



# How are School Experience Associated With Mental Health?

Findings from Longitudinal Cohorts of Children  
and Adolescents in Canada and the UK

**Chair : Sophie Chaput-Langlois**

**Presenters : Sophie Chaput-Langlois**

**Kaili Rimfeld**

**Gabriel Arantes Tiraboshi**

**International Convention of Psychological  
Science, 11 March 2023**



**GRISE**

Groupe de recherche et d'intervention  
 sur les adaptations sociales de l'enfance (GRISE)  
 de l'Université de Sherbrooke




# The contribution of kindergarten school readiness to mental health during elementary and high school

Sophie Chaput-Langlois, Corinne Mavungu-  
Blouin, Caroline Fitzpatrick, Jean-Pascal  
Lemelin, Gabrielle Garon-Carrier  
Université de Sherbrooke



Université de  
Sherbrooke

Fonds de recherche  
Société et culture

Québec 

International Convention of Psychological  
Science, 11 March 2023

Institut  
de la statistique

Québec 

1

# Introduction



# School readiness

Set of strengths and weaknesses forming the child's ability to function in school

Multidimensional construct

## Cognitive skills

- IQ – Fluid/crystalized intelligence
- Language/Vocabulary
- Preacademic skills (preliteracy, prenumeracy...)

## Approaches to learning

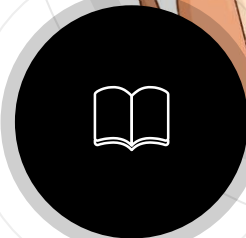
- Classroom engagement
- Motivation
- Curiosity

## Socioemotional skills

- Social skills
- Prosocial behaviour
- Emotional regulation
- Absence of internalizing or externalizing behaviours

## Motor and physical skills

- Fine and gross motor skills
- Health
- Fitness
- Coordination

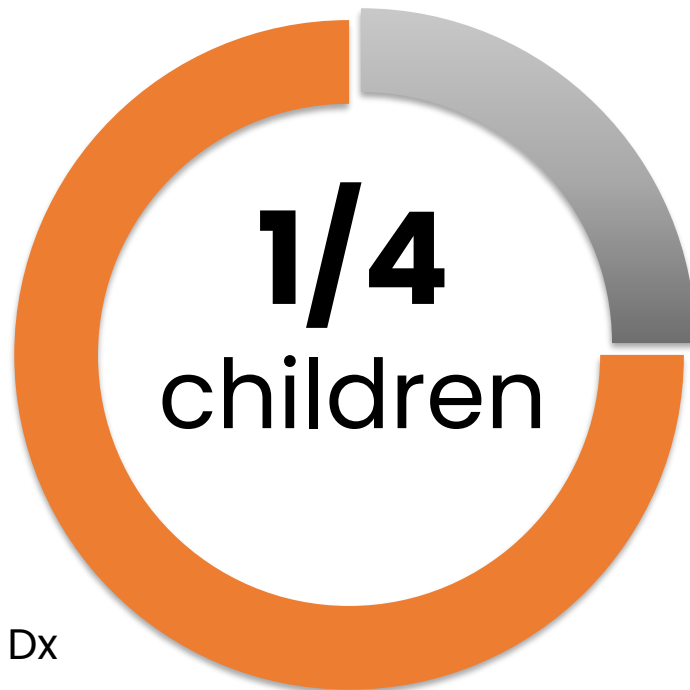




# Who is not ready to start school?

## Important factors :

- Poverty
- Parent's education
- Mental health/  
neurodevelopmental Dx
- Language(s) spoken
- Parenting, Daycare  
attendance...



(Ghandour et al., 2021; Institut de la statistique du Québec, 2018)



# The consequences of poor school readiness



(Collie et al., 2019; Fitzpatrick et al., 2020; McClelland et al., 2013; Quirk et al., 2017; Ricciardi et al., 2021; Thomson et al., 2021)



## Mental health

### Externalizing symptoms

- Hyperactivity/Impulsivity/Inattention
- Opposition/Conduct problem
- Aggression
- Lying, Stealing, Vandalism

### Internalizing symptoms

- Depression
- Anxiety
- Phobia/Social phobia
- Loneliness/Social withdrawal

A+

Cognitive/Language



Approaches to learning

# What is poor school readiness?



Motor skills  
Health/fitness



Socioemotional skills

(Fitzpatrick et al, 2020; Pan et al, 2019 Tavassolie et al, 2018)



# Person-centered approaches in school readiness



- How multiple variables combine across individuals
- Cluster analysis, Latent class analysis, latent profile analysis
- Profile: group of subjects with a similar combination of variables, different from the other groups in the sample/population

# Person-centered approaches in school readiness



## What we know

1. The majority of children are ready to start school  
(profile: strengths on all dimensions)
2. Around 15% are not ready  
(profile: vulnerabilities on all dimensions)
3. 1-2 groups of children with profiles of varying strengths and vulnerabilities
4. School readiness profiles predict school adaptation/success

## What we don't know

1. If and how profiles change when incorporating ALL dimensions of school readiness
2. How the profiles predict long-term mental health outcomes
- 3.



(Collie et al., 2019; Jones et al., 2015; Pan et al., 2019 Tavassolie et al., 2018)

1. When taking into account multiple dimensions of school readiness, which latent profiles exist in kindergarten?  
Are there any differences between boys and girls ?

2. How do **school readiness profiles** contribute to internalizing and externalizing mental health symptoms in elementary and secondary school ?

2

**Sample**



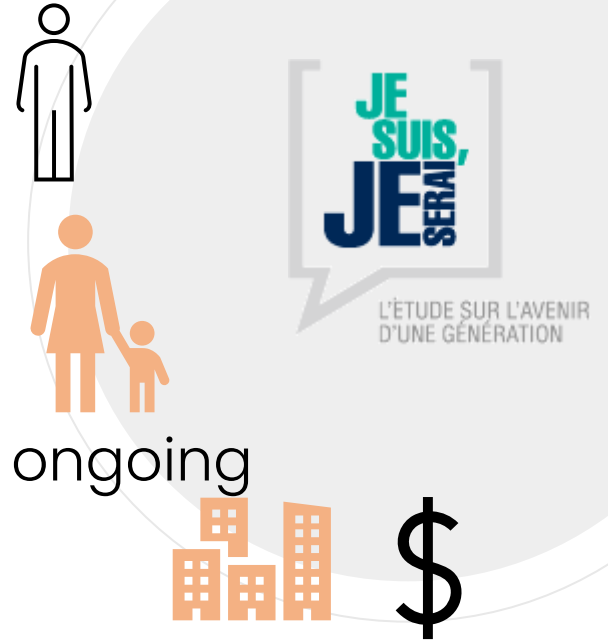
# Quebec Longitudinal Study of Child Development

QLSCD

2 120 families

Child born in 1997-1998

Data collection : every 1 or 2 years, still ongoing



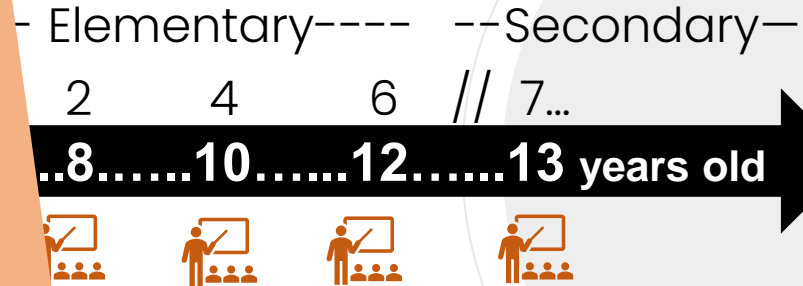
# Assessments



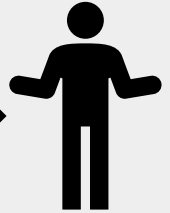
934 children

- Mother's highest diploma
- Father's highest diploma
- Annual income

School readiness



Mental health



3

# Question 1: Methods, Results

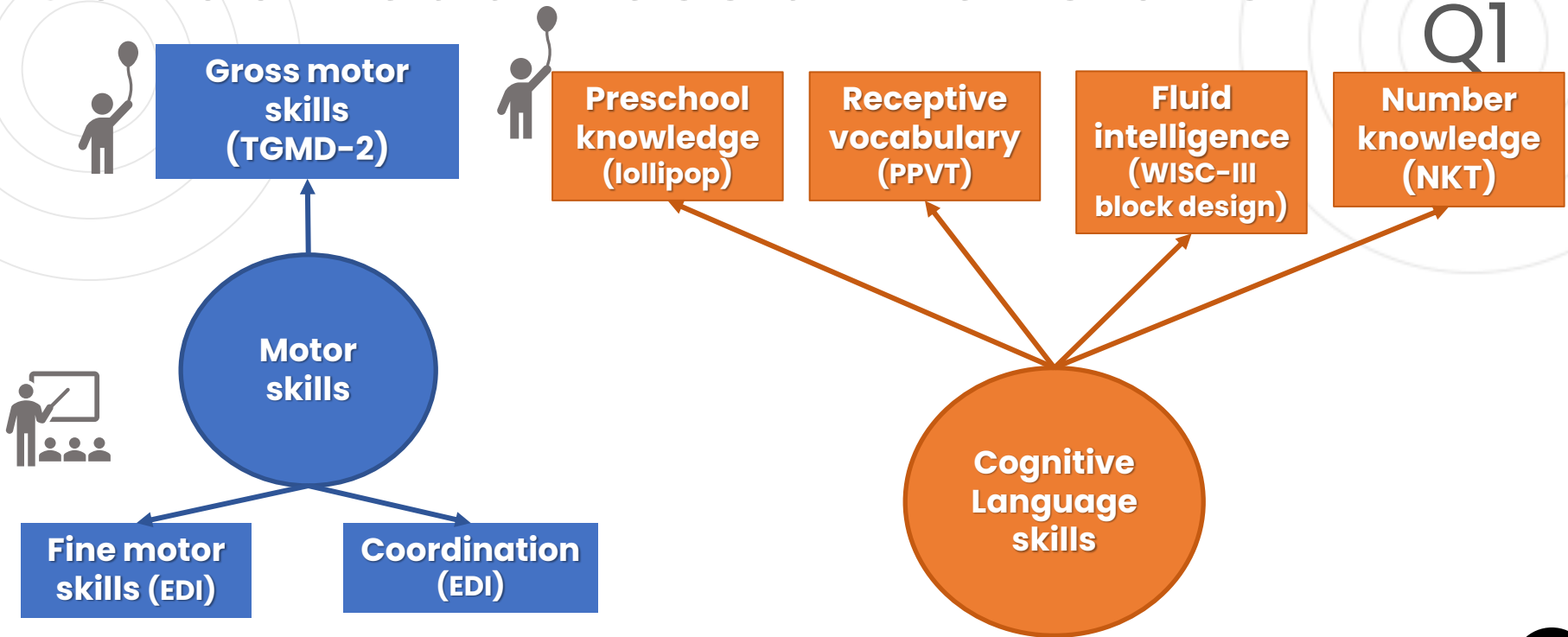
When taking into account multiple dimensions of school readiness, which latent profiles exist in kindergarten?

Are there any differences between boys and girls ?



# Measures

## School readiness dimensions

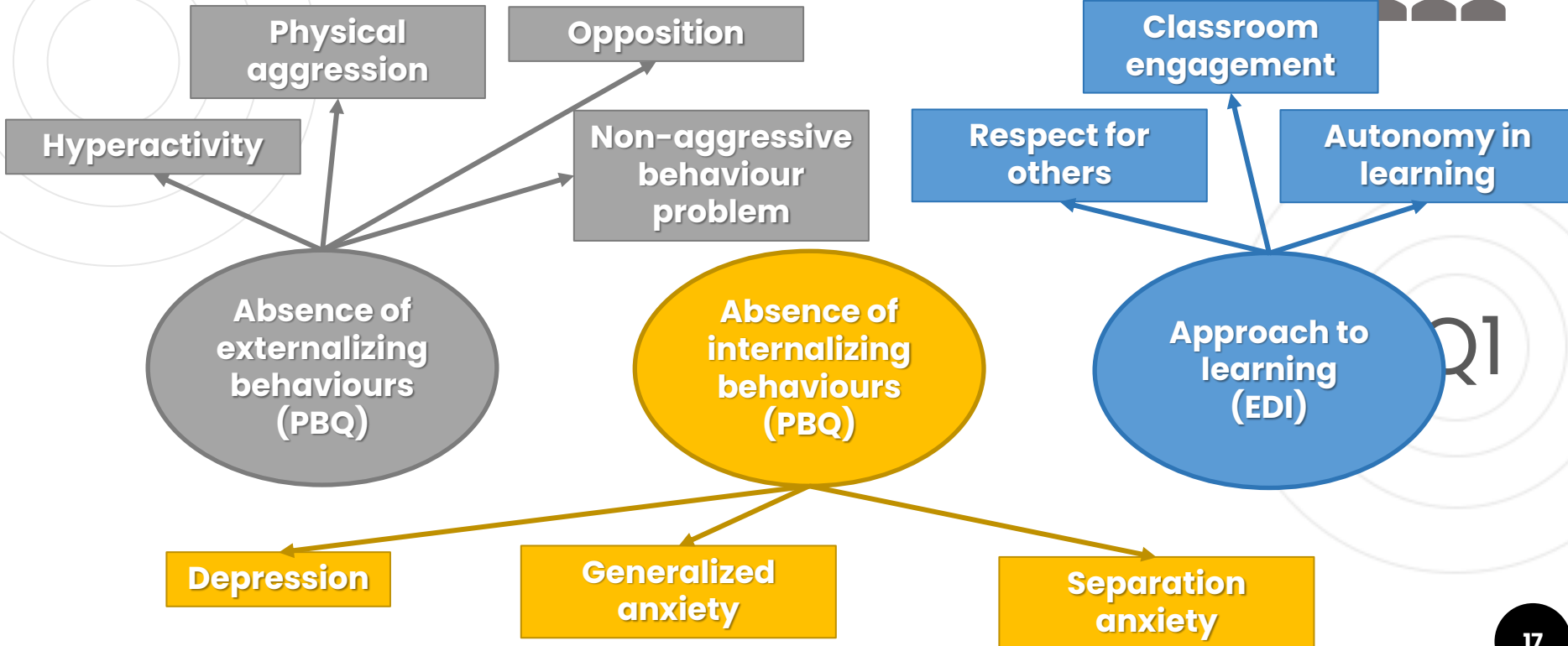


(Dunn & Dunn, 1993; Janus & Orford, 2007, Okamoto & Case, 1996; Tremblay et al., 1987; Ulrich, 2000; Venet et al., 2003, Weschler, 1991)



# Measures

## School readiness dimensions



# Analysis

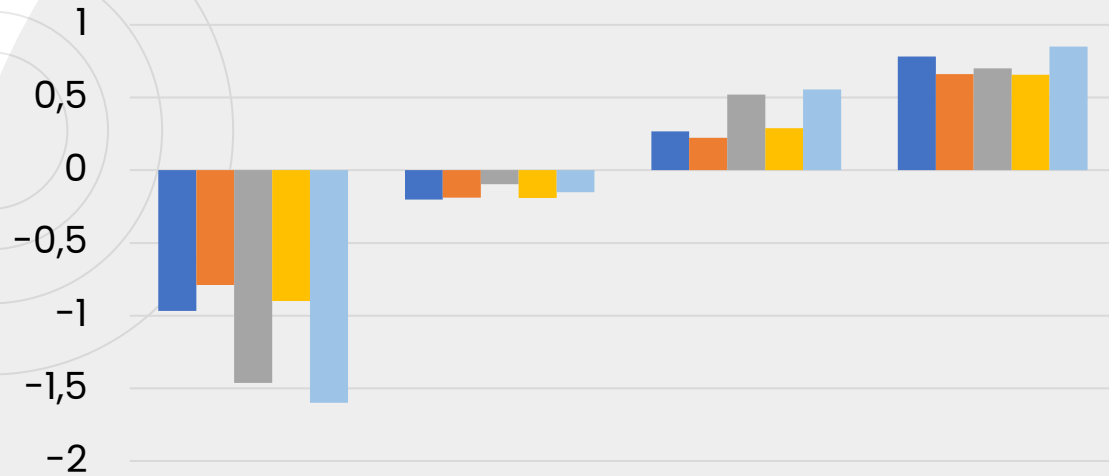
# School readiness profiles

- CFA ( $\Omega > 0.70$ )
  - 1 latent variable per dimension
- Latent profile analysis
  1. AIC, BIC, adjBIC, CAIC
  2.  $p$  of LMR, VLMR, BLRT
  3. Entropy, posterior probabilities
- SPSS and Mplus

Q1

# Latent profiles of school readiness

Q1



## School readiness dimensions:


- Motor skills
- Cognitive/Language skills

- Absence of externalizing behaviours
- Absence of internalizing behaviours

- Approache to learning

# Sex differences in profiles

Q1



Profile	Girls		Boys	
	<i>n</i>	%	<i>n</i>	%
At-risk	89	17.9	123	28.2
Average	114	22.9	121	27.8
Behavioural S.	161	32.3	150	34.4
Generalized S.	134	26.9	42	9.6
Total	498	100	436	100

$$\chi^2(3) = 224,41, p < 0.001$$

4

## Question 2: Methods, Results

How do school readiness profiles contribute to internalizing and externalizing mental health symptoms in elementary and secondary school ?



# Measures – Mental health

## Social Behaviour Questionnaire (SBQ)

### Externalizing symptoms

1. Hyperactivity/impulsivity
2. Inattention
3. Physical aggression
4. Opposition
5. Non-Aggressive behaviour problems (i.e. stealing)

### Internalizing symptoms

1. Social withdrawal
2. Anxiety
3. Depressive symptoms

3-6 questions/scale

Answers : 1-never,  
2-sometimes, 3-often/always

Scale range: 0-10



# Measures – Mental health Social Behaviour Questionnaire (SBQ)



1<sup>st</sup>, 2<sup>nd</sup>, 4<sup>th</sup>, 6<sup>th</sup>  
and 7<sup>th</sup> grade

For each mental health scale  
separately:

1 Latent growth curve

Intercept (7<sup>th</sup> grade)

Slope

All LGCM:

CFI/TLI: >0.95

RMSEA/SRMR: <0.08



Q2

# Measures – Mental health Social Behaviour Questionnaire (SBQ)



1<sup>st</sup>, 2<sup>nd</sup>, 4<sup>th</sup>, 6<sup>th</sup>  
and 7<sup>th</sup> grade

For each mental health scale  
separately:

1 Latent growth curve

Intercept (7<sup>th</sup> grade)

Slope

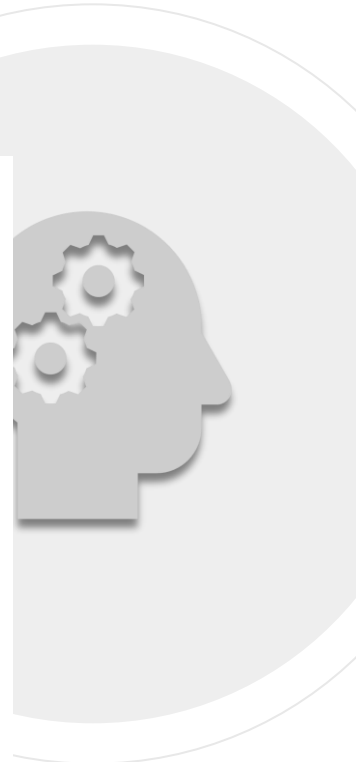
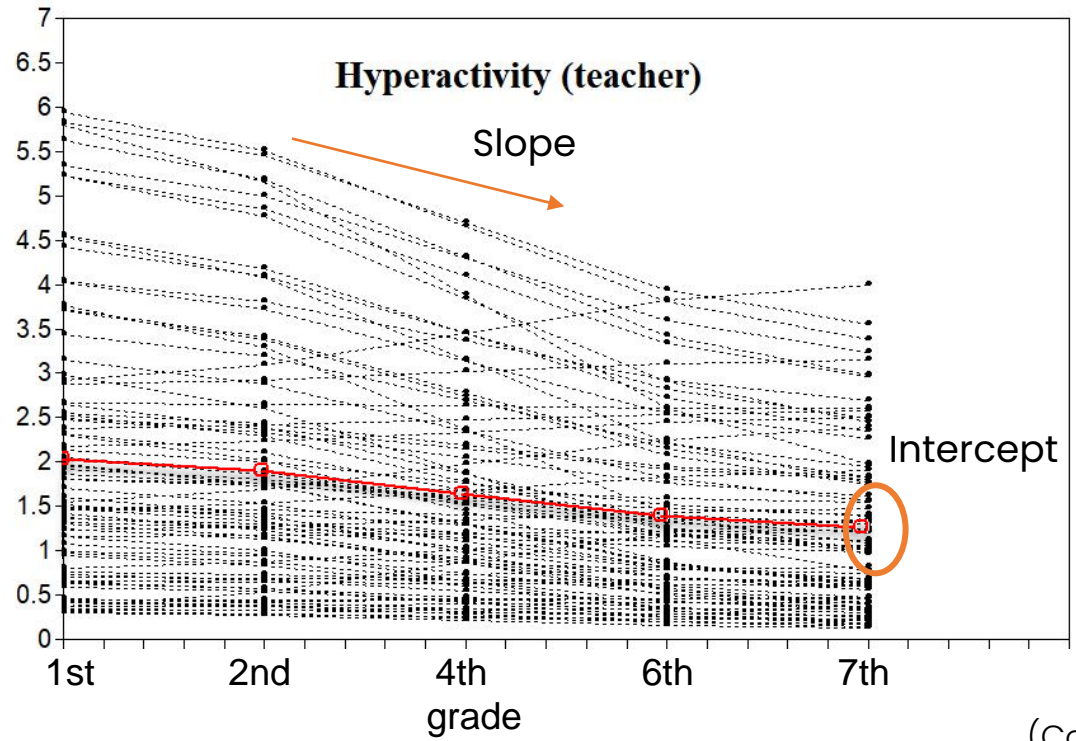




# Measures – Mental health Social Behaviour Questionnaire (SBQ)



1st, 2nd, 4th, 6th, and 7th grade



# Analysis

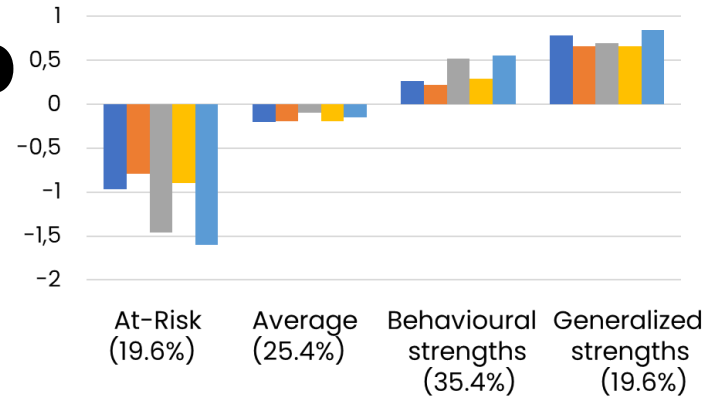
## Does profile membership predict mental health?

### Using the final profile model

1. Added the growth curves
2. Allowed intercept/slope to vary across profiles
3. Tested if intercepts varied significantly between profiles

Q2

Mplus : Wald  $\chi^2$ , model constraints



# Analysis

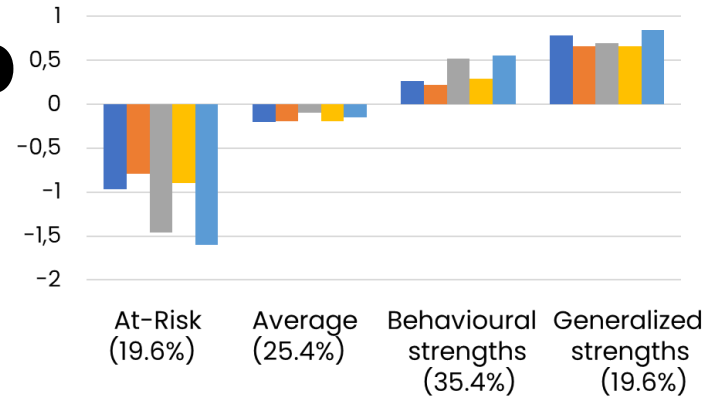
## Does profile membership predict mental health?

### Using the final profile model

1. Added the growth curves
2. Allowed intercept/slope to vary across profiles
3. Tested if intercepts varied significantly between profiles

Q2

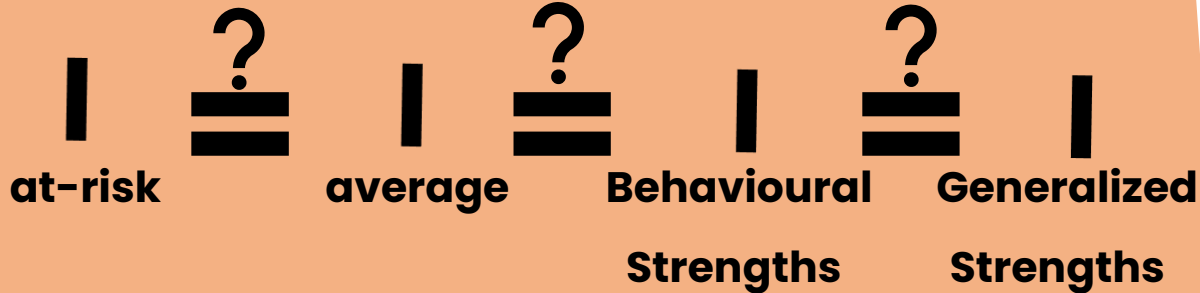
Mplus : Wald  $\chi^2$ , model constraints



# Analysis

## Does profile membership predict

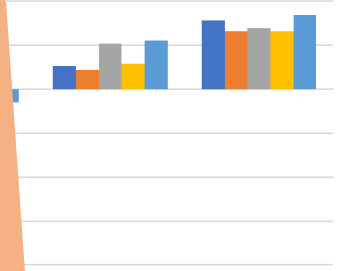
For each mental health scale:



And:

In each profile, is there change across time?

**S?**



Behavioural strengths (35.4%)      Generalized strengths (19.6%)

Q2



# Results – Mental health

## Teacher-reported SBQ (1<sup>st</sup> to 7<sup>th</sup> grade)

Q2

### Externalizing symptoms

Intercept:

At-risk › Average, Behavioural or Generalized S.

Slope:

No changes or slow ↓ over time, mostly in the Average profile

### Internalizing symptoms

Intercept:

At-risk › Average, Behavioural or Generalized S.

Slope:

No changes over time except in the Generalized S. profile:  
↑ in depression and anxiety

4

# Discussion

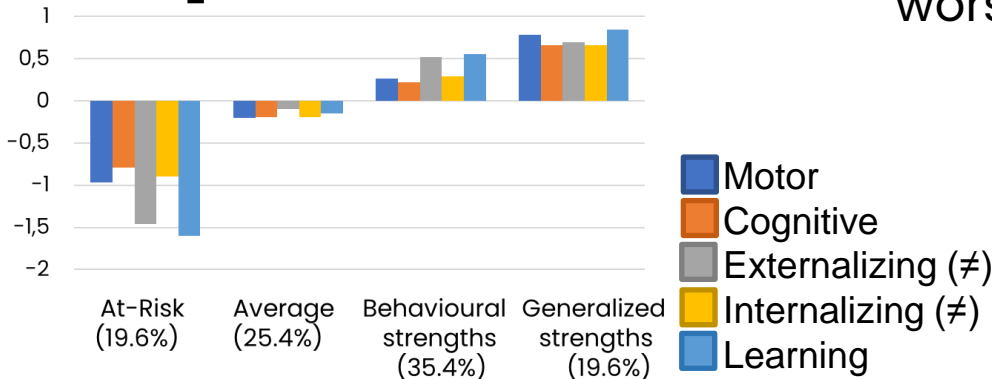


Q1

# School readiness profiles

4 profiles

- At-risk : Difficulties in all dimensions  
19.6% > 15%
- Behavioural strength: Good behaviour in class, but academic success?
- Average: Is it good to be average?  
25% of sample, but the second "worst" profile

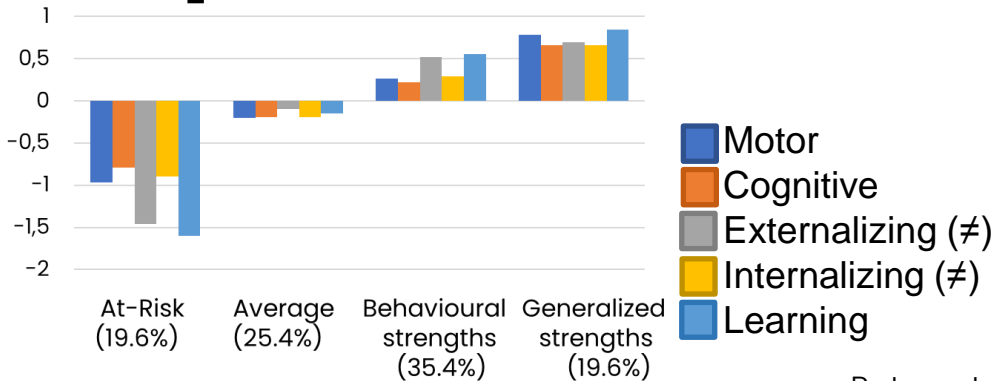


Q1

# School readiness profiles

## Sex differences

- Similar profiles for boys and girls
- BUT
- At-risk profile : significantly more **boys**
- Why?
- Sex differences on the 5 dimensions of school readiness?



(Grissom et al., 2019; Kokstejn et al., 2017; Navarro-

Paton et al., 2021; Pahlevanian et al., 2014; Zheng et al., 2022)





Q2

# Mental Health

Latent growth intercept : 7<sup>th</sup> grade

- At-risk profile : Always worse
- Average profile : equal to the “better” profiles

Latent growth slope : changes from 1<sup>st</sup> to 7<sup>th</sup> grade

- Few changes over time: Early intervention
- Average profile : only one to show decrease in mental health symptoms over time
- Generalized strength profile: increase in depression and anxiety over time

Differences in school-related aspirations and anxiety?

# Limits

- Generalization (non-White, non-French/English speaking...)
- Correlational design
- Mental health : 1 informant

# Strengths

- Multiple informants and dimensions of school readiness
- Longitudinal design with many timepoints

From Kindergarten to secondary school

# Future studies

- Include multiple informant of classroom behaviors
- Study possible differences in school readiness profiles according to sex/gender and cultural background
- Study how school readiness profiles continue to differentiate over time, with the increases in stress and autonomy in secondary and post-secondary school
- Study possible moderators and mediators (intervention target)





Université de Sherbrooke

# Thank you

## A special thanks to my coauthors and colleagues:

Corinne Mavungu-Blouin

Caroline Fitzpatrick

Jean-Pascal Lemelin

Gabrielle Garon-Carrier

Kaili Rimfeld

Gabriel Arantes Tiraboschi

Marie-Andrée Binet

Emma Cristini

Jasmine Gobeil-Bourdeau

Samantha Bédard



**GRISE**

Groupe de recherche et d'intervention sur les adaptations sociales de l'enfance (GRISE) de l'Université de Sherbrooke



**CRUJ&F**

Centre de recherche universitaire sur les jeunes et les familles



ASSOCIATION FOR PSYCHOLOGICAL SCIENCE



L'ÉTUDE SUR L'AVENIR D'UNE GÉNÉRATION



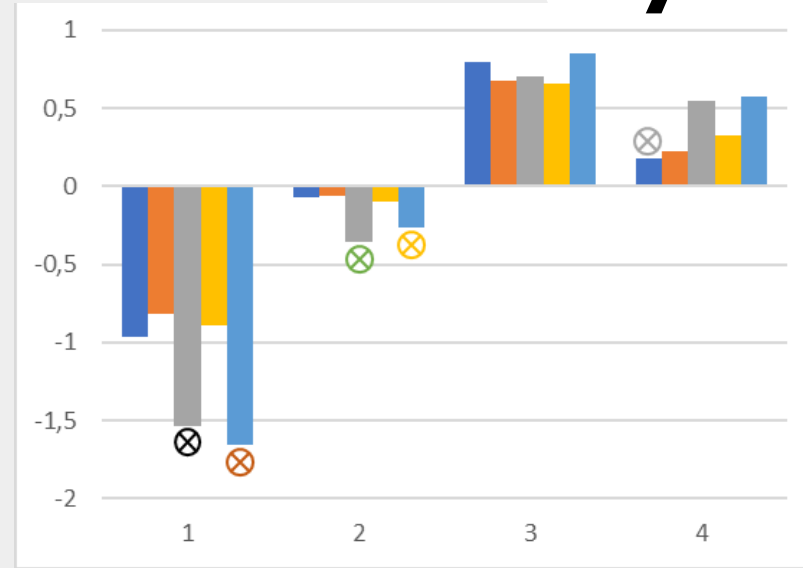
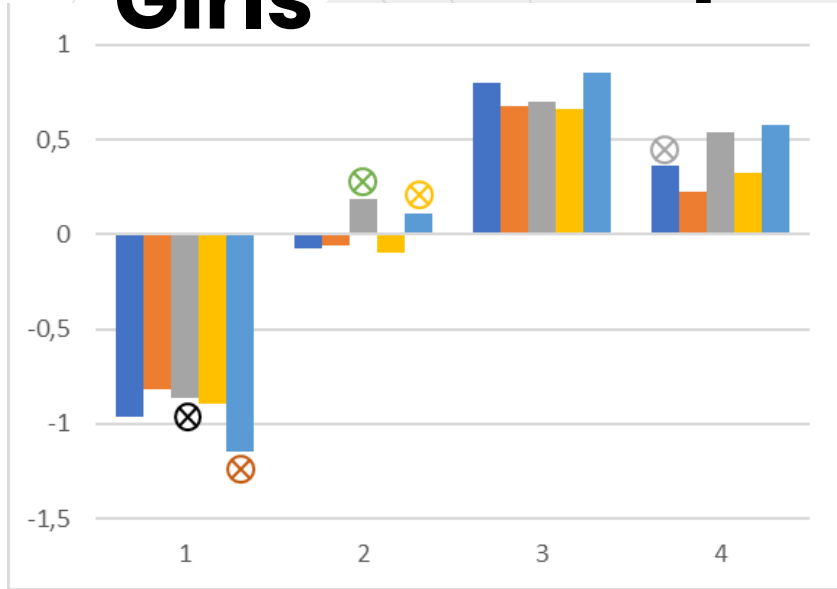
Fonds de recherche Société et culture



Institut de la statistique



# Girls Latent profile analysis Boys



## Profiles of School readiness :

1. Deficiency
2. Average

3. Good, with behaviour strengths
4. Superior

## Intercepts and slopes of externalized and internalized behaviour problems from 1<sup>st</sup> to 7<sup>th</sup> grade according to teachers

Mental health measures	Statistic	School readiness profiles				Comparison of profile intercept means
		At-risk (R)	Average (A)	Behavioural strength (B)	Generalized strength (G)	
Externalizing behaviour problems						
Hyperactivity	Intercept	2.28***	0.56**	0.56***	0.40***	R > (A = B = G)
	Slope	-0.14	-0.19***	-0.05	-0.02	
Inattention	Intercept	5.20***	3.45***	2.85***	1.86***	R > (A = B = G)
	Slope	-0.12	-0.13	0.04	0.08*	
Physical Aggression	Intercept	1.19*	0.09*	0.06	0.03	R > (A = B = G)
	Slope	0.08	-0.06***	-0.04**	-0.01*	
Opposition	Intercept	2.34***	1.02***	0.60***	0.38**	R > A > (B = G)
	Slope	-0.18**	-0.04	0.02	0.02	
Non-aggressive behaviour problems	Intercept	1.22**	0.29*	0.12**	0.24	R > (B = G)
	Slope	-0.04	-0.08*	-0.04*	0.00	
Psychopathic behaviours	Intercept	1.80**	0.69***	0.45***	0.50**	R > (B = G)
	Slope	-0.06	-0.02	-0.03	0.01	
Internalizing behaviour problems						
Depressive symptoms	Intercept	3.63***	2.35***	1.88***	1.77***	R > (B = G)
	Slope	0.14	0.00	0.05	0.12**	
Anxiety	Intercept	3.82***	2.68***	2.32***	2.15***	R > (A = B = G)
	Slope	0.16	0.00	0.08	0.12*	
Social withdrawal	Intercept	3.81***	2.01***	1.90***	1.59***	R > (A = B = G)
	Slope	0.13	-0.08	-0.01	-0.03	

## Intercepts and slopes of externalized and internalized behaviour problems from 4<sup>th</sup> to 7<sup>th</sup> grade according to the children (self-reports)

		School readiness profiles				Comparison of profile intercepts means
		At-risk (R)	Average (A)	Behavioural strength (B)	Generalized strength (G)	
Externalized behaviour problems						
Hyperactivity	Intercept	2.96***	2.85***	2.17***	1.83***	(R = A) > (B = G)
	Slope	-0.21*	-0.12	-0.13*	-0.16*	
Inattention	Intercept	3.39***	2.90***	2.37***	2.09***	R > A = B = G
	Slope	-0.11	-0.16	-0.09	0.01	
Physical Aggression	Intercept	0.62***	0.47***	0.37***	0.16**	R = A > G, B > G
	Slope	-0.21**	-0.05	-0.05	-0.11*	
Opposition	Intercept	2.92***	2.80***	2.40***	2.12***	(R = A) > (B = G)
	Slope	-0.02	0.05	-0.02	-0.04	
Non-aggressive behaviour problems	Intercept	0.66***	0.77***	0.55***	0.44***	R > G, A > (B = G)
	Slope	-0.10*	-0.01	0.02	-0.02	
Internalized behaviour problem						
Depressive symptoms	Intercept	2.92***	2.26***	2.15***	2.06***	R > (A = B = G)
	Slope	-0.10	-0.10	0.00	0.01	
Anxiety	Intercept	3.74***	3.18***	2.85***	2.75***	R > (A = B = G)
	Slope	-0.04	-0.18*	-0.20**	-0.15*	
Social withdrawal	Intercept	3.09***	2.04***	2.24***	2.24***	R > A = B = G
	Slope	0.03	-0.25***	-0.16***	-0.09	

## Intercepts and slopes of externalized and internalized behaviour problems from 4<sup>th</sup> to 7<sup>th</sup> grade according to the children (self-reports)

	School readiness profiles				Profile comparison
	At-risk (R)	Average (A)	Behavioural strength (B)	Generalized strength (G)	
Externalizing behaviour problems					
Hyperactivity	2.72***	2.78***	2.18***	2.30***	(R = A) > B
Impulsivity	2.94***	2.94***	2.65***	2.45***	(R = A) > G
Inattention	4.16***	4.16***	3.44***	3.32***	(R = A) > (B = G)
Physical Aggression	0.68***	0.70***	0.63***	0.52***	R = A = B = G
Opposition	2.60***	2.51***	2.21***	1.93***	(R = A) > G, R > B
Conduct problems	0.92***	1.09***	0.66***	0.73***	(R = A) > B, A > G
Internalizing behaviour problems					
Depressive symptoms	4.79***	4.77***	4.22***	4.55***	(R = A) > B
Social phobia	3.13***	3.35***	2.63***	3.17***	A > G > B
Generalized anxiety	5.49***	5.34***	4.93***	5.05***	R > B
Eating disorders	2.35***	2.36***	2.04***	2.16***	R = A = B = G



## Free templates for all your presentation needs



For PowerPoint and  
Google Slides



100% free for personal  
or commercial use



Ready to use,  
professional and  
customizable



Blow your audience  
away with attractive  
visuals