's and the father's education, both highly correlated with income and the socioeconomic status. By consequence, this inclusion may have cancelled the direct effect of a low income on school performance. Another surprising result is that for boys, the father's education does not seem to influence the probability to be near the top of the class. This situation may be caused by the strong correlation between the two variables of both parents' education (r=0.55). Therefore, the unique effect of one does not clearly appears in the models. Alternative models with the education of only one parent (not shown) confirmed the importance of education of parents on school performance of children, and a slightly stronger role for girls than for boys.

***[Table 3]***

## CONCLUSION

We find several results. First, while in the United States, consensual union is marginal as a form of union and is often associated with behavioral and school problems, in Quebec consensual union is more often a substitute for marriage. In this Canadian province, its effect on school performance is at best slightly positive (for girls), or totally null (for boys). Second, even when we control for several family characteristics, we find a negative effect of the separation of parents on school performance. However, this effect is not constant across all subjects, between the sexes and marital statuses. Girls seem slightly more affected by the separation of a marriage than of a cohabiting union, but this effect is only significant in reading. As for boys, they seem slightly more affected by the separation of a cohabiting union than of a marriage, but the difference is significant only for the school performance in all areas of instruction. Finally, and this may be the main result of the present study, the effect of family structure and other covariants on the probability to be near the top of the class varies considerably by sex of the child.

Therefore future research should insist more on gender differences to better understand the reasons of the possible differences of school performance between girls and boys. A surprising result is the positive effect of cohabitation on school performance of girls in reading and writing. How can consensual union positively influence school performance of girls? What are the mechanisms in play? Why is this effect null for boys? Could it be that the values of the cohabiting parents –in particular the greater emphasis on equality between the sexes and the stronger economic independence of the partners– translate to a greater attention given to the schooling of girls?

To conclude, we think that the present research showed that we should study the role of family structures and family transitions by taking into account the sociodemographic characteristics of individuals. If the increase of cohabitation in Western societies and in several developing countries is irreversible (Lesthaeghe, 2010), a greater social and legal acknowledgement of other forms of unions than marriage can only be beneficial for children of those families who were marginalized in the past.

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**TABLE 1** Characteristics of children by marital status at birth and occurrence of a separation after birth (in %, except specified)

| Characteristics | Total | Marital status | | | Separation | | |
|---|---|---|---|---|---|---|---|
| | | Married[a] | Cohabiting | | Not separated[b] | Separated | |
| Near the top of class, in | | | | | | | |
| Reading | 33.3 | 36.4 | 30.7 | † | 36.7 | 23.0 | *** |
| Writing | 26.4 | 27.8 | 25.1 | | 28.6 | 19.4 | ** |
| Mathematics | 31.9 | 33.6 | 30.5 | | 34.0 | 25.4 | ** |
| Across all areas | 27.2 | 30.0 | 24.7 | † | 30.0 | 18.4 | *** |
| Cohabiting parents at birth | 53.4 | --- | --- | | 46.8 | 73.8 | *** |
| Separated parents since birth | 24.5 | 13.8 | 33.9 | *** | --- | --- | |
| Boys | 47.7 | 47.1 | 48.1 | | 47.2 | 49.1 | |
| Age of child at 8th passage (in month) | 85.7 | 85.6 | 85.7 | | 85.7 | 85.6 | |
| Elder child | 42.3 | 35.5 | 48.2 | *** | 42.0 | 43.0 | |
| At least one child from a previous union | 14.4 | 7.6 | 20.3 | *** | 10.7 | 25.8 | *** |
| Regular reading before 29 months | 84.1 | 88.1 | 80.7 | ** | 85.4 | 80.1 | † |
| High verbal communication of the mother at at least one passage | 45.5 | 46.0 | 45.1 | | 47.4 | 39.8 | * |
| 40 children's books or more at home | 70.1 | 70.4 | 69.7 | | 73.0 | 60.8 | *** |
| Nb of periods below the threshold of low income | 1.38 | 1.14 | 1.58 | ** | 0.93 | 2.73 | *** |
| Nb of periods with bad health | 0.74 | 0.71 | 0.77 | | 0.66 | 0.99 | ** |
| Low family functioning at at least one passage | 40.8 | 41.0 | 40.6 | | 37.6 | 50.6 | *** |
| High symptoms of mother's depression at 5 months or 1½ years | 33.4 | 30.8 | 35.8 | | 28.2 | 49.4 | *** |
| Type of child care at 3½ years | | | | | | | |
| No care | 29.1 | 28.4 | 29.8 | | 30.7 | 24.3 | † |
| At home | 6.1 | 8.3 | 4.2 | * | 6.0 | 6.6 | |
| In a family day-care | 33.7 | 30.4 | 36.7 | * | 33.5 | 34.3 | |
| In a day-care center | 31.1 | 33.0 | 29.3 | | 29.9 | 34.8 | |
| Age of the mother at child birth | | | | | | | |
| Young - 22 years and less | 9.2 | 2.8 | 15.1 | *** | 6.0 | 18.9 | *** |
| Medium - 23 to 36 years | 82.6 | 86.1 | 79.5 | * | 84.4 | 77.3 | * |
| Old – more than 36 years | 8.1 | 11.1 | 5.4 | *** | 9.5 | 3.9 | *** |
| Age of father at child birth | | | | | | | |
| Young - 25 years and less | 10.4 | 3.2 | 17.0 | *** | 7.6 | 18.9 | *** |
| Mean - 25 to 39 years | 80.3 | 86.0 | 75.1 | *** | 83.5 | 70.9 | *** |
| Old - more than 39 years | 9.2 | 10.7 | 7.8 | | 8.9 | 10.2 | |
| Mother's education (years) | 13.2 | 13.8 | 12.7 | *** | 13.5 | 12.5 | *** |
| Father's education (years) | 13.1 | 13.8 | 12.4 | *** | 13.3 | 12.2 | *** |
| Immigrant mother | 13.7 | 24.1 | 4.6 | *** | 15.6 | 7.9 | ** |
| N | 1188 | 536 | 652 | | 896 | 292 | |
| Proportion | 100 | 45 | 55 | | 75 | 25 | |

† *p < 0.1 ;* * *p < 0.05 ;* ** *p < 0.01 ;* *** *p < 0.001*

[a] *Children born to married parents form the reference category for the left part of the table.*
[b] *Children whose parents never separated form the reference category for the right section of the table.*
*Source : Institut de la statistique du Québec,* QLSCD.

**TABLE 2** Hazard ratios to be near the top of the class in three subjects and across all areas of instruction, by marital status of parents at birth, the occurrence of a separation and sex.

| | GIRLS | | | | BOYS | | | |
|---|---|---|---|---|---|---|---|---|
| | **Reading** | **Writing** | **Math.** | **All areas** | **Reading** | **Writing** | **Math.** | **All areas** |
| **Models WITHOUT interaction** | | | | | | | | |
| *[Married]* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* |
| Cohabiting | 1.07 | 1.07 | 0.98 | 0.87 | 0.70 † | 0.76 | 0.88 | 0.88 |
| *[Not separated]* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* |
| Separated | 0.54 ** | 0.61 * | 0.69 | 0.60 * | 0.51 * | 0.68 | 0.62 † | 0.48 * |
| **Models WITH interaction** | | | | | | | | |
| *[Married, not separated]* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* |
| Cohabiting, not separated | 1.03 | 1.11 | 1.11 | 0.84 | 0.68 | 0.81 | 0.90 | 0.92 |
| Married, separated | 0.46 * | 0.70 | 1.02 | 0.53 † | 0.47 | 0.83 | 0.67 | 0.57 |
| Cohabiting, separated | 0.60 * | 0.64 | 0.61 † | 0.54 * | 0.37 ** | 0.49 † | 0.55 * | 0.41 * |
| N | 618 | 613 | 614 | 623 | 555 | 555 | 546 | 553 |

*† p < 0.1 ; * p < 0.05 ; ** p < 0.01 ; *** p < 0.001*

*Source : Institut de la statistique du Québec,* QLSCD.

**TABLE 3** Hazard ratios to be near the top of the class in three subjects and across all areas of instruction, by marital status of parents at birth, the occurrence of a separation and sex, controlling for family characteristics.

| | GIRLS | | | | BOYS | | | |
|---|---|---|---|---|---|---|---|---|
| | **Reading** | **Writing** | **Math.** | **All areas** | **Reading** | **Writing** | **Math.** | **All areas** |
| **Models WITHOUT interaction** [a] | | | | | | | | |
| *[Married]* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* |
| Cohabiting | 1.51 * | 1.55 * | 1.35 | 1.10 | 0.70 | 0.72 | 0.95 | 0.88 |
| *[Not separated]* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* |
| Separated | 0.66 † | 0.74 | 0.82 | 0.74 | 0.66 | 0.85 | 0.70 | 0.47 * |
| **Models WITH interaction** | | | | | | | | |
| *[Married, not separated]* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* |
| Cohabiting, not separated | 1.36 | 1.54 † | 1.42 | 1.00 | 0.66 | 0.74 | 0.94 | 0.90 |
| Married, separated | 0.44 * | 0.71 | 0.97 | 0.54 | 0.52 | 0.93 | 0.69 | 0.52 |
| Cohabiting, separated | 1.11 | 1.17 | 1.05 | 0.90 | 0.50 † | 0.60 | 0.67 | 0.40 * |
| Age of child at 8th passage (in month) | 1.10 ** | 1.04 | 1.08 * | 1.09 * | 1.00 | 1.07 † | 1.05 | 1.07 |
| *[Other ranks of birth]* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* |
| Elder child | 1.08 | 1.24 | 1.05 | 1.08 | 2.04 ** | 2.71 *** | 1.32 | 2.00 ** |
| *[No child from a previous union]* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* |
| At least one child from a previous union | 1.38 | 1.47 | 1.55 | 1.59 | 0.34 * | 0.46 † | 0.51 * | 0.53 |
| *[Regular reading after 29 months or never]* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* |
| Regular reading before 29 months | 1.15 | 2.04 * | 1.69 † | 1.31 | 1.00 | 1.65 | 1.55 | 1.42 |
| *[Low or moderate communication of the mother]* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* |
| High verbal communication of the mother | 1.22 | 0.98 | 1.51 † | 1.00 | 2.02 ** | 1.90 * | 1.55 † | 2.26 ** |
| *[Less than 40 books for children at home]* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* |
| 40 children's books or more at home | 1.69 * | 1.35 | 1.28 | 1.67 * | 0.98 | 0.70 | 0.79 | 0.72 |
| Nb of periods below the threshold of low income | 0.94 | 0.95 | 0.99 | 0.92 | 1.02 | 1.08 | 1.06 | 1.13 † |
| Nb of periods with bad health | 0.94 | 0.88 | 1.02 | 0.95 | 0.78 ** | 0.84 † | 0.85 * | 0.84 † |

**TABLE 3 (Continued)** Hazard ratios to be near the top of the class in three subjects and across all areas of instruction, by marital status of parents at birth, the occurrence of a separation and sex, controlling for family characteristics.

| | GIRLS | | | | BOYS | | | |
|---|---|---|---|---|---|---|---|---|
| | **Reading** | **Writing** | **Math.** | **All areas** | **Reading** | **Writing** | **Math.** | **All areas** |
| *[Good or moderate family functioning]* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* |
| Low family functioning | 0.82 | 0.87 | 0.89 | 0.82 | 1.50 | 1.48 | 1.46 | 1.85 * |
| *[Low or moderate symptoms of depression]* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* |
| High symptoms of mother's depression | 1.11 | 1.02 | 1.04 | 1.15 | 1.18 | 0.88 | 1.44 | 1.14 |
| *[No child care]* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* |
| At home | 1.69 | 1.80 | 2.12 † | 1.70 | 1.33 | 0.83 | 2.61 † | 0.76 |
| In a family day-care | 1.06 | 0.99 | 0.84 | 0.99 | 1.41 | 1.41 | 1.45 | 1.35 |
| In a day-care center | 0.95 | 0.85 | 1.26 | 1.00 | 0.74 | 0.67 | 0.87 | 0.87 |
| Young mother at birth (22 years and less) | 1.51 | 1.25 | 0.72 | 1.08 | 0.72 | 0.70 | 0.90 | 0.61 |
| *[Medium age of mother - 23 to 36* years*)]* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* |
| Old mother at birth (above 36 years) | 0.98 | 1.06 | 0.96 | 0.97 | 2.60 * | 1.92 | 1.52 | 2.54 * |
| Young father at birth (25 years and less) | 0.47 † | 0.31 * | 0.69 | 0.71 | 0.91 | 1.10 | 0.82 | 1.11 |
| *[Medium age of father at birth (25 to 39 years)]* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* |
| Old father at birth (above 39 years) | 1.01 | 1.34 | 1.06 | 1.26 | 0.29 * | 0.55 | 0.85 | 0.34 * |
| Mother's education (years) | 1.10 † | 1.15 ** | 1.10 † | 1.12 * | 1.05 | 1.11 † | 1.10 † | 1.09 |
| Father's education (years) | 1.13 ** | 1.06 | 1.14 ** | 1.09 * | 1.07 | 1.06 | 1.08 | 1.05 |
| *[Non immigrant mother]* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* | *1.00* |
| Immigrant mother | 0.75 | 0.54 | 0.38 * | 0.47 † | 0.82 | 0.78 | 0.54 | 0.56 |
| Chi2 test of likelihood ratio for the joint influence of mother's and father's education (2 ddl) | 23.80 *** | 18.17 *** | 16.52 *** | 15.72 *** | 6.97 * | 10.06 ** | 11.78 ** | 10.89 ** |
| N | 618 | 613 | 614 | 623 | 555 | 555 | 546 | 553 |

*† p < 0.1 ; * p < 0.05 ; ** p < 0.01 ; *** p < 0.001*

[a] To simplify. the hazard ratios of the control variables in the models without interaction are not presented since they are almost equal to those in models with interaction.

*Source : Institut de la statistique du Québec,* QLSCD.