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I enjoy reading more and more every day, how come you don't?

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Evolution of the interest of first graders in reading over the school year

Introduction

Motivation is a key factor to understand children's academic achievement and early academic achievement is crucial. Then, understanding this motivation for school at an early age appears critical to reduce the achievement gap between children. To understand motivation in early age, exploring and explaining different growth patterns in first grade would be an important first step, but to date, little research exists (Nurmi & Aunola, 2005).

To go further, after showing that there are different growth patterns in motivation in the first year of school for important skills (reading), we focus on a malleable explanation factor: the relationship between teacher and children. This relationship would be a critical lever to improve motivation and close the achievement gap between children.

Aims

This research aims at exploring and understanding the multiple growths in first-graders interest in reading.

Method

Sample and Procedure

240 French children (Girls : 49%) Mean age = 6.2 (SD = 0.3)
Longitudinal study (3 times, October, February and June)

Measures

- Motivation: Task Value Scale for Children (TVS-C, Aunola, Leskinen, & Nurmi, 2006)
- Pre- and reading skills: phonological awareness, alphabetic principle, fluency (Zorman, Valdois, & Jacquier-Roux, 2002)
- Quality of teacher-child interaction: CLASS (Pianta, LaParo & Hamre, 2008)
- Sociodemographic information (age, parents' socioeconomic class, qualifications, etc.)

Analytic strategy

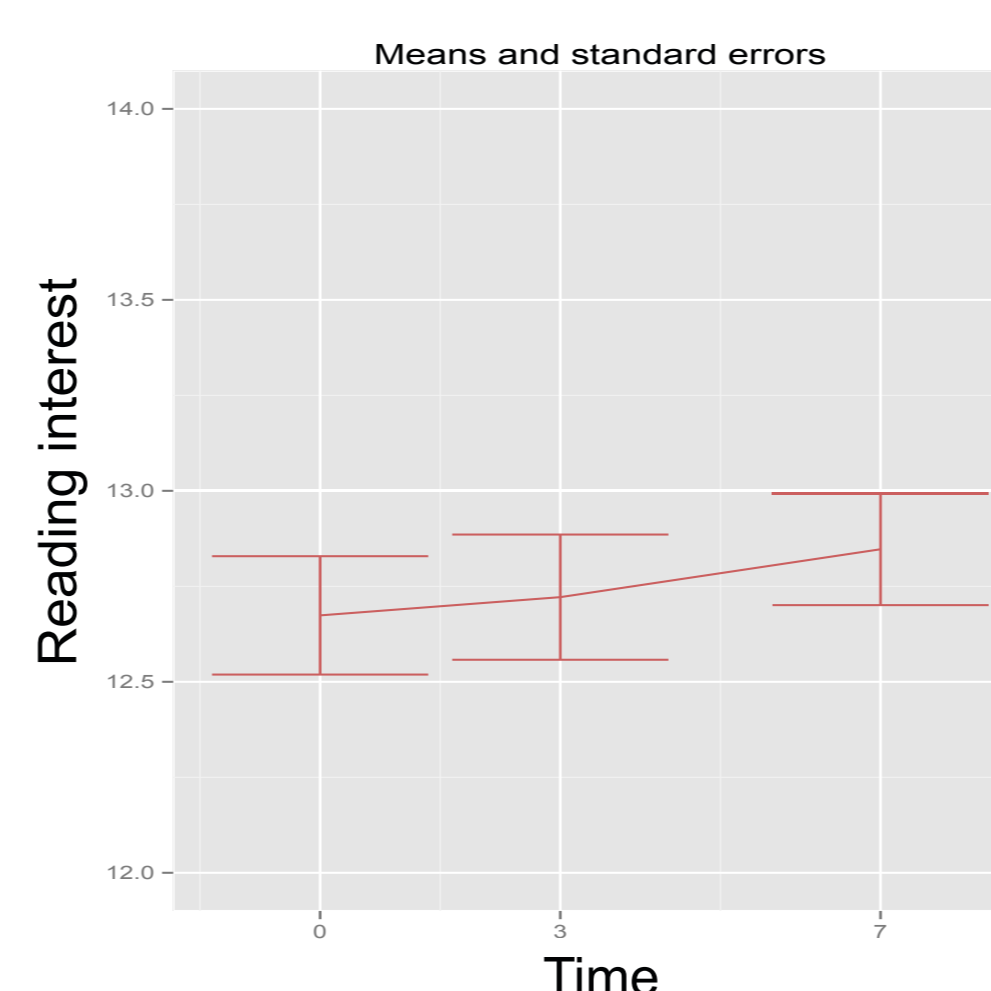
- 1) Measurement invariance of pupils' reading interest
- 2) Growth curves analysis on motivation development
- 3) Modeling heterogeneous growth trajectories using both
 - longitudinal k-means clustering (Genolini & Falissard, 2011) and
 - latent class mixed models (Proust-Lima, Amieva, & Jacquemin-Gadda, 2012) to ensure their validity
- 4) Multilevel Logistic regression to explain the trajectories

Results

- 1) Is the construct of reading interest the same over time?
Measurement invariance: weak invariance established.

Step	Invariance	df	χ^2 scaled	Δ df	$\Delta\chi^2$	CFI scaled	RMSEA scaled	BIC
1	Configural	24	38.79*	-	-	.98	.05	4773.98
2	Weak	28	40.10	4	1.57	.98	.04	4754.87

Necessary condition attained to make meaningful comparisons across time.

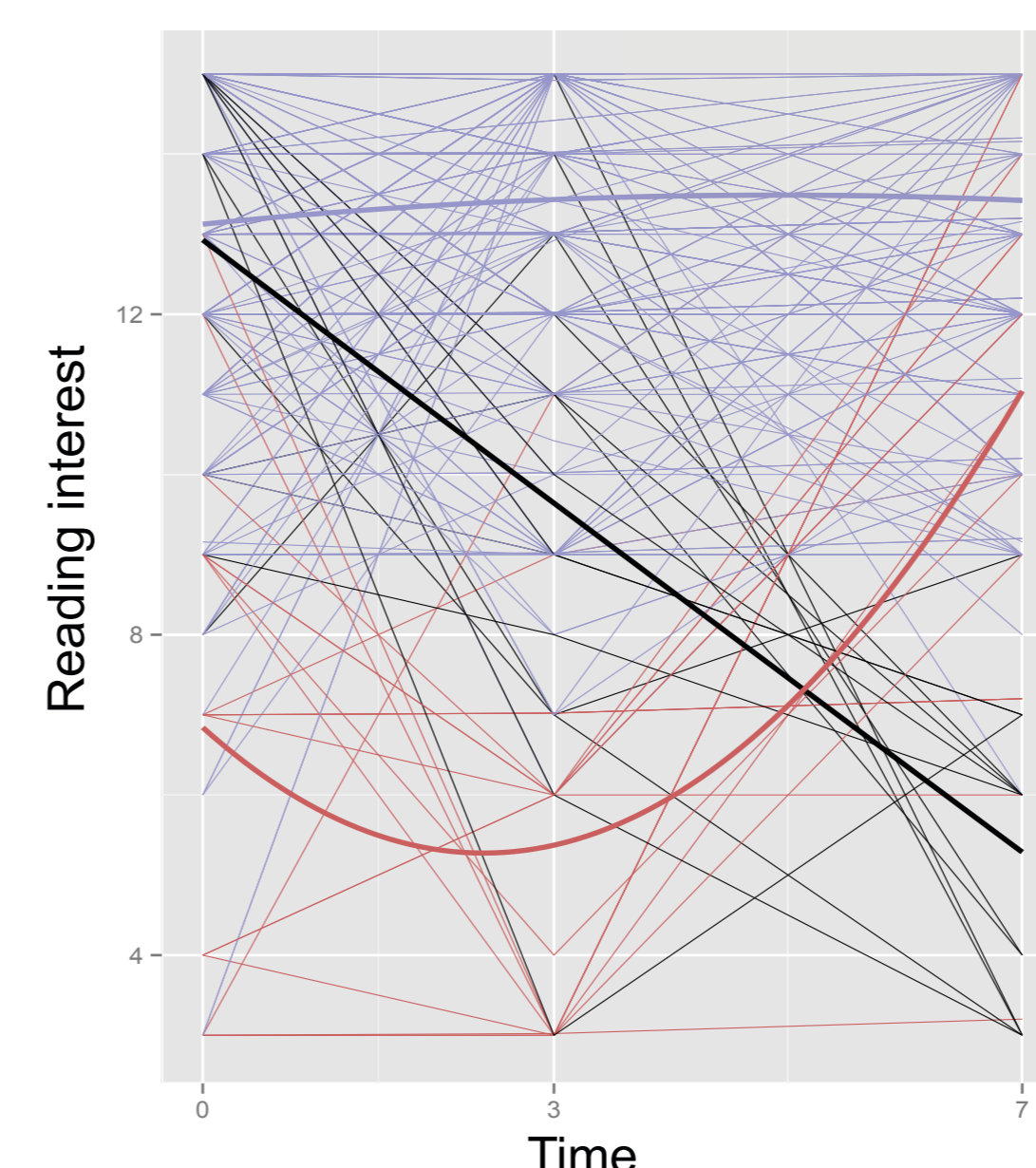


- 2) Do children differ in their start and rate of change?
Growth curves analysis of reading interest development.

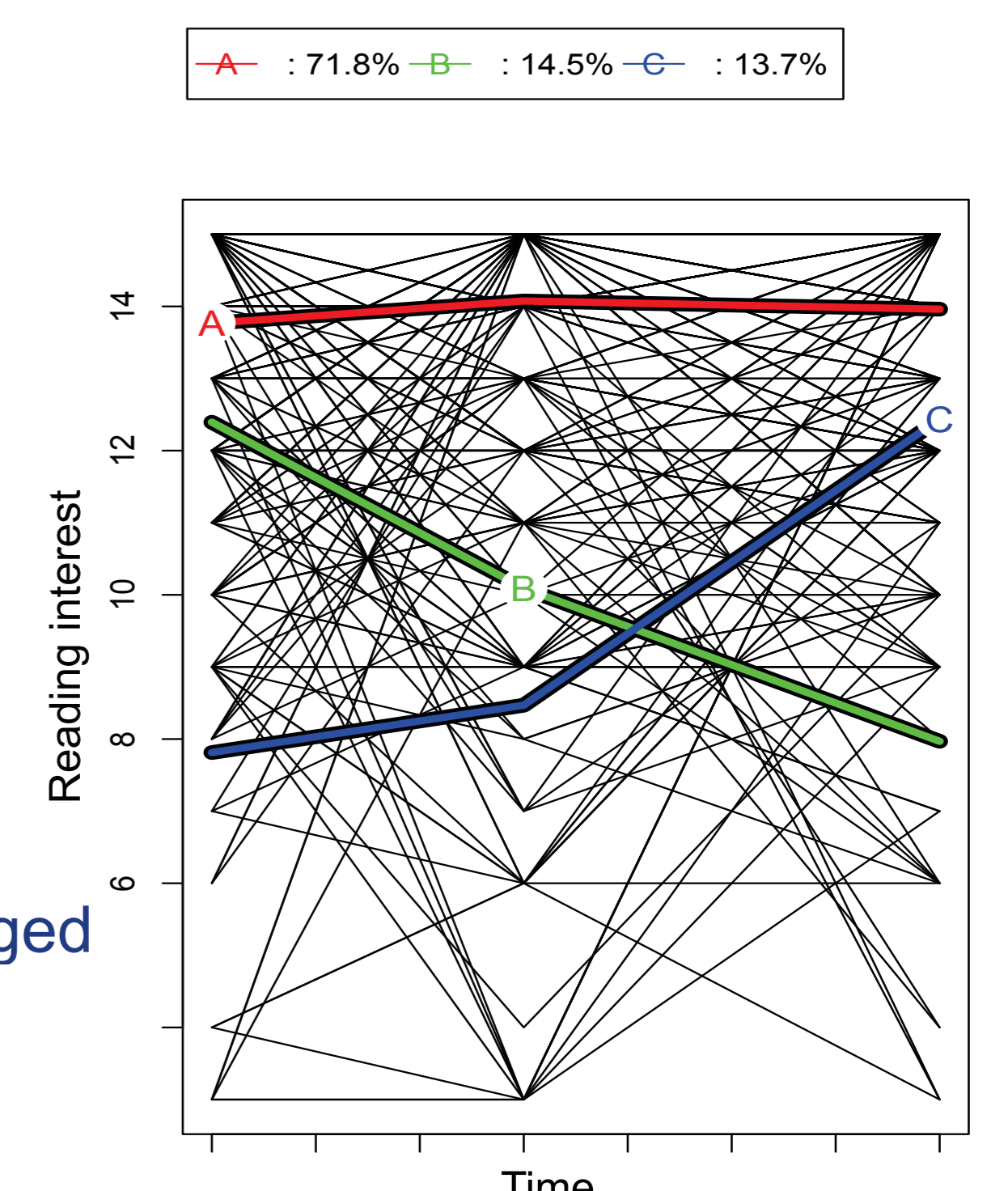
Model	χ^2 (df)	CFI	RMSEA	Mean (sd)	Slope (sd)
linear	0.23 (1)	1	.00	12.65* (0.17)	0.02 (0.03)

Constant mean across time but significant interindividual differences in October. No significant variability in the slope.

- 3) Do all children follow this longitudinal pattern?
Cross-validation of group based trajectory modeling.



Latent class mixed model (LCMM)



Longitudinal K-means clustering (KML)

Convergent solutions:
3 patterns emerged

- 4) Can we explain these group membership?
Multilevel logistic regression: membership probability to A vs. (B+C)?

	Model : Unconditional	Conditional	Unconditional bootstrapped (N=1000)
Fixed effects			
Intercept	1.26 (0.00)**	0.55 (0.99)	0.57 (-3.67 – 4.45)
Reading score (October)	-	0.74 (0.23)**	0.97 (0.10 – 2.14)
SES mother (high)	-	-0.84 (0.39)*	-1.22 (-3.03 – 0.28)
Learning support	-	0.54 (0.24)*	0.83 (0.11 – 1.85)
Random effects			
Intercept	0.51 (0.72)	0.24 (0.49)	1.46 (0.31 – 2.29)
Fit statistics			
Deviance	292.5	197.6	-
AIC	296.5	207.6	-
BIC	303.7	224.2	-

With all other factors held constant, children receiving high learning support are more likely to belong to the high-stable group.

Conclusion

Results indicate the convergence of LCMM and KML to a three latent class trajectories solution.

Nearly 80% of children show a high-stable pattern of motivation in reading during primary grade but 20% show a changing pattern.

When trying to explain the high-stable group membership versus the changing group: controlling for performances in reading in October, the quality of learning support from teacher positively impacts the probability of the child to belong to the high-stable group.

These data enlarge previous works showing variability at school entry in children motivation and those establishing that quality of teacher-child interaction could have an impact on pupils' motivation to read (Lerkkanen et al., 2012).

