

# Infant Cognitive Development at 18 Months Among Children Attending Daycare Since Their First Year of Life: A Comparative Study.

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## INTRODUCTION

- ❖ Early childhood education has rapidly expanded in the last thirty years. Between 1997 and 2009, Quebec (Canada) has grown the most (205,000 places for children under four years old).
- ❖ In recent researches, considerable attention has been given to the impact of daycare on children's development.
- ❖ Studies have suggested that children who experience daycare in their first year of life show higher levels of cognitive development when evaluated during the preschool years.
- ❖ Research indicates that neither child and family nor daycare variables in isolation can explain these developmental outcomes.
- ❖ To explain children's development in daycare, characteristics of the child, family, and daycare environment must be simultaneously considered across multiple points in development.
- ❖ Yet, in Quebec (Canada), few studies have examined children's development in the context of proximal environments of both home and daycare using longitudinal data. Even fewer have examined the effects of child care attendance for very young children.

## RESEARCH QUESTIONS

This longitudinal study examines variables associated with early daycare attendance by addressing four research questions.

- 1) Which child and family characteristics are associated with daycare attendance in the first year of life?
- 2) How is daycare attendance starting in the first year of life related to children's cognitive development?
- 3) Which variables predict cognitive development among children in daycare, and what is the relative predictive weight of daycare quality compared to family characteristics?
- 4) Across all children, which child and family factors predict cognitive development, and are these predictors different for children in parental care compared to children in daycare?

## METHOD

### Sample

161 infants (78 girls) distributed in 3 unequal groups

- 1) Daycare center (n=49; 24 girls);
- 2) Family daycare (n= 40; 18 girls);
- 3) Parental care (n = 72; 36 girls).

### Procedures

❖ Recruitment from 2004 to 2006 in Montréal & Montérégie (QC, Canada)

❖ 3 home visits to measure the child's cognitive development

T1) Upon entry (X=10 months)

T2) 15 months

T3) 18 months

### Measures

Variables and Instruments	T1	T2	T3
Cognitive development - Bayley Scale of Infant Development- II (Bayley, 1993)	X	X	X
Child's temperament - Infant Characteristics Questionnaire [ICQ] (Bates et al., 1979)	X	X	X
Questionnaire on Parental expectations about children's development (Bigras et al., 2008)	X	X	X
Questionnaire on the family's socio-demographic characteristics (Bigras et al., 2004; 2008)	X	X	X
Leisure Activities and Reading Practices Questionnaire (Laboratoire d'étude du nourrisson, 2000)	X	X	X
Quality of daycare - <i>Educative Quality Observation Scales</i> (EQOS) (Bourgon & Lavallée, 2004a, b)			X

## RESULTS

### Question 1: Which child and family characteristics are associated with daycare attendance in the first year of life?

	ANOVA						F
	Daycare center		Family daycare		Parental care		
	M	SD	M	SD	M	SD	
Income (\$)	72225.00	27329.41	68540.54	31551.18	55679.49	39462.92	(2,113) = 3.53*
Mother's education (years)	14.24	2.32	14.13	2.57	12.47	2.65	(2,157) = 9.18***
Age of first reading (months)	4.39	2.37	4.33	2.41	5.38	2.69	(2,144)=2.937

	MANOVA						Reading activities
	Child's Temperament			Parental Estimations			
	High		Low				
	Mother F(2,135)	Father F(2,103)	Mother F(2, 145)	Father F(2, 126)	Mother F(2,126)	Father F(2,125)	F(2,114)
Group (G)	1.16	0.55	2.42	2.04	1.65	3.61**	0.61
Time (T)	16.94***	8.08***	22.10***	18.29***	10.86***	6.63***	4.39*
G X T	0.78	0.22	2.77*	.30	0.80	3.52***	0.97

\*p < .05, \*\*p < .01, \*\*\* p < .001.

### Question 2: How is cumulative daycare attendance starting in the first year of life related to children's cognitive development?

	df	F
Group (G)	2, 151	2.02
Time (T)	1.86, 280.24	32.61***
G X T	3.71, 280.24	.97

\*p < .05, \*\*p < .01, \*\*\* p < .001.

### Question 3: For children attending daycare since their first year of life, which variables predict cognitive development, and what is the relative predictive weight of daycare quality compared to family characteristics?

Variables	B	SE B	β	Incremental R <sup>2</sup>	Total R <sup>2</sup>
Step 1:					
- Mother's evaluation of child difficulty	-4.129	1.734	-.272*	.074	.074
Step 2:					
-Age of children when first read to	-1.483	.541	-.302**	.090	.164
Step 3:					
-Global daycare quality score	5.284	3.834	.159	.022	.186

\*p < .05, \*\*p < .01. Note. R<sup>2</sup> = .074 (p = .02) for step 1; R<sup>2</sup> = .164 (p = .008) for step 2, and R<sup>2</sup> = .186 (p = .173) for step 3.

### Question 4: Across all children, which child and family factors predict cognitive development, and are these predictors different for children in parental care compared to children in daycare?

Variables	B	SE B	β	Incremental R <sup>2</sup>	Total R <sup>2</sup>
Step 1:					
-Mother's education (ME)	-.106	1.246	-.008	.274	.274
-Father's education (FE)	3.022	1.132	.239**		
-Parents' high estimations of their child's development at 15 months (PHE)	3.343	1.086	.253**		
-average of mother's score					
-average of father's scores					
-Age of child when first read to (ACR)	-2.021	1.022	-.165*		
-Duration of reading activities at 15 months (DR)	3.013	.999	.239**		
-Daycare attendance (Group)	.995	1.054	.076		
Step 2:					
-ME x Group	-.829	1.255	-.060	.041	.315
-FE x Group	-.316	1.164	-.025		
-PHE x Group	-.349	1.193	.026		
-ACR x Group	-1.840	1.023	-.148		
-DRA x Group	-1.807	1.014	-.143		

\*p < .05, \*\*p < .01, \*\*\* p < .001.

## CONCLUSION

### Child and family characteristics associated with daycare attendance

- ❖ Families sending their children to daycare early in life may differ notably from families keeping their children home.
- ❖ Children attending daycare came from families with **higher incomes** and had mothers with **higher education** levels. Their mothers held **higher expectations** regarding their future development and their **parents began reading with them earlier** in life.
- ❖ It suggests the importance of measuring and controlling for these initial differences when investigating the impact of daycare attendance and quality on children's development.

### Cumulative daycare attendance and children's cognitive development

- ❖ We found **no relationship** between daycare attendance and cognitive development.
- ❖ Cumulative effects of differential care experiences may not yet be observable at 18 months or when children have only been attending daycare for less than a year.
- ❖ It may suggest the importance of **following children over time** to explore the possibility of cumulative or sleeper effects of daycare attendance on cognitive development for children in daycare since their first year of life.

### Predictors of cognitive development for children in daycare

- ❖ **Family characteristics** were a **stronger predictor** of cognitive development than daycare characteristics.
- ❖ **No relationship** found between daycare quality and cognitive development when children were 18 months old

### Child and family factors predicting cognitive development for all children

- ❖ Family variables significantly predicted cognitive development for both groups of children in our sample. Consistent with previous research, **no interactions were found between type of daycare experience and family variables.**

**In sum**, despite this study's failure to document a direct link between daycare variables and children's cognitive development at 18 months, we suggest that daycare settings remain an important environment for young children. Specifically, early high quality daycare may be important for children in particular circumstances. Investing to improve the quality of daycare services may enable providers to offer services that are more adapted to children who present a difficult temperament. Raising the quality of all daycare services could also help to compensate for environmental family characteristics associated with lower developmental outcomes. These patterns of relationships would only be revealed through interaction effects that our study may not have been well designed to reveal.

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The cognitive development of children in centre-based daycare was no higher than that of children in family-based daycare or children in parental care since birth.

Daycare contributes relatively little to cognitive development at 18 months when more proximal family and child-related variables are controlled for.

The influence of family variables on cognitive development would be the same among children in parental care as among children attending daycare.