

# Evaluation of the self efficacy of learners during intensive statistical training sessions

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## Context

- Increasing availability of spatial data
- Growing set of applications
- Need for skills and tools to : access, extract, explore and analyse such data

Building an European master level course: OPEN SPAT

Three partners:

- Liege University
- Montpellier SupAgro
- University of Lisboa

Funded by :

- Erasmus + Key Action 2  
Strategic Partnerships for  
adult education

# OPENSPAT : lifelong learning course

## ➤ **Module 1 : (Lisbon)**

- Access and manipulate spatial data
- Spatial autocorrelation – variogram – variance estimation
- Introduction to linear model

## ➤ **Module 2 : (Montpellier)**

- Variogramme – Kriging
- Regression over spatially autocorrelated variables

## ➤ **Module 3 : (Gembloux)**

- Pattern recognition with spatial constraints: clustering & classification

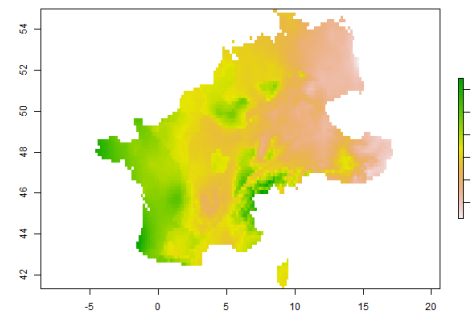
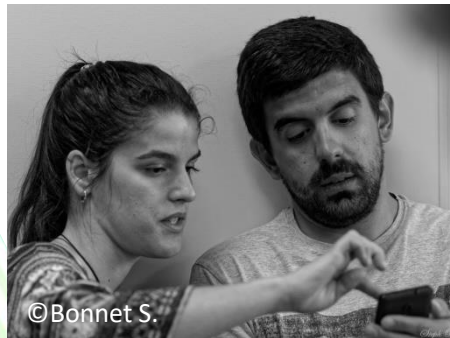


# Standard training day

- AM : Background theory



- PM : Real-size case studies in peer learning



# OPENSPAT : lifelong learning course

Designed to upgrade people already trained in statistics

⇒ Check the **consistency** and **adequacy** of the learning module

⇒ 13 PhD students tested the first session

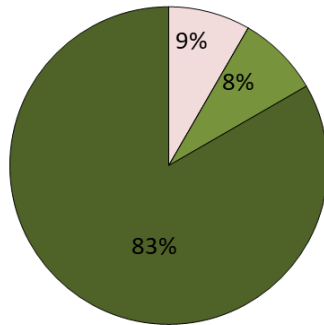
- From different countries (France, Portugal, Belgium)
- With different background (Geomatics, agronomy, forestry, ...)

**Motivation** plays a fundamental role in learning

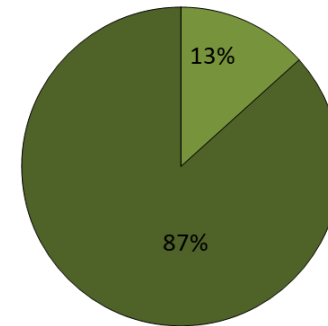
= > **Evaluation of the learners' motivation**

# What is the *test learners'* profile ?

You are interested in **using** Statistical analysis of spatial data

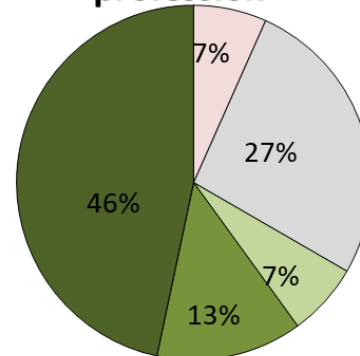


You are interested in **understanding** Statistical analysis of spatial data



Public much more demanding than future learners

You will have **application** of statistical analysis of spatial data **in your current profession**



- 1 (Strongly disagree)
- 2
- 3
- 4 (Neither disagree nor agree)
- 5
- 6
- 7 (Strongly Agree)

# Methodology

- 3 learning modules in 3 different countries (AM : theory / PM Practical)
- One questionnaire after each learning session (7-point Likert scale)

- Self efficacy (5 items ;  $\alpha = 0,85$ )
- Task value (5 items ;  $\alpha = 0,74$ )
- Interest (4 items ;  $\alpha = 0,74$ )
- Competence (13 items ;  $\alpha = 0,89$ )
- Professor's attitude (2 items ;  $\alpha = 0,61$ )
- Peer learning (7 items ;  $\alpha = 0,76$ )
- Modules evaluation (2 items ;  $\alpha = 0,78$ )

Evaluation of  
the motivation

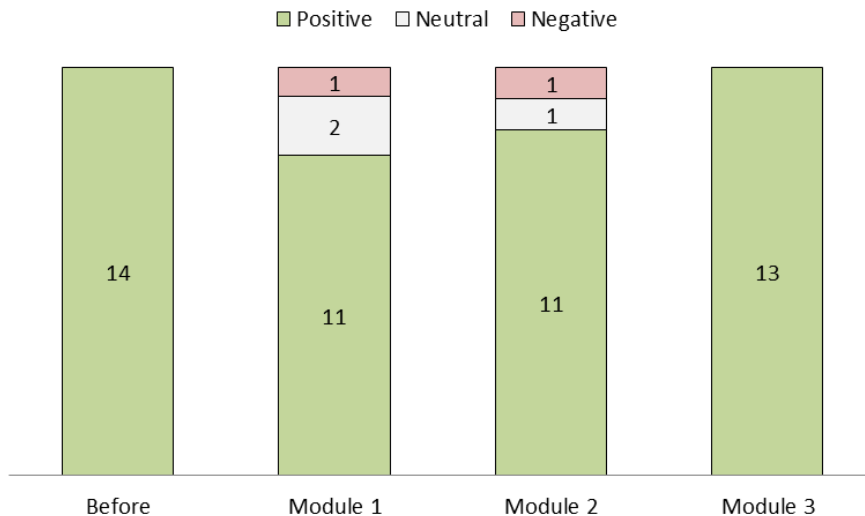
\* 37 items inspired by the Intrinsic Motivation Inventory and the SATS-36

# Self efficacy (5 items)

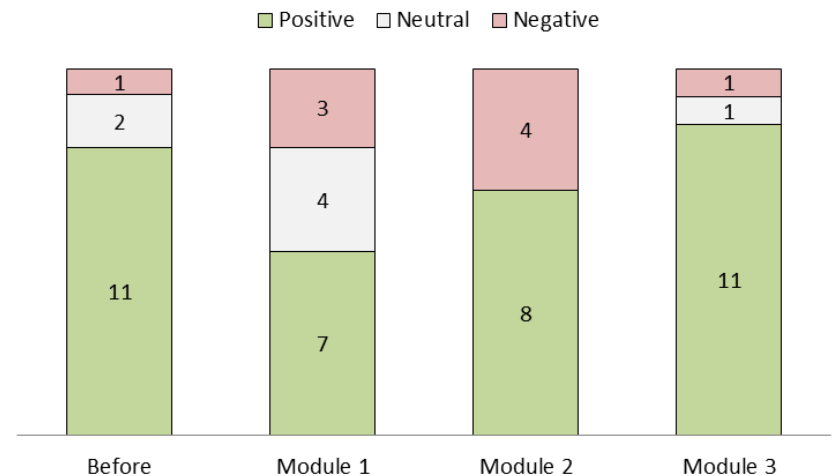
Mean (M) and Standard Deviation [SD]

M [SD] Module 1	M [SD] Module 2	M [SD] Module 3
4,96 [1,22]	5,08 [1,20]	5,40 [0,97]

I'm **confident** in my abilities to **interpret spatial data**



I'm **confident** in my abilities to **choose the right method for analyzing spatial data**





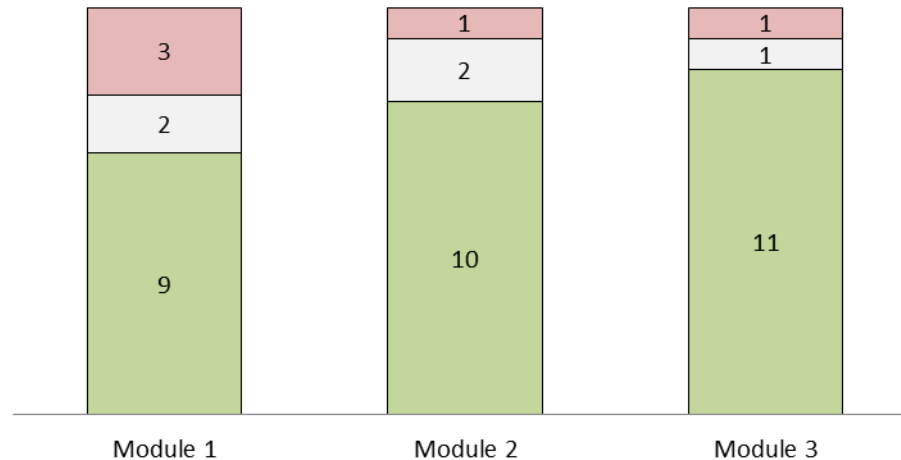
# Self efficacy (5 items)

Mean (M) and Standard Deviation [SD]

M [SD] Module 1	M [SD] Module 2	M [SD] Module 3
4,96 [1,22]	5,08 [1,20]	5,40 [0,97]

**At the end of the learning module i feel much more efficient in this field**

■ Positive □ Neutral ■ Negative



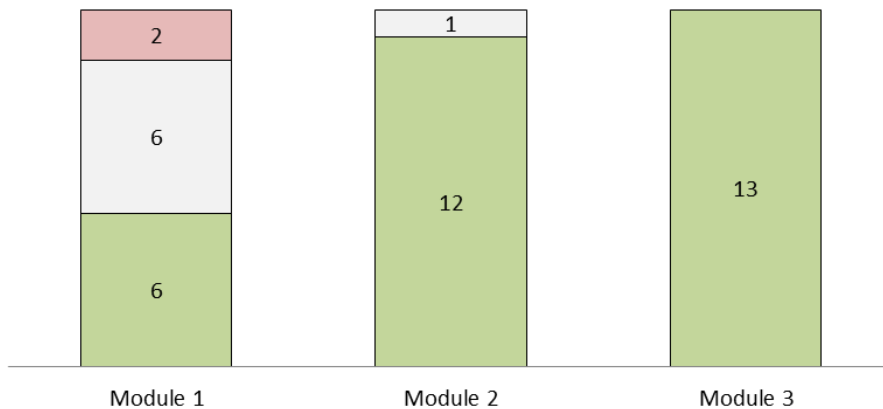
# Competence (13 items)

Mean (M) and Standard Deviation [SD]

M [SD] Module 1	M [SD] Module 2	M [SD] Module 3
4,52 [1,65]	4,93 [1,61]	4,74 [1,74]

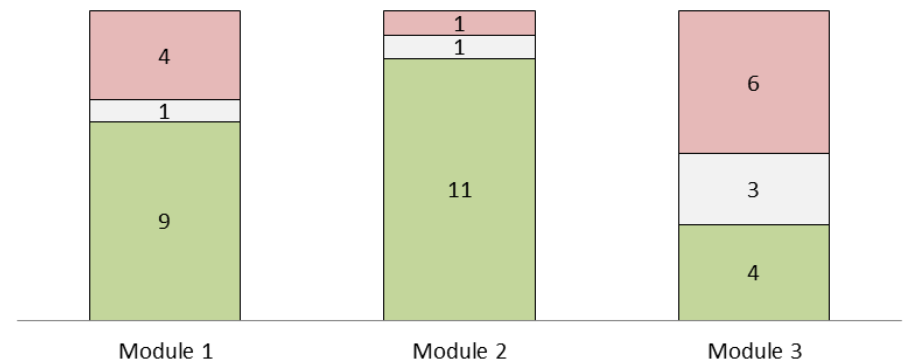
You succeeded to **understand** the essential of **content** during the **theoretical course**

■ Positive ■ Neutral ■ Negative



You succeeded to **complete** the majority of **exercises** proposed during the **practical course**

■ Positive ■ Neutral ■ Negative



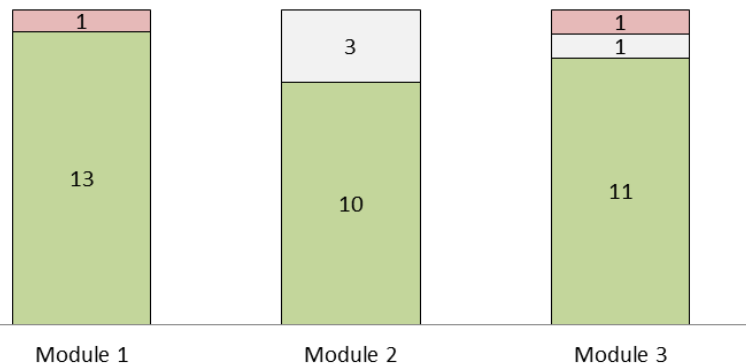
# Module evaluation (2 items)

Mean (M) and Standard Deviation [SD]

M [SD] Module 1	M [SD] Module 2	M [SD] Module 3
5,36 [1,22]	5,27 [0,87]	5,50 [1,21]

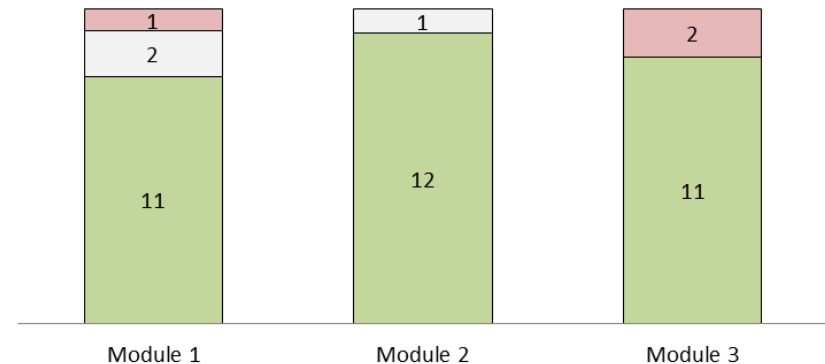
The **organization** for this learning module **was perfect**

■ Positive ■ Neutral ■ Negative



Your **expectations** for this module **have been met**

■ Positive ■ Neutral ■ Negative

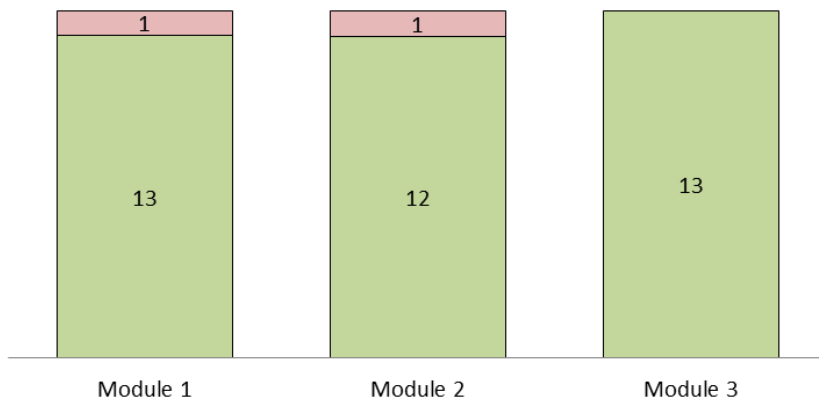


# Professor's attitude & Peer support

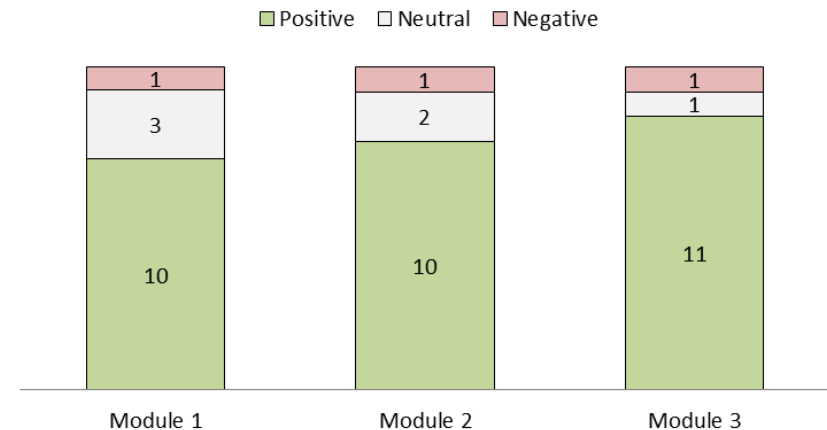
Mean (M) and Standard Deviation [SD]

	M [SD] Module 1	M [SD] Module 2	M [SD] Module 3
Professor's attitude (2 items)	6,07 [0,98]	5,62 [1,02]	6,00 [0,84]
Peer support (6 items)	5,39 [1,46]	4,85 [1,54]	5,17 [1,66]

The **teacher's contribution** to this learning module was **positive** and **effective**



You have **benefited** from **interacting** with your **peers** (colleagues)



# Spearman Correlation Coefficients



Consistent with data in the scientific literature

# Conclusions

- Feedback from test students is very positive
- The different parameters that can influence motivation seem to be activated
- Validation of the standard training day theory/practice and the sequencing of the different modules
- Evolution of the feeling of self-efficacy through the learning session : Validation of the proposed pedagogical activities

= > Test the learning session in version « lifelong learning course »



# Acknowledgements

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