

*Rapport  
de recherche*  
PROGRAMME ACTIONS CONCERTÉES

**Junior kindergarten for 4-year-olds:  
the quality of the educational environment and its association with school  
readiness among children from disadvantaged backgrounds**

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Other parts of the report can be accessed at the following site (in French only):  
<http://www.frgsc.gouv.qc.ca/partenariat/nos-resultats-de-recherche/histoire/les-maternelles-4-ans-la-qualite-de-l-environnement-educatif-et-son-apport-a-la-preparation-a-l-ecole-chez-les-enfants-en-milieus-defavorises-stk2rfmm1491403959302>

## **PART A – BACKGROUND TO THE RESEARCH PROJECT**

### **1. Problem**

Education and success at school are crucial to the human and social capital of any nation (Stepp, 2009). Although Canada is an economically advanced nation that makes substantial investments to ensure free and accessible education for all, the level of school success is nonetheless a critical issue here. In the Province of Quebec, for example, in 2013, nearly 20% of youths in the public high-school system left school without a diploma (Ministry of Education, Leisure and Sports, 2014). In disadvantaged areas, that is, areas where there is a high rate of poverty, single parents, and parents with a low level of education, the dropout rate can be close to 40% (Ministry of Education, Higher Education and Research, 2015). The harmful consequences of such a high dropout rate are manifold. On the individual level, dropouts are at far greater risk of living on welfare, finding only precarious employment, and encountering health problems. On the societal level, government must assume the high costs associated with dropouts. An under-qualified workforce translates into lower income tax revenue, increased pressure on social programs, and, by the same token, a drag on economic growth (Caspi et al., 2016; Canadian Council on Learning, 2009).

Yet, the precipitating factors related to dropping out, or an educational trajectory marked by difficulties, are identifiable. The precursors of cognitive and socio-emotional adaptation difficulties, for example, can be observed even before children enter the school system (McCain, Mustard, & McCuaig, 2011; Tremblay et al., 2004).

Starting in the 1960s, Quebec began initiating prevention programs for preschool children at risk of dropping out – programs designed to develop the children’s cognitive and social skills. In line with the Head Start programs introduced to American public schools to reduce the consequences of poverty and prevent dropping out among children from disadvantaged areas (see Currie & Duncan, 1995), Quebec established a public network of part-time senior kindergartens for 5-year-olds, as well as the first part-time junior kindergartens for 4-year-olds, which opened in the 1970s. These junior kindergartens constituted a targeted prevention program set up in certain public schools in disadvantaged areas, the majority of which were located in urban milieus. In the late 1990s, Quebec expanded these initiatives, creating a network of childcare settings one primary goal of which was to provide all children, irrespective of their parents’ socio-economic status, a high-quality preschool milieu to help them prepare for eventual entry into elementary school (Ministry of Family and Childhood, 1997).

Despite the introduction of these preschool programs, the school readiness and school success of children from disadvantaged areas remain a concern (DSP, 2008; ISQ, 2012). Because children from disadvantaged areas are less likely to attend child care or preschool services before starting school (Guay et al., 2015; Japel, 2008; Japel et al., 2005), in 2013 the government proposed new measures to improve these children’s school readiness. Bill 23 foresaw the progressive introduction on a voluntary basis of full-time junior kindergarten in disadvantaged areas in every school commission in Quebec in order both to lower the dropout rate and to fight poverty. During the 2015–2016 school year, there were 88 such preschool classes throughout the province, representing an investment of some \$10

million and serving some 1,200 pupils. In June 2016, the Minister of Education announced the addition of 100 new junior kindergarten classes for the following September and an additional government investment of over \$10 million in this targeted school dropout prevention measure (MEES, 2016).

Several studies have documented the positive effects on behaviour and cognitive development of attending a regulated childcare setting. These benefits are particularly apparent among more vulnerable children (Côté et al., 2007; Geoffroy et al., 2010; Japel, 2008; Laurin et al., 2015). With regard to the outcomes of junior and senior kindergartens, to date only one study has examined their effect on school success. Lapointe et al. (2005) examined the outcomes for some 10,000 pupils from disadvantaged areas and observed that, at the end of their first year of elementary school, children who had gone to preschool at 4 years old (part-time) did not do any better in school than children who had started school only when they were 5 years old. However, given the lack of data on the characteristics and quality of these programs, it is not possible to establish a relationship between the quality of the educational environment and the students' academic success.

The quality of the preschool educational service is a crucial prerequisite for fostering the school readiness of children at risk of dropping out (Japel & Dihman, 2013); however, no study has ever systematically examined the educational quality of the preschool programs currently provided to 4-year-olds in a school milieu in Quebec. The efficacy of the program may thus be seriously called into question. The issue is all the more critical in light of the significant investment of public funds in preschool programs – funds that should be used to promote equal opportunity by improving the school readiness of children from disadvantaged areas.

## **2. Goals and main research questions**

- 1) What were the sociodemographic characteristics of children attending junior kindergarten (full-time and part-time) in 2014-2015?
- 2) What individual and sociodemographic factors are associated with the cognitive and behavioural performance of children when they start junior kindergarten?
- 3) What level of educational quality is provided by junior kindergarten (full-time and part-time)?
- 4) Is the educational quality of junior kindergarten associated with children's progress from the beginning to the end of the school year?
- 5) According to teachers in senior kindergarten, are children from disadvantaged areas who have attended junior kindergarten better prepared for school than children who start school only at 5 years old?
- 6) According to teachers in senior kindergarten, are children who have gone to a full-time junior kindergarten better prepared for school than children who have gone to a part-time junior kindergarten?

## **PART B – POSSIBLE SOLUTIONS BASED ON THE FINDINGS, IMPACTS, AND RAMIFICATIONS OF OUR WORK**

### **1) Who is the audience for our work?**

Our findings are significant for personnel at all levels of the education system: Ministry decision-makers, school administrators, teachers, and support staff.

### **2) What do our conclusions signify for decision-makers, administrators, teachers and support staff?**

With regard to decision-makers, based on our conclusions we recommend

reconsideration before TPMD<sup>1</sup> junior kindergartens are rolled out on a larger scale. Rigorous assessments are needed to ascertain the quality of existing junior kindergartens and their effect on children's development.

With regard to administrators, the setting up of a TPMD junior kindergarten in a school requires that the environment be adapted to the needs of 4-year-olds. The continuity of the personnel and provision of adequate support to teachers, namely, trained full-time support staff, must also be ensured.

With regard to teachers and support staff, they must have access to ongoing training programs based on best practices in order to help them sustain and cultivate a high-quality educational milieu and to deal with the various challenges that arise when working with children from disadvantaged areas.

### **3) What are the immediate and projected social, economic, and political repercussions of our work?**

In line with some of the concerns raised in the preliminary evaluation report on TPMD junior kindergartens (MELS, 2015), we hope that our work will have the following impacts:

Regarding the structure of preschools:

- ☐ The ratios in junior kindergartens should be lower in the schools in disadvantaged areas in order to boost the efficacy of the targeted measure.
- ☐ The financing of junior kindergartens must be sufficient to guarantee the quality of the layout of the educational environment (classrooms and equipment) in terms of variety and appropriateness to child development.

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<sup>1</sup> Translator's Note: TPMD – The meaning in English of this abbreviation is full-time [kindergarten] in disadvantaged areas.

Regarding support from another resource in the classroom:

- ☐ Teachers must have the classroom support of trained personnel for a sufficient number of hours.

Regarding the preschool education program in TPMD junior kindergarten:

- ☐ Although the program was judged satisfactory by several teachers (MELS, 2015), the proposed interventions seem somewhat vague, especially with regard to the development of social skills. It would be beneficial to enrich the program by providing, for instance, practical examples of validated activities and programs that contribute positively to the different domains of children's overall development.

Regarding the continuing education of teachers:

- ☐ The training provided to teachers since the introduction of TPMD junior kindergartens must be evaluated based on observation to verify whether it has helped improve the quality of classroom educational practices.
- ☐ Teachers must be supported with ongoing training that addresses the variety of challenges that their clients may present. This training should be based on best practices.

Regarding the initial training of teachers:

- ☐ The training requirements for preschool teachers must be reviewed. Currently, a bachelor's degree in preschool and elementary education or an equivalent is required. However, to meet the needs of 4-year-olds from disadvantaged areas, teachers require a good knowledge of both the development and the needs of these children, as well as of best educational practices – those substantiated by conclusive data.
- ☐ Bachelor's programs in preschool and elementary education offer few courses



on preschool education. Those programs should include training on the needs of vulnerable students, the various components that constitute the quality of the preschool environment, as well as educational practices that are substantiated by conclusive data.

#### **4) What are the limitations of our findings and to what extent can they be generalized?**

The following limitations of our research should be mentioned. Out of the 76 TPMD junior kindergartens in existence in 2014-2015, we evaluated only 16 of them, corresponding to 21% of the total. We did however evaluate nearly 30% of the children (N=304) that went to these preschools during that school year (N=968). Nonetheless, our findings cannot be generalized to all preschools in 2014-2015, as our sample included services in urban and semi-urban milieus, and hence, we have no data on the realities faced by junior kindergartens in rural milieus. Among children who were part of our study, the participation rate was very high during our two measurement periods (over 80%). However, our findings cannot be generalized to all children attending junior kindergartens, as our participants came primarily from urban and semi-urban milieus.

#### **5) What are the key messages for each target audience?**

*Decision-makers:* Junior kindergartens are intended for a vulnerable clientele. The quality of the initiative must therefore be adequate to achieve the goal of reducing social inequality. The junior kindergartens evaluated in this study do not meet the quality criteria needed to positively impact the development of children from disadvantaged areas. These junior kindergartens are a new educational resource. The government and educational authorities can ensure that they meet the goals

set for them by implementing certain practical steps based on conclusive data related to research on quality preschool environments.

*Administrators:* The quality of the educational environment in kindergarten classrooms must be ensured through the judicious allocation of resources in line with scientifically-recognized quality criteria. The continuing education of preschool teachers must also be provided for, again with a focus on the quality of the educational environment, as well as best practices for promoting children's development and addressing the problems of the more vulnerable children in the group.

*Teachers and support staff:* Junior kindergartens serve a vulnerable clientele. These settings have a positive impact on children's development when the quality of the educational environment is ensured. Rigorous quality criteria do exist. Teachers and support staff should consult them in order to organize the classroom environment and to intervene appropriately with their students.

## **6) What is the possible solution for each targeted audience?**

*Decision-makers:* Make the financial resources available to the milieus to enable them to meet the quality criteria, notably with regard to the ratios, the presence of trained personnel to provide support to teachers throughout the day, the quality of the premises where children spend their day, and the equipment put at their disposal. Ensure that teachers receive training linked to scientifically-recognized quality criteria and substantiated by conclusive data on the best intervention strategies for fostering child development.

*Administrators:* The educational environment of junior kindergartens must be

evaluated regularly and then adapted based on the quality criteria. Teachers should be supervised and supported in creating and sustaining an educational environment that ensures the school's quality as well as their own use of interventions recognized as effective in fostering child development.

*Teachers:* Teachers should participate in training sessions on recognized quality criteria and on the interventions that are recognized as effective in having a positive impact on cognitive and socio-emotional development in children.

## **PART C – METHODOLOGY**

### **1. Description and rationale underlying the methodological approach**

A quasi-experimental protocol was adopted to compare the degree of school readiness in senior kindergarten for two groups of children from the same socio-economic milieu, one group that did attend a junior kindergarten and one that did not.

### **2. Description and rationale underlying the data collection methods**

Junior kindergarten: evaluation of the cognitive and self-regulation skills at the beginning and end of the 2014-2015 school year. Observation of the quality of the preschool environment in the winter of 2015. Questionnaires filled out by the teacher at the beginning and end of the school year. Telephone interviews with parents in order to obtain sociodemographic data.

Senior kindergarten: evaluation of the cognitive and self-regulation skills at the beginning of the 2015-2016 school year. Telephone interviews with parents in order to obtain sociodemographic data. Questionnaires filled out by the teacher on the children's school readiness at the end of the 2015-2016 school year.

**3. Participants:** Three hundred and twenty-six (N=326) children were recruited in junior kindergartens. These children attended 29 different junior kindergartens (16 full-time and 13 part-time) in 21 schools (IMSE 9 or 10), belonging to 14 different school commissions, in either an urban or semi-urban milieu. In senior kindergarten, 318 children (control group) attending 17 of the 21 schools in 34 senior kindergarten classes were added to the research study.

**4. Strategies and analytical techniques**

Comparisons of means, Chi square tests, linear regressions.

**PART D – FINDINGS**

**1. The main findings**

With regard to our key research questions:

**1.1 What were the sociodemographic characteristics of the children who went to junior kindergartens, either full-time or part-time, in 2014-2015?**

According to the information provided to us by the parents (N=280; 82% mothers):

- About 8 out of 10 children live with both parents (81%).
- More than three-quarters of the respondents indicate that French is the primary language spoken at home (76.5%).
- One-quarter of the mothers (25%) indicate that they did not get a high-school diploma (HSD).
- More than one out of 5 families (22%) report a family income that is less than \$20,000.
- Nearly one out of 5 children (19%) did not attend a childcare setting before going to junior kindergarten.

- Of those children who did attend a childcare setting, a small proportion went to a CPE (17%), while the majority went to a lower-quality childcare setting (15% daycare, 26% regulated family milieu, 22% non-regulated family milieu, 6% family, friends, neighbours, etc.).

## **Regarding the differences between children who attended junior**

### **kindergarten full-time or part-time:**

- ☐ Children who went to junior kindergarten full-time are more likely to have French as the language spoken at home, compared to children who went to junior kindergarten part-time (88% vs. 63%).
- ☐ On the other side of the coin, children who went to junior kindergarten part-time are more likely to have a language other than French as the language spoken at home, compared to children who went to junior kindergarten full-time (37% vs. 12%).
- ☐ With regard to the mother's education, more mothers whose children are registered in full-time junior kindergartens indicate that they did not obtain a high-school diploma (HSD), compared to the mothers whose children went to a part-time junior kindergarten (32% vs. 17%).
- ☐ In terms of the years of schooling completed, children who went to a junior kindergarten part-time are more likely to have a mother who has completed university, compared to children attending a junior kindergarten full-time (38% vs. 16%).
- ☐ Children who go to junior kindergarten part-time are more likely to live with both their parents, compared to children attending a junior kindergarten full-time (87% vs. 77%).

□ The children in both types of junior kindergartens do not differ along the dimensions of family income, their preschool trajectory (no childcare, CPE or other types of childcare resources), nor in their performances on the tests that were administered (PPVT, NKT, HTKS) when they first started junior kindergarten.

### **1.2 What are the individual and sociodemographic factors associated with the cognitive and behavioural performance of children when they start junior kindergarten?**

Three hierarchical regressions were done to identify the factors associated with the language skills (PPVT), number-related skills (NKT), and self-regulation (HTKS) of children when they start their junior kindergarten experience, taking into account the children's individual characteristics (age, gender), their family environment (language spoken at home, mother having obtained a high-school diploma (HSD), family income), and the child's preschool experience before going to junior kindergarten (no childcare, attending a CPE, going to another kind of childcare setting).

**Receptive vocabulary (PPVT):** Children who are older, where the language spoken at home is French, whose mother obtained a high-school diploma and, marginally, whose family income is higher demonstrate better receptive vocabulary scores when they first enter junior kindergarten.

**Number-related activities (NKT):** A higher score in this activity is associated with the child's age, gender (girl), whether the mother has obtained a high-school diploma, and marginally, the family's income.

**Self-regulation (HTKS):** A child's self-regulation skill is associated with the child's

age and whether the mother has obtained a high-school diploma.

The children's preschool experience does not play a role in their performance on receptive vocabulary tests (PPVT), knowledge of the conceptual prerequisites to perform mathematical operations (NKT), or, regarding self-regulation, a test that calls upon their memory, behavioural inhibitions, and cognitive flexibility.

### **1.3 What is the level of educational quality of junior kindergartens (full-time and part-time)?**

The quality of the preschool environment was observed during the winter of 2015 with the help of the Early Childhood Environmental Rating Scale - Revised version (ECERS-R; Harms et al., 1998). This observation instrument provides a way to determine the profile of several elements that characterize a milieu, notably the quality of the physical environment, the interactions and activities, and the day-to-day planning. The results of our observations of the 28 junior kindergarten groups reveal that:

- the quality of the educational environment is generally very poor, with noticeable shortcomings in terms of space and furnishings, personal care routines, language and reasoning stimulation, the activities offered, interactions, and the program structure.
- Although the quality of all junior kindergartens is relatively poor, the full-time ones are generally of better quality than the part-time services. With regard to the subscales, the two types of milieus differ only along two dimensions, namely space and furnishings and program structure, where scores are higher in the full-time junior kindergartens.

### **1.4 Is the educational quality of junior kindergarten associated with**

### **the children's progress from the beginning to the end of the school year?**

The results achieved by the children on the tests administered at the end of the school year (PPVT, NKT, HTKS) were examined, taking into account the children's characteristics (age, gender, the kind of junior kindergarten they attended, and the results achieved on the same test at the beginning of the school year). Then, family factors (language spoken at home, whether the mother has a high-school diploma, family income) were added to our analyses. Finally, two subscales of the ECERS-R that are correlated with children's progress (space and furnishings, personal care routines) were introduced into the analyses in order to verify whether the quality of the kindergarten plays any role in the children's results, all other things being kept equal.

In the three tests, the best predictor of the children's performance at the end of the year was the score they achieved when they first started junior kindergarten. However, when taking this score into account, other factors emerged that were associated with their results.

**Receptive vocabulary (PPVT):** Girls made more progress than boys.

**Number-related activities (NKT):** The child's age is associated with more progress in terms of basic mathematical concepts.

**Self-regulation (HTKS):** The girls and children whose mothers obtained a high-school diploma improved their self-regulation.

In the three areas that were evaluated (PPVT, NKT, HTKS), the characteristics of the educational environment (ECERS-R) do not play an independent and significant role in the children's progress during their time spent in junior kindergarten.



**1.5 and 1.6 : Are children from disadvantaged areas who have gone to a junior kindergarten better prepared for school than children who begin school only at 5 years old? Are children who have gone to a full-time junior kindergarten better prepared for school than children who have gone to a part-time junior kindergarten?**

Based upon the answers provided by teachers near the end of the senior kindergarten experience, the five indicators pertaining to school readiness used in other studies were constructed and linked to the individual and family factors characterizing the children, their preschool experience (the kind of childcare and the kind of kindergarten they attended when they were 4 years old), and their performance on the PPVT, NKT, and HTKS tests administered when they first started out in senior kindergarten.

**Physical health and well-being:** According to the teachers, the boys and children from families with lower incomes exhibit a lower level of physical health and well-being. A higher receptive vocabulary (PPVT) and poorer performances on the Number Knowledge Test (NKT) are also associated with difficulties in this domain.

**Social competence:** These skills are marginally poorer among boys, children from families with lower incomes, and families where the language spoken at home is French. A higher receptive vocabulary (PPVT) and poorer performances on the Number Knowledge Test (NKT) and self-regulation (HTKS) are also associated with difficulties in this domain.

**Emotional maturity:** Boys and children coming from families with lower incomes are perceived as having more difficulties in this area. A higher receptive vocabulary

(PPVT) and lower scores on the Number Knowledge Test (NKT) and self-regulation (HTKS) are likewise associated with more problematic emotional maturity.

**Language and cognitive development:** Teachers report that girls exhibit a higher level of development in this area. Higher scores in the Number Knowledge Test (NKT) are also associated with greater cognitive and language development.

**Communication and general knowledge:** Boys, children from low income families, and from families where the mother has not obtained a high-school diploma exhibit poorer skills in this area. In addition, lower scores on the Number Knowledge Test (NKT) and self-regulation (HTKS) are associated with shortcomings in a child's communications skills.

**Type of preschool:** The type of junior kindergarten attended by a child is associated with three areas of preparation for school, namely, language and cognitive development, emotional maturity, and social competence. However, while going to a full-time junior kindergarten (vs. going to a part-time one or having other kinds of preschool experience) is associated with better cognitive and language development in senior kindergarten, the effects related to emotional maturity and, marginally, social competence tend to go in the opposite direction. In other words, teachers in senior kindergarten report more difficulties in these areas among children who have gone to full-time junior kindergarten than among those who have gone to part-time junior kindergarten or had other kinds of preschool experience. These results, which appear to be counter-intuitive, may imply that full-time junior kindergarten serves a clientele characterized by more developmental shortcomings than those who go to part-time junior kindergarten or other kinds of settings.

## **2) Conclusions and possible solutions**

The findings of this research project show that junior kindergarten serves, overall, a vulnerable clientele. The degree of vulnerability is however higher among children attending the new TPMD junior kindergartens.

The cognitive and behavioural performance of children when they first go to junior kindergarten and their progress during the school year are associated with individual and family factors. The various preschool experiences do not appear however to better prepare children for junior kindergarten, and the quality of the educational environment, which is generally-speaking rather poor, does not significantly contribute to children's progress.

The degree of school readiness is also associated with individual and family factors, as well as children's cognitive performance and self-regulation at the beginning of the senior kindergarten stage. Boys appear to be more at risk for exhibiting shortcomings in the five domains of school readiness. Attending full-time junior kindergarten translates into an added value in only one of these areas, namely, language and cognitive development.

Finally, in regard to all these findings, we would like to emphasize that full-time junior kindergartens serve a vulnerable population and that the foremost response to these results should be improving the quality of junior kindergarten.

## **3) Main contributions of our work**

This research project is innovative in that it is the first one to examine the quality of the preschool environment in junior kindergarten and its association with school readiness among children from disadvantaged areas. Our findings indicate that the

intensity and quality of junior kindergarten have very little effect on school readiness and, accordingly, do not significantly reduce the effect of sociodemographic influences on children's school readiness.

In addition, this research helps advance knowledge in the field of the development of children from disadvantaged areas: it has a solid theoretical framework and employs a longitudinal methodology that uses several sources of information (parents, teachers, direct observation, evaluation by assistants). This provides a way, for example, to verify the validity of teachers' perceptions of children's school readiness by linking that information to the results on tests administered by a third party. Our findings indicate that senior kindergarten teachers are good observers of the level of development of the children they teach.

## **PART E – FUTURE RESEARCH**

### **1. What new research questions emerge from this work?**

Numerous ideas for future research arise from our work, including:

- 1) A longitudinal follow-up of pupils who attended TPMD junior kindergartens to examine their school trajectory and to help verify whether this measure has had the anticipated effects upon school success and the drop-out rate.
- 2) Our findings suggest that educational interventions in TPMD junior kindergartens place more emphasis on “education” than on the development of behavioural skills that foster learning. A research project could be done to examine the effect on school readiness by introducing into junior kindergarten validated programs that foster the development of the social and self-regulation skills that are essential for children’s success at school.
- 3) The establishment of a “model” TPMD junior kindergarten that provides a high-quality educational environment and a curriculum enriched by validated approaches in order to foster the cognitive and socio-emotional development of the children. If these children then attended senior kindergarten as a follow-up, researchers would have a way to verify whether their school readiness is better than that of children who go to junior kindergarten where these types of interventions are not part of the program.

### **2. What is the main takeaway of this research project?**

Invest in the quality of preschool milieus and in initial and ongoing teacher training based on validated programs.

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