Pre-service teachers' conceptions on explicit, (socio-)constructivist and transmissive approaches to teaching and learning in French Speaking Belgium

Authors: Chloé Gravé, Marie Bocquillon, Nathanaël Friant & Marc Demeuse

Pre-service teacher education in French-Speaking Belgium

- Takes place in different institutions according to the level at which future teachers will teach:
  - ISCED 0, 1 and 2: Tertiary colleges (Hautes Écoles), 3 years
  - ISCED 3: At university during subject training (master) or after (aggregation), 1 year.
- Pedagogical freedom : each teacher, as a “reflective practitioner” (Schon, 1984), is free to embrace his/her own approach to teaching and learning

Changing pre-service teachers' conceptions

- It is often said that students arrive in pre-service teacher training with a "transmissive" preconception.
- Following Nettle (1998), we hypothesize that pre-service education has an effect in changing pre-service teacher's conceptions.
- We also hypothesize that different colleges may have different effects, as their teacher trainers may embrace different approaches and pass them on to their students.

Study by Wanlin & Crahay (2015) on pre-service teachers' conceptions

- Postulate the existence of a socio-constructivist doxa that structures an opposition between two approaches:
  - Socio-constructivist approach presented as the only legitimate contemporary approach
  - "Transmissive" approach
- Questionnaire to measure the extent to which pre-service teachers have a socio-constructivist vs a "transmissive" conception of teaching and learning.

Study by Wanlin & Crahay (2015) on pre-service teachers' conceptions

- Questionnaire

Concept.	Example of items
Constr. (13 items)	• Letting the pupils discuss their own ideas of resolution help them understand learning contents • Learners should have the opportunity to construct their own knowledge in collaboration with their classmates or with the teacher • The teacher should often give to the pupils the opportunity to solve problems in pairs or in teams
Trans. (17 items)	• Pupils learn best when they follow their teacher's explanations • Pupils need a clear demonstration by the teacher of the way to solve problems by applying contents • Pupils learn best when the teacher explains, demonstrates and expounds the contents

Study by Wanlin & Crahay (2015) on pre-service teachers' conceptions

- Their results
  - pre-service teachers do not embrace a dichotomized conception of approaches to teaching and learning
  - Many of them prefer one approach without rejecting the other
- But what if they forgot one conception of teaching and learning?
  - Explicit teaching is often confused with a caricatured "transmissive" approach but is different.

Explicit teaching

- Visible behaviours of teachers and learners (Hattie, 2009)
- Proven to be effective in a wide range of situations
- Three phases
  - Preparation: planning, objectives, steps
  - Interaction : I do it / We do it / You do it
  - Consolidation: daily/weekly/monthly review, independent practice, transfer, evaluation

Bocquillon, Derobertmasure & Demeuse (2018), d'après Gauthier, Bissonnette et Richard (2013)

Transmissive vs explicit teaching

Transmissive teaching	Explicit teaching
Monologue by the teacher	Dialogue between teacher and pupils
Teacher checks understanding at the end of the lesson	Teacher checks understanding continuously
Pupil is passive, listens	Pupil is active, is constantly asked to do something
Autonomous practice	Guided practice first, then autonomous practice

Bocquillon, Derobertmasure & Demeuse (2018), d'après Gauthier, Bissonnette et Richard (2013)

Questionnaire

- New items on explicit teaching

Concept.	Example of items
Expl. (14 items)	• Exercises should be organized in two steps: a first step when pupils get help and a second step when they do autonomous work • The teacher should clearly define and communicate the objectives of the lessons to the pupils • Pupils learn best when the teacher checks continually their understanding

Hypotheses

1. Respondents can be characterized on three non-independent dimensions: (socio-)constructivist, “transmissive” and explicit approaches
2. There is a weak negative correlation between (socio)-constructivist and transmissive conception
3. In tertiary colleges, students have a more (socio-)constructivist than “transmissive” conception
4. In tertiary colleges, first-year students have a more “transmissive” approach than third-year students
5. In tertiary colleges, third-year students have a more “(socio-)constructivist” approach than first year students
6. There is a college effect, some being more (socio)-constructivist than others

Sample

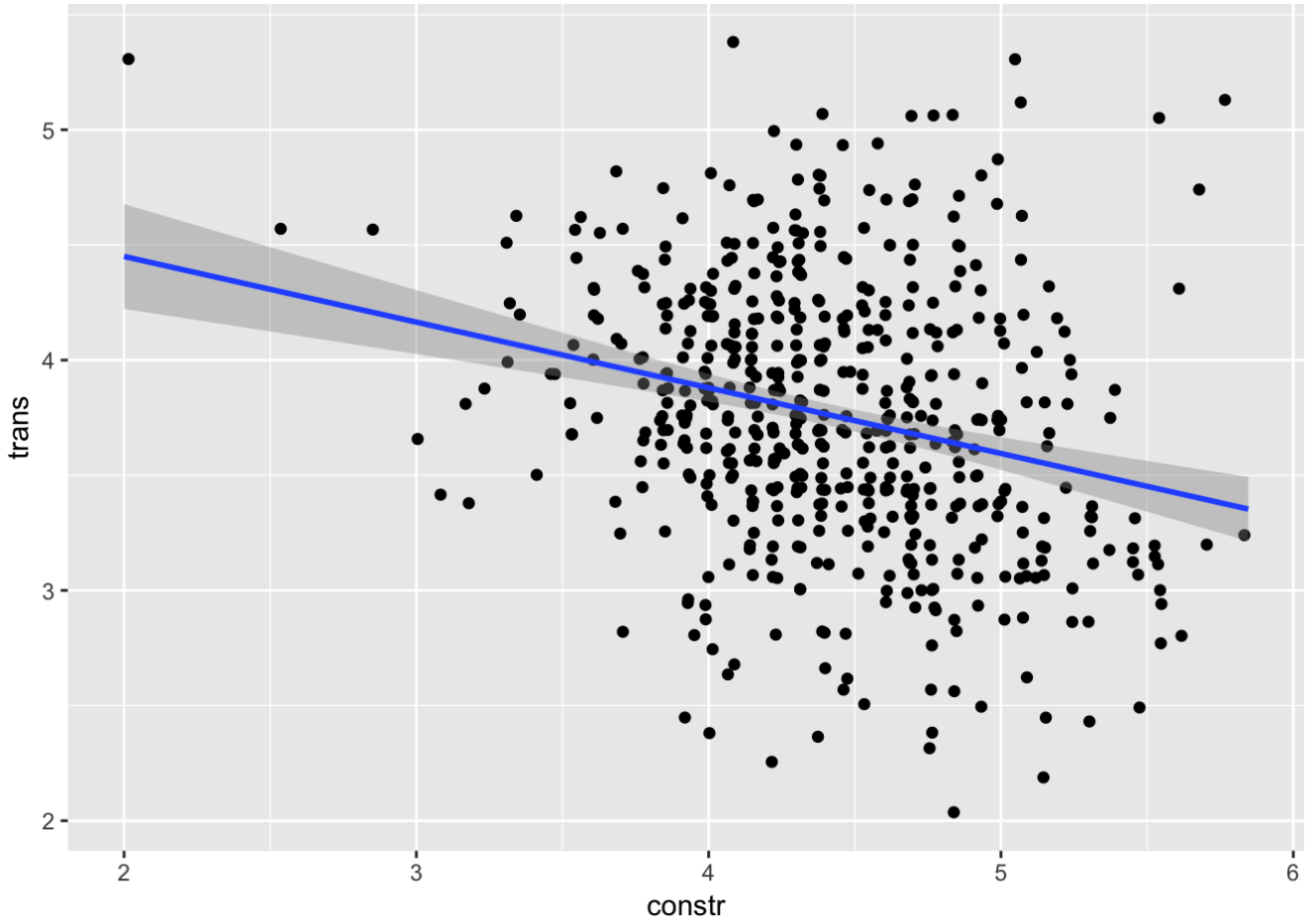
- 563 pre-service teachers from 5 colleges and 1 university
  - Colleges:
    - year 1 and 3
    - ISCED 1 and ISCED 2
  - University:
    - Agregation
    - ISCED 3

Hypothesis 1 : 3 dimensions

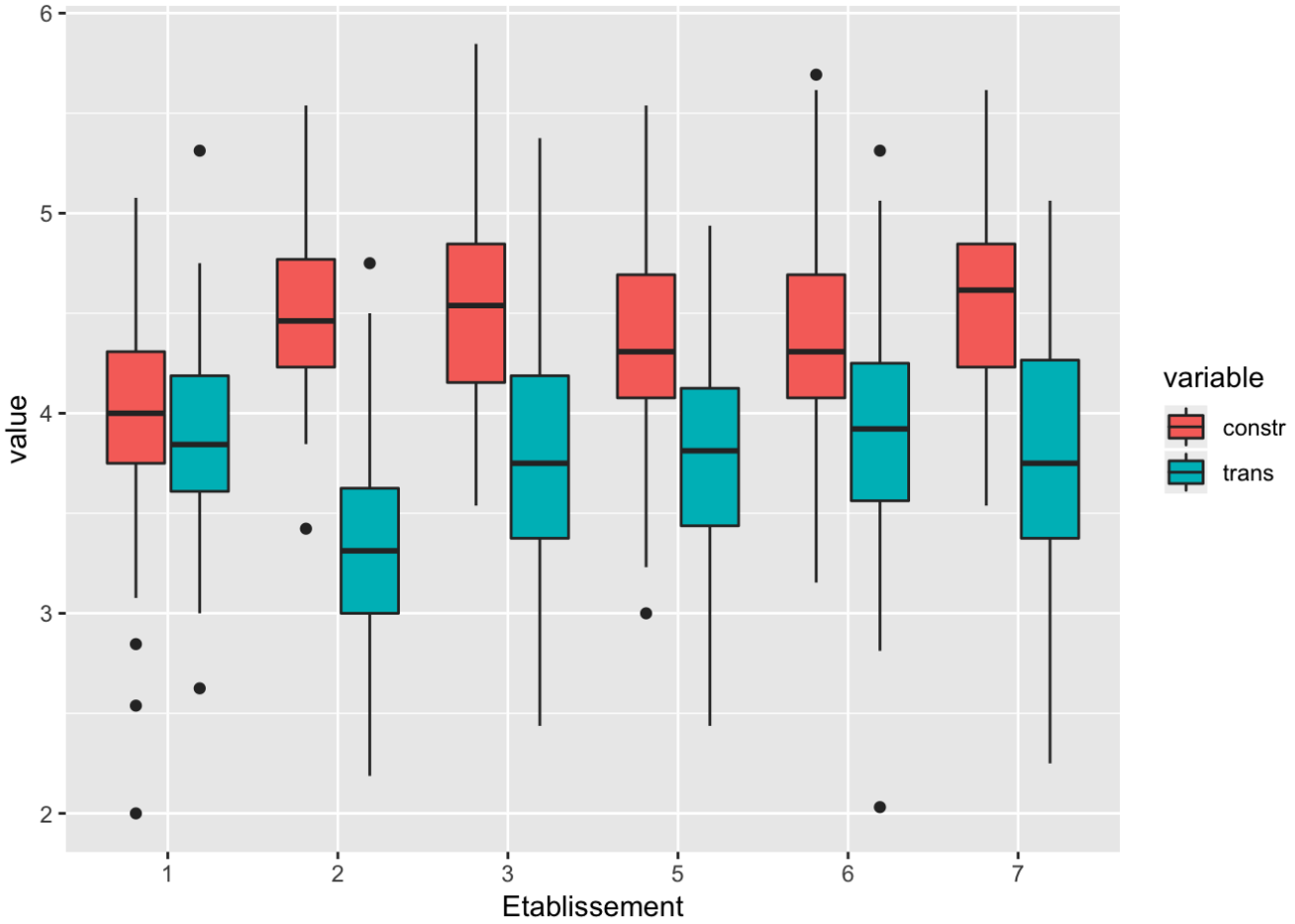
- This hypothesis isn't validated
- Cronbach's alpha:
  - (socio-)constructivist: .74
  - Transmissive: .78
  - Explicit: .54
- Factor analysis (MinRes, Oblimin rotation)
  - 2-factors solution
  - Explicit items load on either (socio-)constructivist or transmissive dimension
  - Correlation between the two factors: -0.13
  - One item must be removed from the transmissive approach.

Hypothesis 2 : Negative correlation

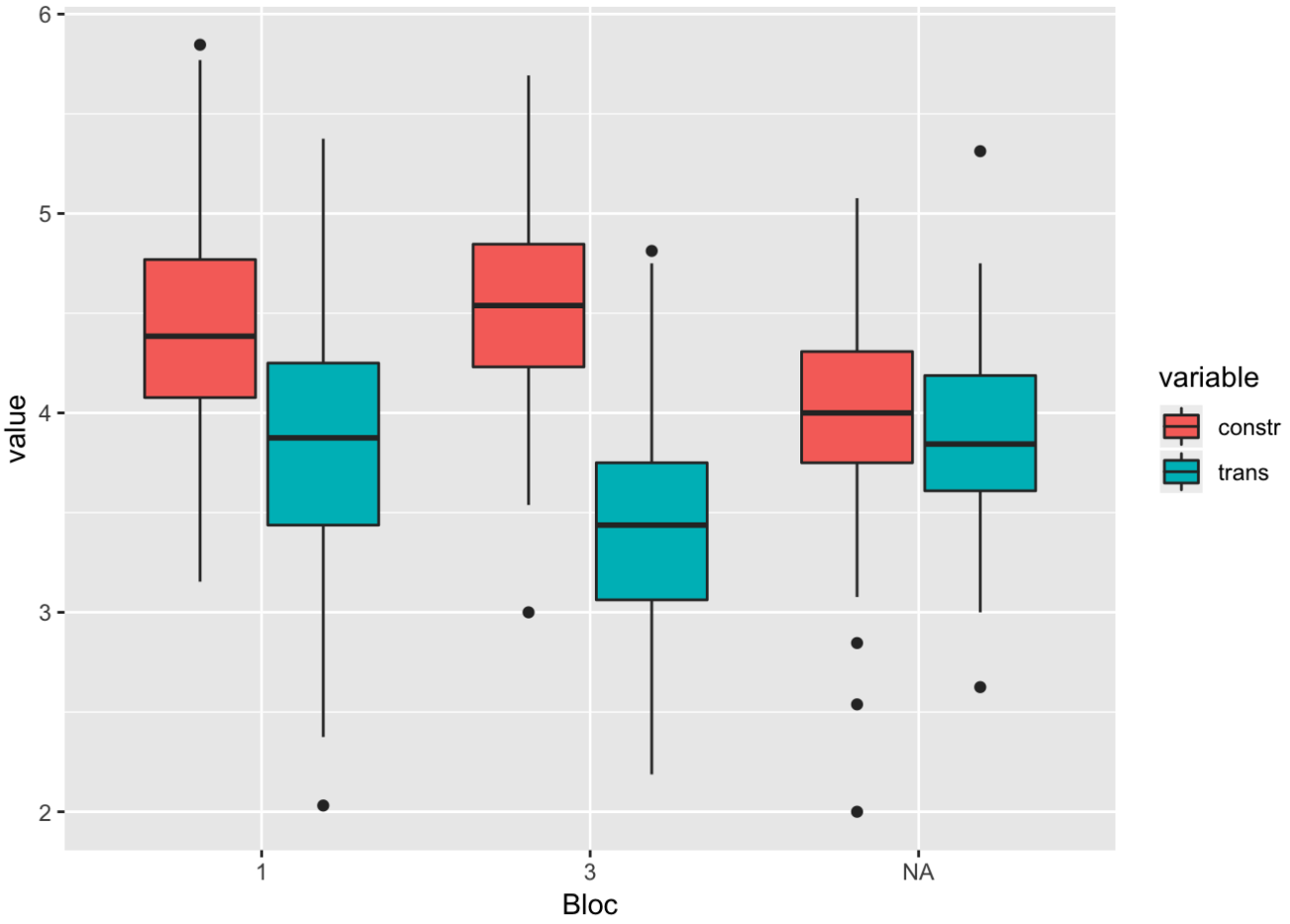
There is a weak negative correlation between (socio)-constructivist and transmissive conception: r = -0,25



(socio-)constructivist vs “transmissive” conception

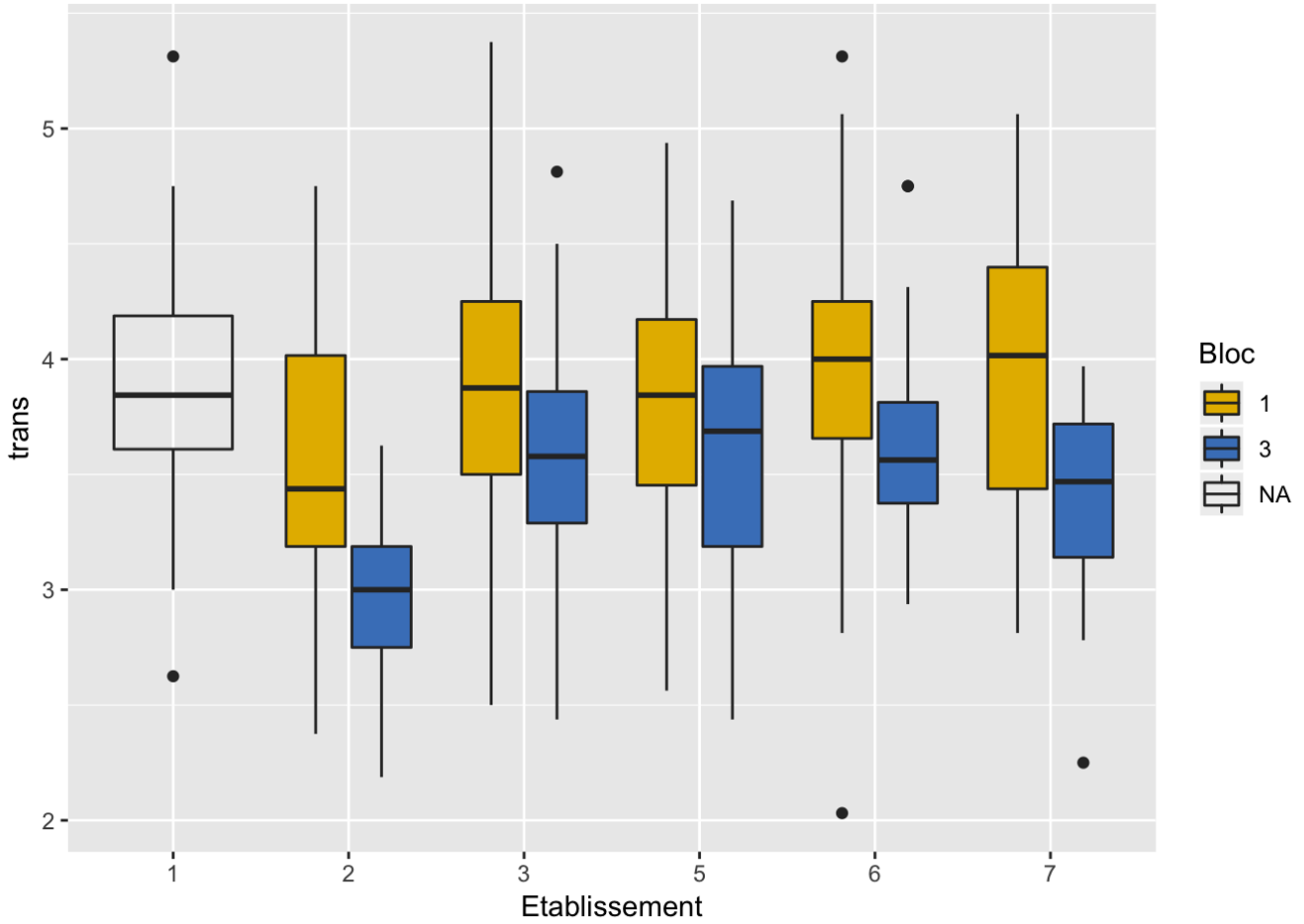


The difference widens in year 3



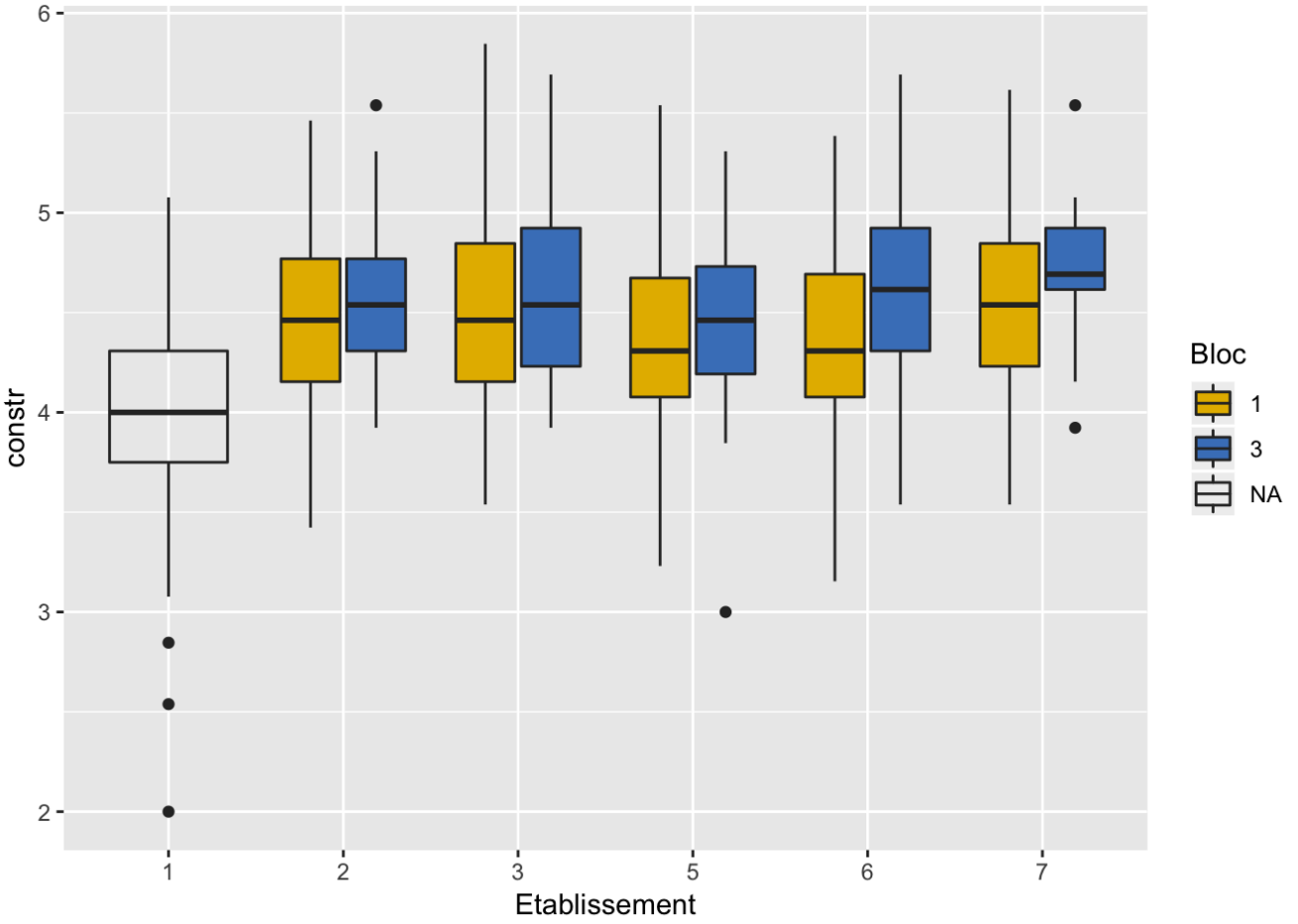
College and year effect on “transmissive” conception

- Proportion of variance explained by the “college” level: 9%
- Proportion of variance explained by the “year” level: 10%



College and year effect on (socio-)constructivist conception

- Proportion of variance explained by the “college” level: 1% (14% if we take university into account)
- Proportion of variance explained by the “year” level: 1%



Conclusions

- Some evidence for a (socio-)constructivist doxa in colleges : pre-service teachers embrace from the beginning a (socio-)constructivist conception.
- This doesn’t mean that pre-service teachers, especially from first year, reject the “transmissive” conception.
- College and year effect mainly on the rejection of the ”transmissive” conception.
- Future ISCED 3 teachers, at university, have less (socio-)constructivist conceptions than their college counterparts

Thank you

Nathanaël Friant
Chargé de cours

T : +32 (0)2 650 60 55
nathanael.friant@ulb.ac.be

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Service des Sciences de l'Éducation
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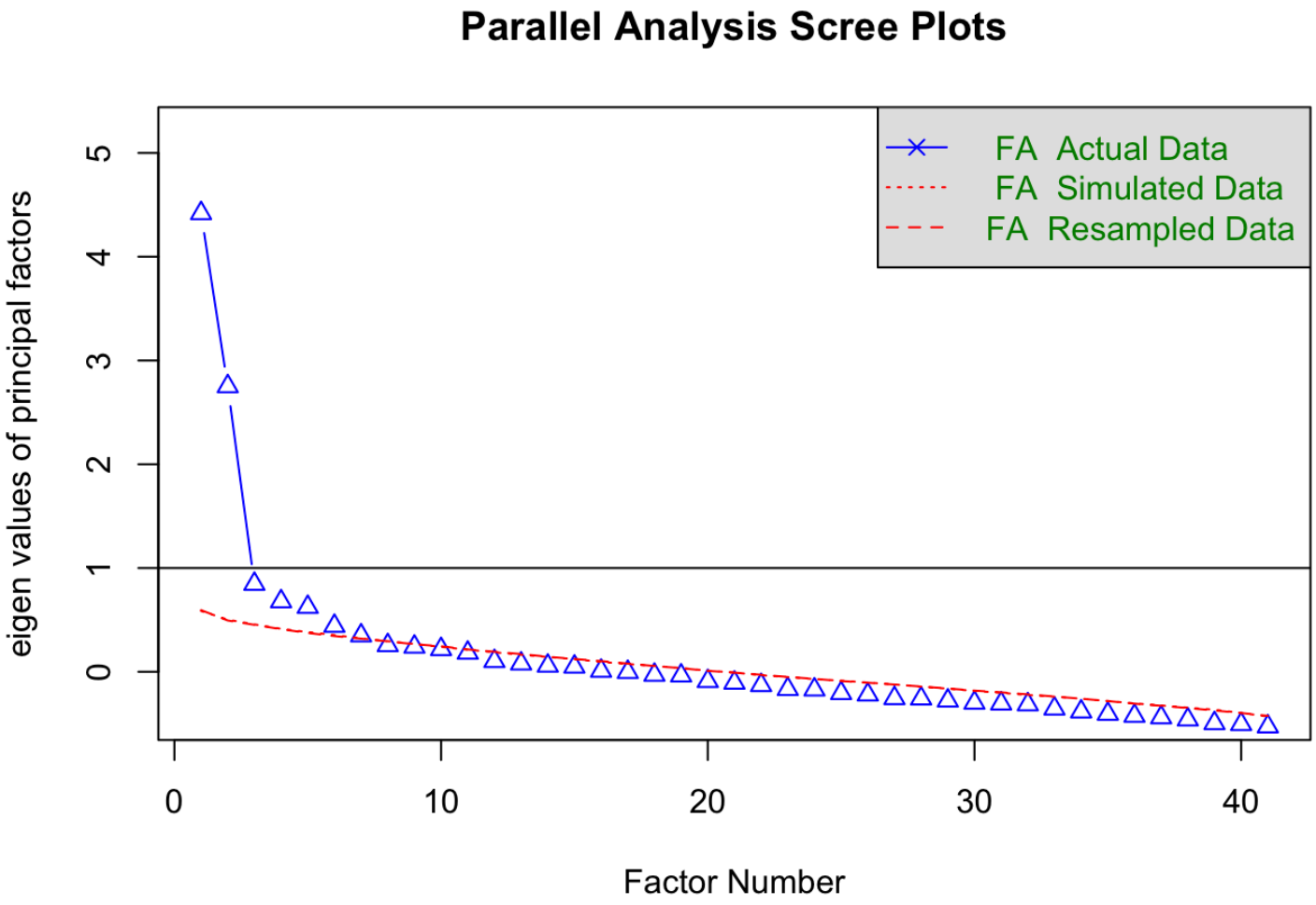
Annex - Sample

Contingency Tables

Groupes	Bloc	Etablissement						Total
		1	2	3	5	6	7	
1	1	0	0	0	0	0	0	0
	3	0	0	0	0	0	0	0
	agreg	64	0	0	0	0	0	64
	Total	64	0	0	0	0	0	64
3	1	0	40	32	8	83	46	209
	3	0	29	18	7	17	18	89
	agreg	0	0	0	0	0	0	0
	Total	0	69	50	15	100	64	298
4	1	0	0	75	74	0	0	149
	3	0	0	32	20	0	0	52
	agreg	0	0	0	0	0	0	0
	Total	0	0	107	94	0	0	201
Total	1	0	40	107	82	83	46	358
	3	0	29	50	27	17	18	141
	agreg	64	0	0	0	0	0	64
	Total	64	69	157	109	100	64	563

Annex –Factor analysis



Annex – Linear mixed model

Modèle incluant le bloc comme prédicteur au niveau individuel

```
modeltrans <- lmer(trans ~ (1 | Etablissement) + Bloc, data = resume, REML = FALSE)
summary(modeltrans)
```

```
## Linear mixed model fit by maximum likelihood  ['lmerMod']
## Formula: trans ~ (1 | Etablissement) + Bloc
##    Data: resume
##
##      AIC      BIC   logLik deviance df.resid
##    780.7    797.6   -386.4    772.7      495
##
## Scaled residuals:
##     Min      1Q  Median      3Q     Max
## -3.4022 -0.6435 -0.0097  0.5866  2.8279
##
## Random effects:
##  Groups        Name        Variance Std.Dev.
##  Etablissement (Intercept) 0.02576  0.1605
##  Residual                  0.26915  0.5188
## Number of obs: 499, groups:  Etablissement, 5
##
## Fixed effects:
##             Estimate Std. Error t value
## (Intercept)  3.87784    0.07726  50.191
## Bloc3       -0.35148    0.05226  -6.726
##
## Correlation of Fixed Effects:
##       (Intr)
## Bloc3 -0.194
```

Annex – Linear mixed model

Modèle incluant le bloc comme prédicteur au niveau individuel

```
modelconstr <- lmer(constr ~ (1 | Etablissement) + Bloc, data = resume, REML = FALSE)
summary(modelconstr)
```

```
## Linear mixed model fit by maximum likelihood  ['lmerMod']
## Formula: constr ~ (1 | Etablissement) + Bloc
##    Data: resume
##
##      AIC      BIC   logLik deviance df.resid
##    672.3    689.2   -332.2    664.3      495
##
## Scaled residuals:
##     Min      1Q  Median      3Q     Max
## -3.2515 -0.6857 -0.1357  0.6699  2.9220
##
## Random effects:
##  Groups        Name        Variance Std.Dev.
##  Etablissement (Intercept) 0.002503 0.05003
##  Residual                  0.220031 0.46907
## Number of obs: 499, groups:  Etablissement, 5
##
## Fixed effects:
##             Estimate Std. Error t value
## (Intercept)  4.44047    0.03384 131.214
## Bloc3        0.12836    0.04698   2.732
##
## Correlation of Fixed Effects:
##       (Intr)
## Bloc3 -0.394
```