

# WHAT IMPACT DOES EDUCATIONAL SERVICE ATTENDANCE HAVE ON CHILD DEVELOPMENT IN KINDERGARTEN BASED ON SOCIOECONOMIC STATUS ?

Results of the Montréal Survey on the Preschool Experiences of Children in Kindergarten (MSPECK, 2012)



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## MSPECK in brief

In 2006, Direction de santé publique de l'Agence de la santé et des services sociaux de Montréal conducted a *Survey of the School Readiness of Montréal Children* attending public five-year-old kindergartens in Montréal's elementary schools. The survey showed that one in three children in kindergarten were vulnerable in at least one domain of development measured with the Early Development Instrument (EDI). When findings were shared with stakeholders in the field, one issue was at the heart of concerns: What is the link between children's preschool experiences and school readiness?

It was in this context that in 2012, when the 2006 survey was reproduced province-wide—*Québec Survey of Child Development in Kindergarten* (QSCDK)—researchers at the public health department and a researcher from UQAM, in collaboration with Institut de la statistique du Québec, launched the *Montréal Survey on the Preschool Experiences of Children in Kindergarten* (MSPECK), a complementary survey of parents of a sample of Montréal children assessed as part of the QSCDK. The MSPECK documented several dimensions of early childhood experiences, including children's health, family environment, quality and safety of home neighbourhood, families' living conditions, and children's preschool educational pathways. Links between children's development in kindergarten and their early childhood experiences were analyzed by coupling data from the QSCDK with those of the MSPECK.

MSPECK is in step with other Canadian initiatives that have developed additional tools to enhance understanding of children assessed with the EDI. The most familiar ones are the *Kindergarten Parent Survey* and the *Early Development Instrument Parent Survey*, used in Ontario and Manitoba respectively. Although these tools differ in content, their goals remain the same: to document the preschool experiences of children assessed with the EDI, and study the determinants of child development.

The results presented in this document were derived from the *Montréal Survey on the Preschool Experiences of Children in Kindergarten* (MSPECK). They build on the portrait presented in issue number 1 on the use of different types of childcare and educational services by Montréal families. By retracing the preschool experiences of children from birth onwards, the portrait highlights the wide range of preschool educational trajectories in Québec. In this number, we strive to answer the question 'What impact does educational service attendance have on child development in kindergarten?' while taking family socioeconomic status into account.

## A brief overview of the scientific literature<sup>1</sup>

There is consensus among national and international researchers as to the critical role of the early childhood period in children's development and subsequent academic success (McCain et al., 2007; McCain et al., 2011; OECD, 2012). Attendance in educational services, specifically during early childhood, appears to be beneficial to children's subsequent development up to the end of adolescence (Vandenbroeck & Lazzari, 2014).

<sup>1</sup> The first two paragraphs of this section are taken from a brief presented by the *Qualité éducative des services de garde et petite enfance* research team to the Public Finance Committee of the National Assembly of Québec. See Bigras et al., 2015.

## A MESSAGE FROM THE DIRECTOR

*For more than 10 years now, Direction de santé publique de l'Agence de la santé et des services sociaux de Montréal has endeavoured to be better informed about the state of health of Montréal children and more cognizant of the social and health inequalities and disparities affecting this population.*

*In 2006, DSP de l'Agence de Montréal carried out the Survey of the School Readiness of Montréal Children and supported broad intersectoral mobilization in the field of early childhood. In 2012, it assembled a profile of the results of the Québec Survey of Child Development in Kindergarten (QSCDK) for the city. In doing so, the DSP was able to measure how the situation of Montréal children had evolved between 2006 and 2012.*

*In addition, in 2012, the DSP de l'Agence de Montréal conducted a complementary survey—the Montréal Survey on the Preschool Experiences of Children in Kindergarten—to document the preschool experiences of Montréal children assessed as part of the QSCDK. The current publication arises out of our first report on Montréal families' use of different types of daycare and educational services. It presents the effects of preschool educational service attendance on the development of children in kindergarten. We hope this document will answer many of the questions raised during the summits on school readiness held in 2006.*

Director of Public Health



Richard Massé, M.D.

Benefits have been found for all children, but have proven far more pronounced among children from disadvantaged backgrounds (Adams & Rohacek, 2002; Burchinal & Cryer, 2003; Burchinal et al., 2011; Burger, 2010; Duncan & Brooks-Gunn, 2000; Shlay et al., 2005). In keeping with early childhood researchers in the fields of education and psychology, Nobel Laureate in Economics James Heckman (2000, 2006, 2008) and sociologist Gøsta Esping-Andersen (2008, 2009) argue that interventions that stimulate cognitive and non-cognitive skills during the early childhood period constitute the most effective public policies for overcoming social inequalities and promoting child development. Such policies represent long-term investments that yield returns later on in children's lives by enabling them to integrate better with the school system and the community.

In recent years, studies have focused more specifically on different components of the childcare experience in order to identify those most likely to influence child development. The most influential component appears to be the quality of the child's personal experience (Bigras et al., 2012; Burchinal et al., 2011), which is generally tied to the practices adopted by the educational staff or teachers as well as to contextual variables such as group size, adult-child ratio, and staff training (Giguère & Desrosiers, 2010). In Québec, there is substantial variation in the quality of different types of child care, with the highest quality care generally being found in Early Childhood Centre (CPE) daycare centres, followed by CPE family daycares (Bigras et al., 2010; Drouin et al., 2004; Giguère & Desrosiers, 2010; Japel et al., 2005). A second component of interest is the cumulative experience, based on the duration and intensity of attendance. Research to date has yet to establish an age at entry or number of hours per week that would be optimal for children's development, partly because these vary considerably depending on the childcare service attended and the developmental domain examined. Studies do however tend to show childcare attendance beginning in the first year of life and continuing until school entry, at a rate of more than 30 or 45 hours per week depending on the study, to be associated with negative consequences especially for affective, social and emotional development (Loeb et al., 2005; NICHD, 2002; Vandell, 2004). On the other hand, childcare attendance initiated after the first year of life and continued at a moderate rate until school entry appears to be beneficial, particularly in terms of language and cognitive development (Fram et al., 2012; NICHD, 2002).

Studies with a particular focus on socioeconomically disadvantaged children have shown the latter to be less likely to attend childcare services on a regular basis during the preschool period (Giguère & Desrosiers, 2010). MSPECK results are consistent with these findings (Guay et al., 2015). Moreover, socioeconomically disadvantaged children who attend high quality childcare programs before school entry arrive better equipped to undertake their school careers than peers who have stayed at home (Duncan & Magnuson, 2013; Loeb et al., 2005). They also derive greater developmental benefit from their experience than their more socioeconomically advantaged peers (Burchinal et al., 2011; Geoffroy et al., 2007), but this also depends on the type of childcare service attended and the child's cumulative experience. Socioeconomically disadvantaged children in Québec are more likely to attend poorer quality childcare services (Bigras et al., 2008; Japel et al., 2005), despite there being no difference in the quality of services provided by CPE daycare centres in disadvantaged neighbourhoods and the quality of those provided by CPE daycare centres in more affluent neighbourhoods (Japel et al., 2005). Few Québec studies have examined the developmental advantages linked to attendance in public four-year-old kindergarten despite this type of kindergarten having been implemented in disadvantaged neighbourhoods as of the early 1970s. The results of the Québec Longitudinal Study of Child Development (QLSCD) show no significant difference in language skills based on attendance or non-attendance of this type of educational service as assessed in five-year-old kindergarten (Desrosiers & Ducharme, 2006). However, more recent results from the QSCDK show that, among children from the most highly disadvantaged backgrounds, proportionally fewer of those having attended four-year-old kindergarten are vulnerable in one or more developmental domains (regardless of whether they attended childcare services or not) than of those not having attended four-year-old kindergarten or any type of childcare service (Institut de la statistique du Québec, 2013).

It should be noted that several of the studies discussed here took place outside Québec, and that the Québec results derived from the QLSCD are based on educational service attendance for the period between 1997 and 2002. Thus, MSPECK sheds new light from a Québec perspective on the effect of different components of educational service attendance on children's development.

## Method

### Study population

MSPECK's target population was children residing on the Island of Montréal and attending five-year-old kindergarten on the Island of Montréal in 2011-2012. The survey frame comprised all children in Montréal whose development had been evaluated in QSCDK, which amounted to 78% of all kindergartners. It should be noted that children with handicaps, social maladjustments and learning disabilities (SHSMLD)<sup>1</sup> were excluded from QSCDK, and were therefore likewise excluded from MSPECK. A probability sample of 1184 children was drawn and stratified by Pampalon's material deprivation index (with over-representation of the lowest quintile), language of instruction (French/English), and school status (private/public).<sup>2</sup>

### Data collection

A structured questionnaire developed by researchers from the Montréal Agency's DSP and UQAM, as well as Institut de la statistique du Québec (Québec Institute of Statistics-ISQ) was used to document children's preschool experiences.<sup>3</sup> Data collection was conducted by the ISQ by telephone with parents between April 25 and July 2, 2012.

### Documentation and definition of variables

#### Educational services

In the context of the present study, only public four-year-old kindergarten and types of childcare services regulated by the ministère de la Famille (CPE, subsidized daycare, non-subsidized daycare, and subsidized family daycare) were considered educational services. They are all obligated to provide educational programs, but non-regulated childcare services (e.g. family daycares not certified by a coordinating office, in-home care, and drop-in daycare centers) are under no such obligation and were therefore excluded. The table on page 5 provides brief definitions of the types of educational services included in our analyses. It should be pointed out that the MSPECK documented educational service attendance only

<sup>1</sup> Pupils identified as SHSMLD in either the administrative files of the ministère de l'Éducation, du Loisir et du Sport or based on information obtained from the school.

<sup>2</sup> Details of the sampling strategy may be found in the ISQ's methodological report, pp. 7-10 (Thibodeau & Gingras, 2013).

<sup>3</sup> The questionnaire is available on the websites of the Direction régionale de santé publique, CIUSSS du Centre-Sud-de-l'île-de-Montréal ([http://www.dsp.santemontreal.qc.ca/dossiers\\_thematiques/tout\\_petits\\_familles/thematique/enquete\\_montrealaise\\_sur\\_lexperience\\_prescolaire\\_des\\_enfants\\_a\\_la\\_maternelle\\_emep/documentation.html](http://www.dsp.santemontreal.qc.ca/dossiers_thematiques/tout_petits_familles/thematique/enquete_montrealaise_sur_lexperience_prescolaire_des_enfants_a_la_maternelle_emep/documentation.html)).

in the province of Québec. As a result, any educational services that children born outside of Québec may have attended prior to arrival in the province were not taken into account.

### *Preschool educational service experience*

The first question parents were asked verified whether the target child had been looked after on a regular basis during early childhood by someone other than the child's mother, father, stepmother or stepfather. Regular care could be full-time or part-time, and take place during the day, evening, night or weekend, inside or outside the home. Attendance in different types of childcare was subsequently recorded for five reference periods: from birth through 11 months, from 12 through 17 months, from 18 through 35 months, from 36 through 47 months, and from 48 months to the beginning of five-year-old kindergarten. A question on the age at which the child began childcare made it possible to begin the collection of information on the use of childcare services at the appropriate reference period. For each of the periods concerned, the parent was asked to indicate the primary type of childcare used and the average number of weekly hours of attendance as long as the child had been in childcare for a minimum of three months. For the period from 48 months to entry into five-year-old kindergarten, attendance in four-year-old kindergarten in a public school was also recorded.

Based on this information, variables of interest were constructed to study the effects of different components of educational service attendance on children's development. These were selected based on the scientific literature presented in the introduction. The following variables were constructed:

- 1) Age at the beginning of educational service attendance. When the age was not available, as in cases in which children began in types of childcare not considered "educational", the age at the beginning of the first period of attendance in an educational service was used (e.g. 18 months for a child who attended an educational service during the 18-to-35-months recording period).
- 2) Longitudinal profile of educational service attendance, based on the principal type of educational service attended during each of the five periods documented. For example, such a profile might consist of attendance in a family daycare during the first two periods, and attendance in a subsidized daycare during the other three periods.
- 3) Duration of educational service attendance, obtained by calculating the sum of the total duration (in months) of the periods during which the child attended educational services, taking into account the exact age at the beginning of attendance when available.

- 4) Average weekly attendance, based on weekly attendance (number of hours per week) for each period during which the child attended an educational service, and weighted according to the length of each of the periods. For example, a weight of 1.5 was assigned to the period from 18 through 35 months, while a weight of 1 was assigned to the period from 36 through 47 months.
- 5) Cumulative attendance, based on the weekly rate (number of hours per week) and duration (number of months) of attendance for each period during which the child attended an educational service. This enabled us to obtain a total number of hours of educational service attendance during early childhood ranging from 364 to 12,402 hours. The number of hours was then converted into an equivalent number of months, ranging from 2.2 to 75.3 months, based on a rate of attendance of 35 hours a week. Finally, cumulative attendance was divided into three categories: low (24 months or fewer), medium (25 to 48 months), and high (more than 48 months).

### *Child development in kindergarten*

By linking MSPECK data with QSCDK data, it became possible to access the different measures of child development in kindergarten obtained using the EDI, an instrument developed by Janus and Offord comprised of 103 questions assessing five domains of child development: physical health and well-being, social competence, emotional maturity, cognitive and language development, and communication skills and general knowledge (Janus et al., 2007). The questionnaire was completed by the teacher based on the latter's knowledge and observations of the child. The metrics of the EDI have been evaluated in several studies, particularly the *Survey of the School Readiness of Montréal Children* conducted in 2006, and the instrument has been shown to possess good reliability and validity coefficients (Janus et al., 2007; Laurin et al., 2012).

The information collected with the EDI permitted children to be given a score from 0 to 10 for each domain of development. Children were considered vulnerable in a domain if they scored at or below the 10th percentile of the distribution for all Québec children in the domain. Two indicators of children's overall development were retained: vulnerability in at least one domain of development, and vulnerability in two or more domains, regardless of the domains. The indicator of vulnerability in two or more domains made it possible to exclude children who were only vulnerable in either the cognitive and language domain or the communication skills and general knowledge domain due to lack of familiarity with the language of instruction. This decision was supported by the results of analyses that focused specifically on immigrant children in the 2006 *Survey of the School Readiness of Montréal Children* (Boucheron et al., 2012).



## Family socioeconomic status

The family low income measure (LIM) was chosen as the measure of family socioeconomic status. The LIM takes into account both family income and the number of people in the home as reported by the parent. The 2011 low income cut-offs before tax for census metropolitan areas of 500,000 inhabitants or more, based on the number of people in the family, were used (Statistics Canada, 2012). In the text, the term *more affluent families* refers to families above the low income cut-off.

## Data analysis

The results are presented using the weighting established by the ISQ. In our analyses, we focused on a sub-group of 1104 children for whom it was possible to determine whether their families fell below the low income cut-off or not, which was a variable of interest in our analyses. Logistic regression was used to measure the impact of the various components of educational service attendance on the probability of a kindergarten being vulnerable in either at least one domain of development or in two or more. A dozen models that employed different constructions and combinations of various components of educational service attendance and were plausible from a theoretical point of view were tested. The Akaike information criterion (AIC) was used to select the model that best explained the data (Burnham & Anderson, 2002). Each of the models incorporated effects differentiated by income and employed the same set of control variables (child age and sex, and maternal education) selected using Greenland's *change-in-estimates* strategy (Maldonado & Greenland, 1993). STATA software version 13 was used for the analyses.

The following ISQ-produced data file was also used in our analysis: Gouvernement du Québec, Institut de la statistique du Québec, Fichier de micro-données masqué contre l'identification involontaire de l'Enquête montréalaise sur l'expérience préscolaire des enfants de maternelle, 2012 [Government of Québec, Québec Institute of Statistics, Masked Microdata File for the Montréal Survey on the Preschool Experiences of Children in Kindergarten, 2012].

### Definition of Educational Services

#### Childcare services regulated by the ministère de la Famille

##### Early childhood centre

An early childhood center (CPE) is a non-profit organization or cooperative that provides subsidized\* places in its childcare centres. It is run by a board of directors comprised of at least seven members, at least two-thirds of whom are parents who are users or future users of CPEs.

##### Daycare

A daycare is generally a for-profit operation. It may or may not offer subsidized\* places. It must have a parents' committee that is consulted on all aspects of the care of the children attending the daycare.

##### Subsidized\* family daycare

A subsidized family daycare is operated in a private residence by an individual certified by a family child care coordinating office [bureau coordonnateur de la garde en milieu familial]. Certified individuals who operate family daycares by themselves may provide educational childcare services for a maximum of six children, including two under the age of 18 months. Operators who are assisted by another adult may provide services to seven to nine children, no more than four of whom may be under the age of 18 months.

#### Part-time four-year-old school-based kindergarten (regulated by the ministère de l'Éducation, du Loisir et du Sport)

Part-time kindergarten, sometimes known as "junior kindergarten", is provided free-of-charge to four-year-old children. It is reserved for children who are handicapped or from disadvantaged neighbourhoods. In Montréal, children spend 11 hours and 45 minutes a week in a class with a kindergarten teacher and 11 hours and 45 minutes in an after school daycare run by an educator.

\* At the time of the survey, the cost of a subsidized place was \$7 per day.

## Characteristics of study subjects

Table 1 presents the characteristics of the children who took part in the study, based on whether or not they came from low-income families (40%).

**Table 1**  
**Characteristics of study subjects (n=1104) as a function of family income (weighted data)**

	KINDERGARTEN CHILDREN	
	Low-income families (n=441)	More affluent families (n=663)
	%	%
<b>FEMALES</b>	49.8	51.3
<b>AVERAGE AGE</b>	5.4 years	5.4 years
<b>BORN IN QUÉBEC</b>	64.7	88.3
<b>SINGLE-PARENT FAMILIES</b>	25.9	9.5
<b>MATERNAL EDUCATION*</b>		
High school incomplete	18.3	2.6
High school diploma	25.0	9.5
College-level diploma	23.9	21.8
University-level diploma	32.8	66.1
<b>LANGUAGES SPOKEN MOST OFTEN AT HOME</b>		
French only	26.4	49.0
English only	11.5	18.6
Other only	36.8	12.9
French and English	3.7	8.5
French or English and other	21.5	11.0
<b>MOTHER'S COUNTRY OR REGION OF BIRTH*</b>		
Canada	24.0	60.1
North Africa	23.6	7.4
East Asia, Southeast Asia or South Asia	14.9	7.4
Europe	4.7	11.5
Caribbean or Bermuda	11.3	3.5
Central or South America	6.3	3.0
Other countries and regions	15.2	7.2

\* For single parent families headed by a father (1.8 %), refers to paternal education and country or region of birth.

Source: *Montréal Survey on the Preschool Experiences of Children in Kindergarten, 2012.*

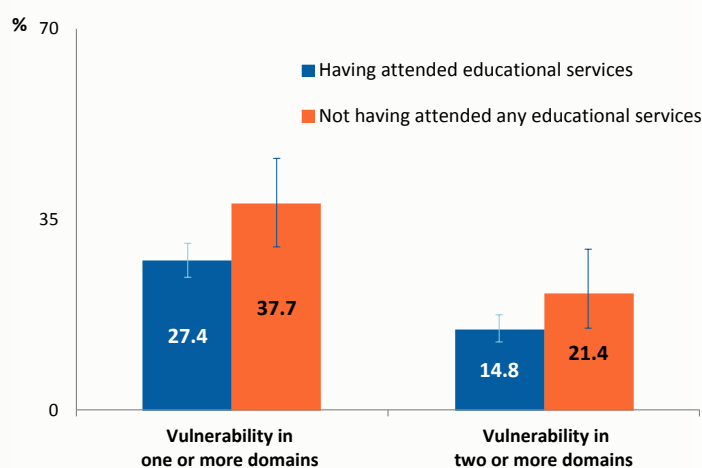
## Results

Table 2 presents descriptive results concerning the preschool experiences of children having attended educational services during early childhood as they pertain to the different components included in the logistic regression models we tested. As these results have been presented in the first publication in this series, they will not be discussed here. It should be remembered that the objective of this number is to examine the effect of different components of educational service attendance on child development as measured in five-year-old kindergarten as a function of family socioeconomic status.

### Vulnerability in one or more domains of development

The proportion of children who were vulnerable in one or more developmental domains was significantly higher among children from low-income families than among their peers from more affluent families (37.3% vs. 24.1%; chi-square test (1df)  $p < 0.001$ ). As shown in the following diagram, the proportion of children having attended educational services during early childhood found to be vulnerable in one or more domains of their development was significantly smaller than that of children not having attended any educational services (27.4% vs. 37.7%; chi-square test (1df),  $p < 0.001$ ).

**Proportion of kindergarten children vulnerable in at least one domain of development or in two or more domains, based on educational service attendance, Montréal, 2011-2012**



Source : *Montréal Survey on the Preschool Experiences of Children in Kindergarten, 2012.*

**Table 2**  
**Preschool experiences of children in kindergarten having attended educational services during early childhood, Montréal, 2011-2012**

	Children from low-income families (n=351)	Children from more affluent families (n=600)	Chi-square test
	%	%	
LONGITUDINAL PROFILE OF EDUCATIONAL SERVICES ATTENDED			
Exclusively CPE	21.3	36.7	p<0.001
Exclusively subsidized daycare	15.0	10.2	
Exclusively another type of daycare	5.4	10.2	
Exclusively subsidized family daycare	9.1	7.0	
Exclusively four-year-old kindergarten	19.7	5.6	
Regulated childcare services* followed by four-year-old kindergarten	17.1	9.0	
Combination of regulated childcare services	12.6	21.3	
AGE AT BEGINNING OF ATTENDANCE (MONTHS)			
< 12 months	10.0	16.1	p<0.001
12–17 months	11.2	25.6	
18–35 months	25.8	32.7	
36–47 months	22.3	15.2	
48 months and older	30.8	10.4	
DURATION OF ATTENDANCE (MONTHS)			
6 or 12 months	33.9	10.8	p<0.001
18 or 24 months	23.4	17.8	
30 or 36 months	2.0	2.9	
42 or 48 months	31.9	57.2	
54 months	8.9	11.3	
AVERAGE WEEKLY ATTENDANCE (HOURS)			
< 16	4.3	3.9	p=0.098
16–30	39.3	31.1	
31–45	50.1	59.0	
> 45	6.3	6.0	
CUMULATIVE ATTENDANCE			
Low	58.6	31.5	p<0.001
Average	32.2	55.7	
High	9.2	12.9	

\* May consist of a CPE, daycare (subsidized or otherwise), a subsidized family daycare, or combination thereof.

Source: *Montréal Survey on the Preschool Experiences of Children in Kindergarten, 2012.*

Table 3 presents the logistic regression model of the combination of educational service attendance components that best predicted vulnerability in one or more domains. The following results emerge from the table:

- Children from low-income families having exclusively attended CPEs during the preschool period were **3.3 times less likely** to be vulnerable in one or more developmental domains than peers not having attended any educational services (CI: 1.14-9.35). However, **no statistically significant effect** was found for children from low-income families with other preschool educational service experiences, including public four-year-old kindergarten, as compared to peers having attended no educational services whatsoever.
- If one compares children from low-income families who had exclusively attended CPEs with children who had different regulated childcare attendance profiles, the former were **2.5 times less likely** to be vulnerable in one or more developmental domains than the latter (CI: 1.21-5.33).
- In children from more affluent families, educational service attendance—regardless of the attendance profile—was observed to have **no statistically significant effect** on vulnerability in one or more domains as compared to no educational service attendance.
- No effect** was found for either **age at the beginning of attendance** or **weekly attendance** on vulnerability in one or more domains, regardless of family socioeconomic status.

## Vulnerability in two or more domains of development

The proportion of children vulnerable in two or more domains of development was significantly higher among children from low-income families than among their peers from more affluent families (23.4% vs. 11.1%; chi-square test (1df)  $p < 0.001$ ). As shown in the diagram on page 6, the proportion of children having attended educational services during early childhood found to be vulnerable in two or more domains of their development was smaller than that of children not having attended any educational services, although the difference was not statistically significant (14.8% vs. 21.4%; chi-square test (1df),  $p = 0.063$ ).

Table 3 presents the logistic regression model of the combination of educational service attendance components that best predicted vulnerability in two or more domains. The following results emerge from the table:

- Children from low-income families having exclusively attended CPEs during the preschool period were **4.3 times less likely** to be vulnerable in two or more developmental domains than peers not having attended any educational services (CI: 1.08-17.54). However, **no statistically significant**

**difference** was observed between children from low-income families with other preschool educational service experiences, including public four-year-old kindergarten, and peers who had attended no educational services whatsoever.

- When children from low-income families having exclusively attended CPEs were compared with children with other regulated childcare attendance profiles, the former were found to be **3.6 times less likely** to be vulnerable in two or more developmental domains than the latter (CI: 1.42-8.87).
- When children from low-income families having exclusively attended CPEs were compared with children having attended regulated childcare services followed by four-year-old kindergarten, the former were found to be **2.7 times less likely** to be vulnerable in two or more developmental domains than the latter (CI: 1.01-7.51).
- In children from more affluent families, educational service attendance, regardless of the attendance profile, was observed to have **no statistically significant effect** on vulnerability in two or more domains when compared to no educational service attendance.
- Children from more affluent families having exclusively attended CPEs were **3.2 times less likely** to be vulnerable in

**Table 3**

**Logistic regression of the effect of components of educational service attendance on the vulnerability of kindergarten children in at least one domain of development or in two or more domains**

	One or more domains		Two or more domains	
	Odds ratio	95% CI	Odds ratio	95% CI
<b>LONGITUDINAL PROFILE OF EDUCATIONAL SERVICES ATTENDED*</b>				
<b>Children from low-income families</b>				
Exclusively CPE	0.31 <sup>a,b</sup>	0.11 – 0.88	0.23 <sup>c,d,e</sup>	0.06 – 0.92
Regulated childcare services other than exclusively CPE	0.78 <sup>b</sup>	0.31 – 1.97	0.82 <sup>d</sup>	0.28 – 2.40
Exclusively four-year-old kindergarten	0.52	0.23 – 1.16	0.47	0.18 – 1.24
Regulated childcare services followed by four-year-old kindergarten	0.67	0.26 – 1.70	0.63 <sup>e</sup>	0.20 – 1.95
No educational service attended	1.00 <sup>a</sup>		1.00 <sup>c</sup>	
<b>Children from more affluent families</b>				
Exclusively CPE	0.66	0.22 – 1.97	0.32 <sup>f</sup>	0.07 – 1.39
Regulated childcare services other than exclusively CPE	0.85	0.29 – 2.51	0.57	0.15 – 2.17
Exclusively four-year-old kindergarten	1.11	0.33 – 3.75	0.75	0.14 – 3.96
Regulated childcare services followed by four-year-old kindergarten	0.74	0.23 – 2.40	1.01 <sup>f</sup>	0.25 – 4.15
No educational service attended	1.00		1.00	
<b>AGE AT BEGINNING (&lt; 12 MONTHS)</b>	1.12	0.68 – 1.85	0.38	0.18 – 0.81
<b>AVERAGE WEEKLY ATTENDANCE (CONTINUOUS)</b>	1.00	0.98 – 1.03	1.02	0.99 – 1.04

Control variables: child age and sex; maternal education.

\* The odds ratios shown for the different educational service profiles should be compared separately for children from low-income families and children from more affluent families.

a,b,c,d,e,f: Identical exponents indicate a significant difference in odds ratios with a threshold of 0.05.

Sources: *Montréal Survey on the Preschool Experiences of Children in Kindergarten, 2012.*

*Québec Survey of Child Development in Kindergarten, 2012.* Institut de la statistique du Québec.



two or more developmental domains than peers having attended regulated childcare services followed by four-year-old kindergarten (CI: 1.14–8.88).

- Regardless of family socioeconomic status, children who began attending an educational service **before the age of 12 months** were **2.7 times less likely** to be vulnerable in two or more developmental domains than those who started later or who never attended an educational service (CI: 1.23–5.71).
- The **average number of hours of attendance per week** in educational services had no observable effect on child development in children from low-income families or more affluent families alike.

## Discussion

These results, which are an extension of those presented in our previous publication on the preschool experiences of Montréal children, provide answers to several of the questions raised by the 2006 publication of the *Survey of the School Readiness of Montréal Children* and the resulting widespread intersectoral mobilization.

What effect do the different components of educational service attendance have on child development, based on family socioeconomic status? The findings reported here concerning the various attendance profiles are similar for both vulnerability in at least one domain of development and vulnerability in two or more domains. It is especially apparent that having exclusively attended CPEs constitutes a protective developmental factor for children from low-income families as compared to not having attended any educational service during the preschool period. However, no protective effect was found for the same children if their preschool trajectories involved other educational services—including public four-year-old kindergarten. When one compares children from low-income families who exclusively attended CPEs with peers who attended other types of regulated childcare, it becomes apparent that the former have a distinct advantage at the time of school entry. In children from more affluent families, attendance or non-attendance in educational services during early childhood does not appear to make a difference at the time of school entry. We conclude that CPEs are the sole type of childcare regulated by the ministère de la Famille that helps mitigate or reduce the effects of social inequalities on the development of children from low-income families. However, it should be remembered that our survey also reveals that of children from low-income families having attended educational services, only one in three have had access to a CPE during early childhood and that as few as one in five have exclusively attended CPEs. Parents who choose types of childcare other than CPE do so primarily because they are unable to obtain a place in the latter (Guay, 2015).

Another result worthy of attention pertains more specifically to vulnerability in two or more domains of development. Beginning to attend any type of educational service before the age of 12 months is advantageous for both children from low-income families and children from more affluent families alike. However, it should be specified that most of the children in our sample who began attending educational services during this period did so between the ages of 6 and 12 months. Moreover, our analyses found no such advantage with regard to vulnerability in one or more developmental domains. As mentioned in the literature review, some studies have shown attendance in an educational service during the first year of life can have detrimental effects on certain components of development (Loeb et al., 2002; NICHD, 2002; Vandell, 2004). Further analysis based on the five domains of development measured with the EDI should allow for a better understanding of this result.

The findings regarding public four-year-old kindergarten are especially interesting as the question of whether children ought to attend kindergarten or a CPE at the age of 4 was a key concern at the school readiness summits in 2008 (Bilodeau et al., 2014). We are unable to provide a definitive answer to this question based on our results, not having compared the development of children who only attended four-year-old kindergarten with that of children who began attending CPEs at the age of 4. However, our results reveal no benefit associated with attendance in four-year-old kindergarten as pertains to vulnerability in at least one domain of development or in two or more domains. It is however important to mention that the provincial survey from which the Montréal sample was derived (QSCDK, 2012) did indeed find such a benefit concerning vulnerability in one or more domains of development (ISQ, 2013). The difference in results may be explained by the different analysis methods employed in the two surveys. It should be remembered that our analytical model included a series of control variables—child age and sex, as well as maternal education—not considered in the provincial survey. Moreover, in our study groups were differentiated by family income, while in the provincial study the neighbourhood deprivation index was used. Given the greater accuracy of our analysis strategy, our study would suggest that attendance in public four-year-old kindergarten prior to school entry may not, in itself, constitute a sufficient means of mitigating the effects of social health inequalities on the development of children from low-income families.

## Study limitations

The study's first limitation is based on the fact that a considerable proportion of the children in the study were born outside the province of Québec and that we only had access to information on their preschool education after their arrival in Québec. It should also be stressed that the study relied on parents' memories in reconstructing the preschool educational trajectory of their children over a five-year period. Obviously, parents may experience more difficulty remembering—or may remember less accurately—events that occurred in the first years of a child's life than those that occurred in the year immediately prior to school entry, and all the more so if they have several children. Furthermore, the size of our sample restricted our ability to study the effect of certain attendance components in educational services serving a small number of children, or to identify small effects. It would thus be advisable to repeat these analyses with larger samples. Finally, the study's observational design made it difficult to distinguish the effect of educational services from the variables associated with them. Although the results were adjusted to take into account a series of identified confounding variables, it is still possible that the effects presented were partially confounded by the effects of other variables.

## Conclusion

Insofar as educational services play a recognized role in mitigating social inequalities, the most interesting finding of our study concerns the beneficial effect of CPE attendance for children from low-income families. That said, children from low-income families who do not attend CPEs are not necessarily destined to have difficulty when they start school. It should be remembered that over 60% of such children are not vulnerable in one or more developmental domains, and the proportion is even higher with respect to the lack of vulnerability in two or more domains (76.6%). It should also be mentioned that whether or not a child attends a CPE prior to school entry does not in itself influence the child's developmental trajectory; numerous other factors also play a role therein. Further examination of our results in relation to the other dimensions assessed in our study, such as family environment, stressful events experienced during childhood, and social support, will be conducted in order to develop a better understanding of the influence of each dimension on child development.

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