

# A pilot study of doctoral students' conceptions of research

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# Summary

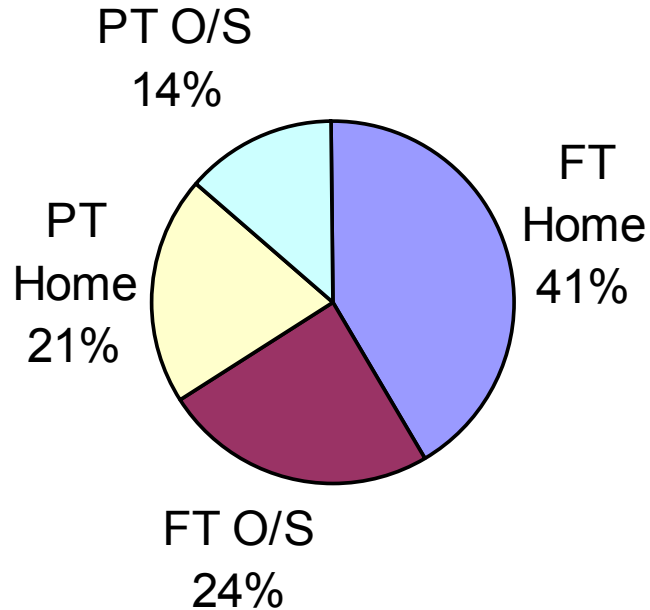
- Background – Institutional Context
- The sample
- Misconceptions
- Some initial correlations
- Conclusions

# The Graduate School

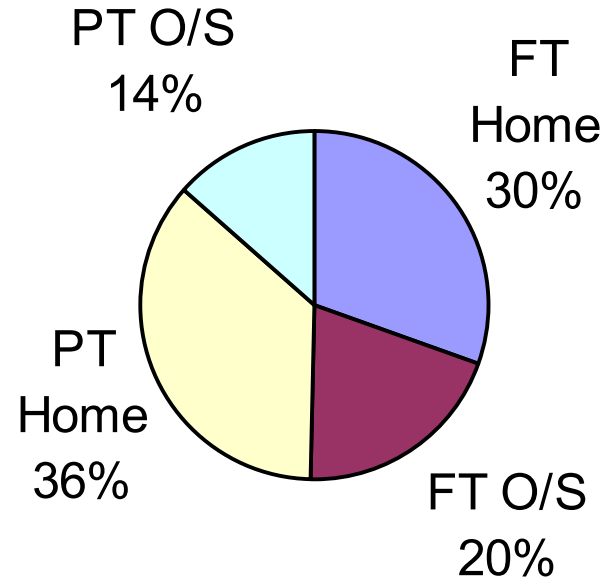
## Postgraduate Numbers – 2006/07 figures

- 1190 Research Postgraduate Students (+continuation)
- 2370 Taught Postgraduate Students
  
- 1975 Full time students (55%)      PGT 50%
- 1585 Part time students (45%)      50%
  
- 2314 Home students (65%)
- 1246 Overseas students(35%)

# Postgraduate Student Demographics



Research Students



Taught Students

# Durham University Values

- We are committed to remaining a research-led institution, valuing knowledge and learning for their own sake as well as for the cultural, social and economic benefits they offer;
- We are committed to the communication of knowledge and learning, through an environment in which leading academic staff teach and engage in dissemination of knowledge to a broader community;
- We believe in creating an environment in which academic excellence can be combined with opportunities for personal development, so enabling individuals to create their own futures;
- We are committed to remaining at the heart of and contributing to improvements in the quality of life of the people in the North East of England.

# Our Sample

- Sample size is 198 Doctoral Students (~20% of total)

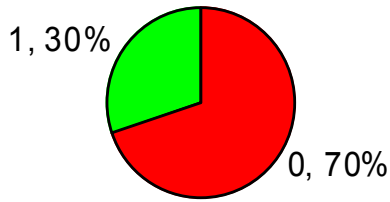
## The Research Questions:

- Are there differences in the way different research students approach their research?
- If so, what are these differences?
- How can we inform our induction and training through this?
- How do effective researchers view themselves and their work?
- Can we “develop” more effective researchers?

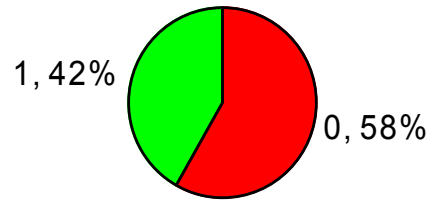
# Our Sample

Pie Chart (scori data delimited.sta 89v\*230c)

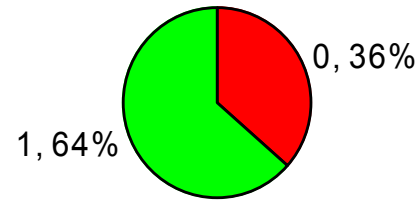
Include condition: v4=1



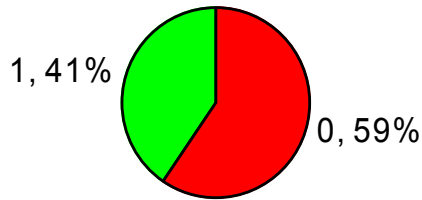
UK/Overseas



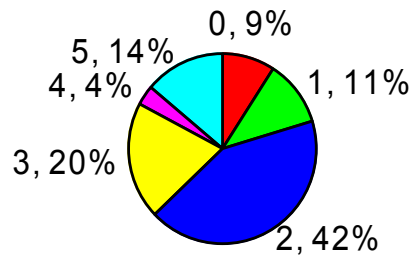
Male/Female



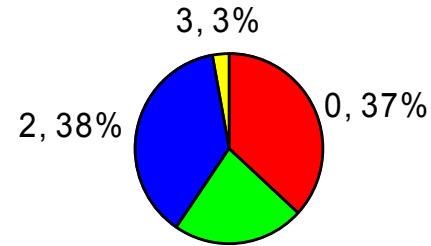
Non English



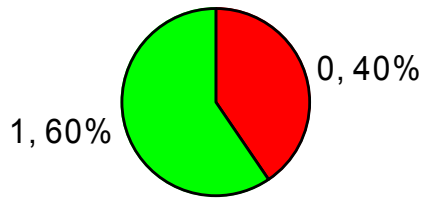
Funded



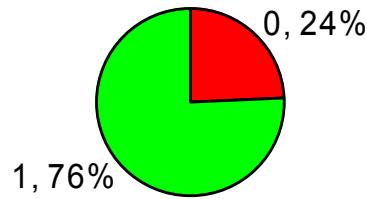
Year of Study



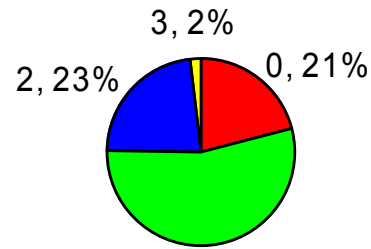
SC/AH/SS



Not presented  
University



Not published



Outcome

Pie charts:  
Left to right  
overseas  
gender  
english  
funded  
years  
field  
presented  
published  
outcome

# The Inventory

- 72 statements answered on 5 point scale from **definitely agree** – **definitely disagree**
- Statements have emerged from previous work using qualitative analysis of open ended written statements
- Conceptions presented in student's own words
- Converted statements into inventory
- Responses analysed using exploratory factor analysis
- Identified discrete dimensions of variation

# Categories emerging from factor analysis

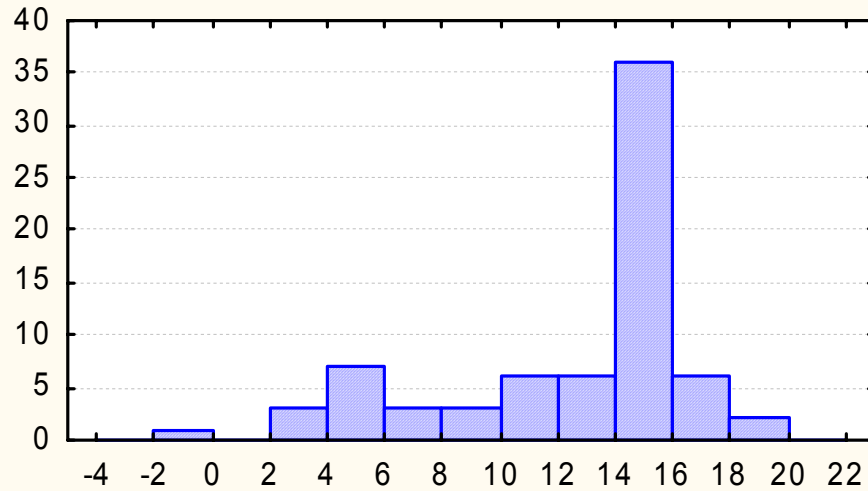
1. Truth
2. Misconceptions
3. Re-search
4. Gathering Information
5. Insightful process
6. Gathering information
7. Scientific method

# Conception 1 Truth

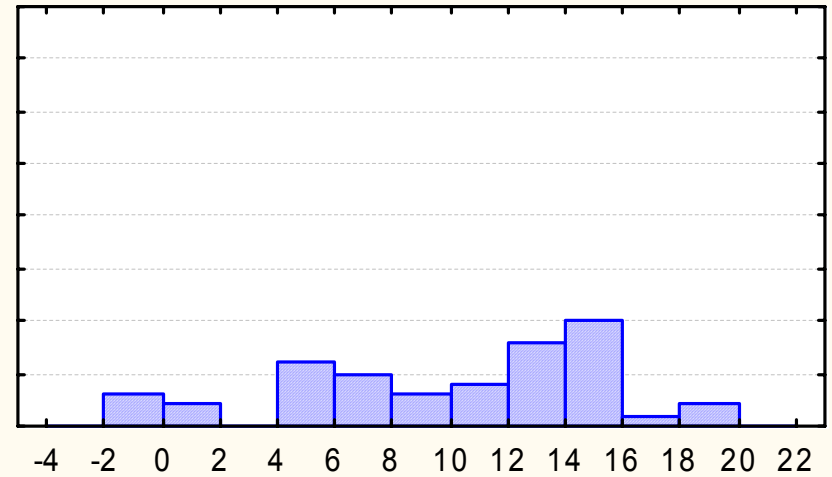
- Research is fundamentally about finding out the truth
- Research is about searching for the truth
- Research is basically concerned with uncovering the truth
- Research is a process for establishing what is true about something
- Research is done in order to determine the truth about something

# Histogram (scori data delimited editedv7.sta 90v\*230c)

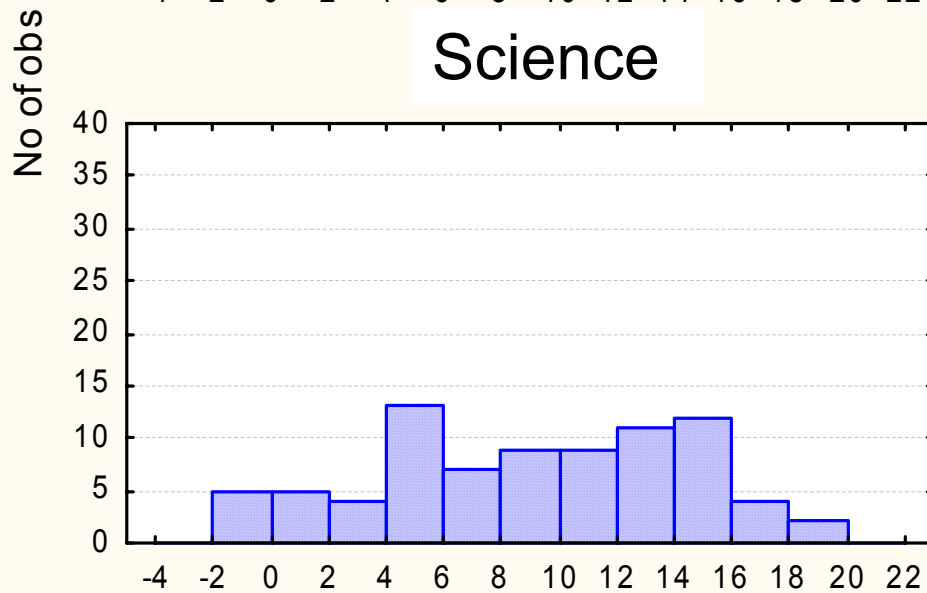
Include condition: v4=1



Science



Arts & Humanities



Social Sciences

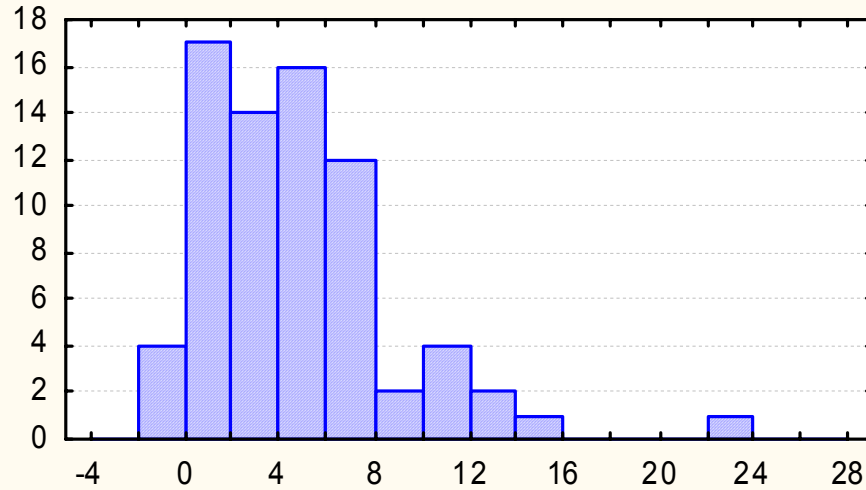
truth

## 2. Misconceptions

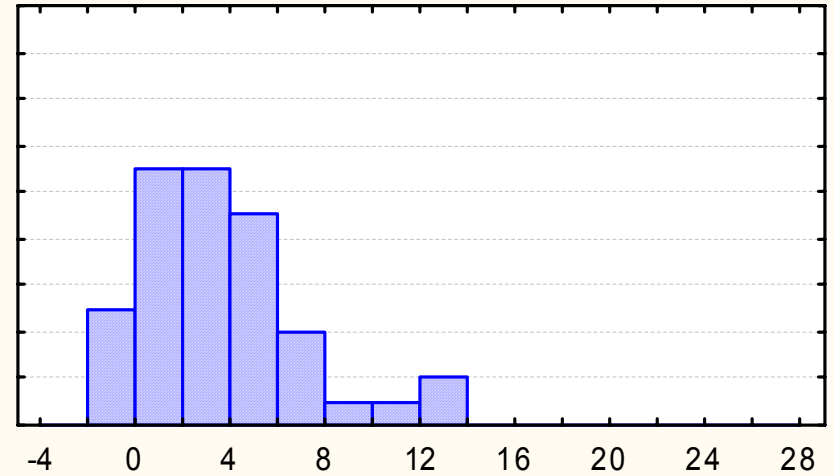
- If followed correctly research procedures always yield positive results
- When qualified people do research the results are always unbiased
- If research is properly conducted then contradictory research findings will never occur
- When research findings are published they become true
- It is quite acceptable to modify the data if it does not look exactly right.
- Good research specifically gathers data that will support the researcher's preconceived ideas.
- There is generally only one way to interpret research findings

# Histogram (scori data delimited editedv7.sta 90v\*230c)

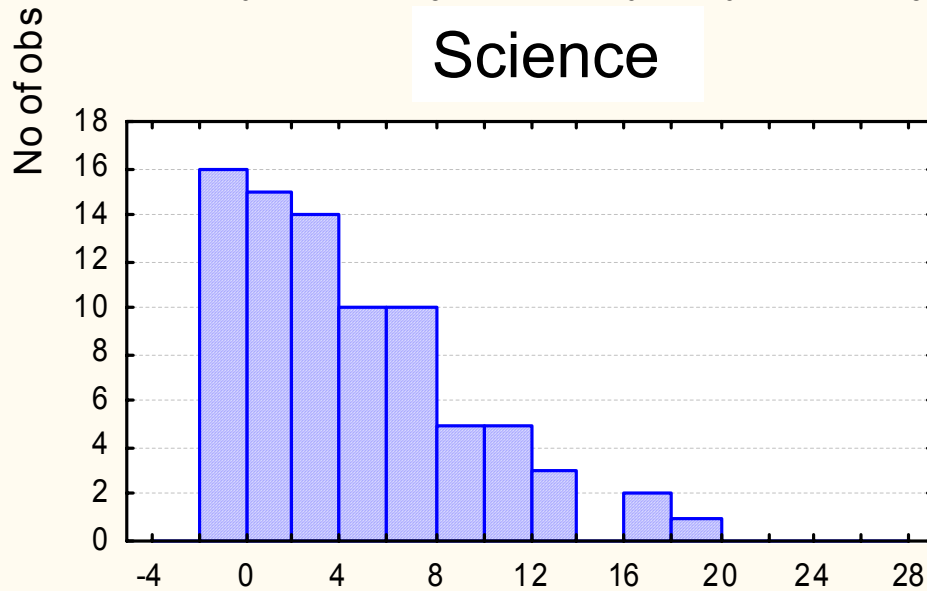
Include condition: v4=1



Science



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Social Sciences

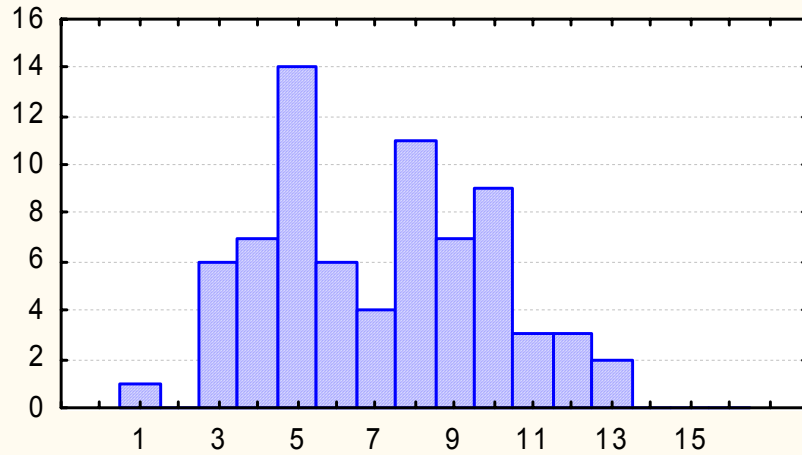
miscon

# 3. Re-search

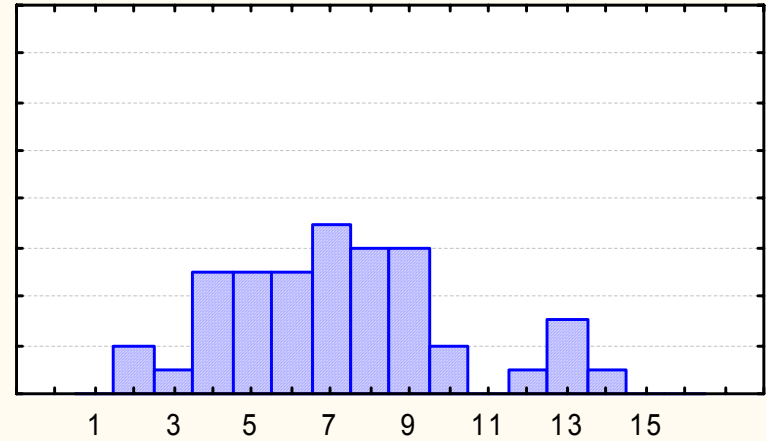
- Research means examining old things in new ways rather than discovering new things
- Research literally means “re-search”; searching again to identify what was previously overlooked
- Research means finding out more information about something previously researched
- Research means re-interpreting something that is already known
- Research is mainly about searching for information that could previously have been found

# Histogram (scori data delimited editedv7.sta 90v\*230c)

Include condition: v4=1

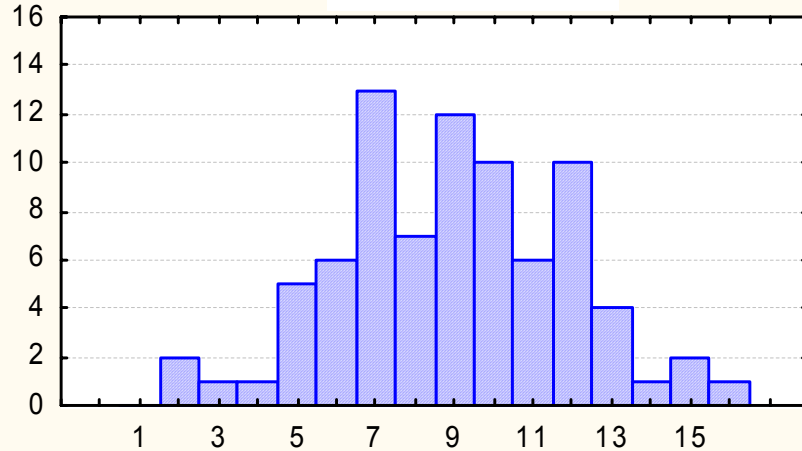


Science



Arts & Humanities

No of obs



Social Sciences

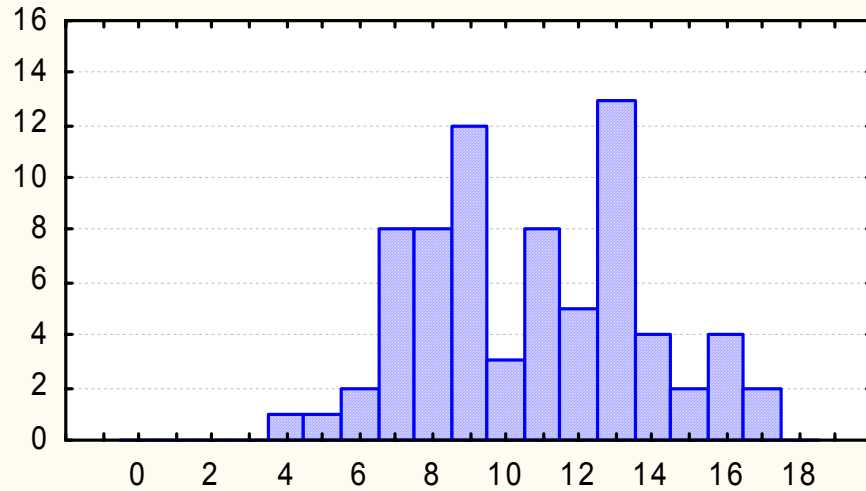
research

# 4. Gathering Information

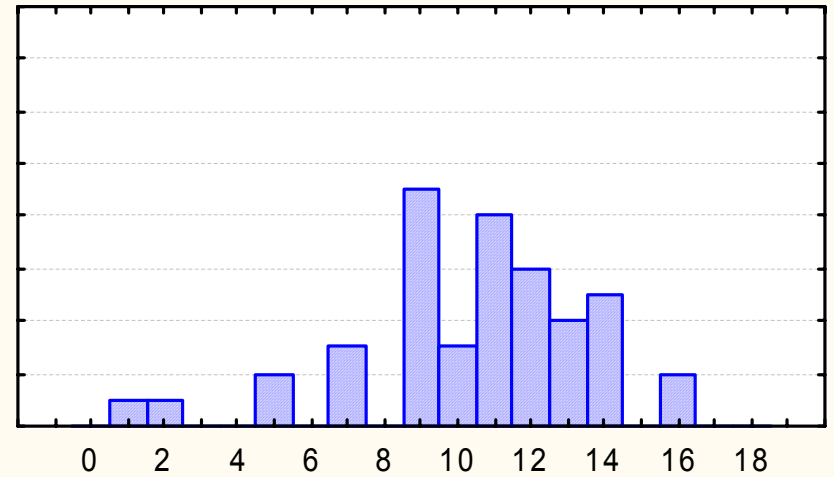
- Research means gathering as much information as you can about something
- Research is about collecting as much data as possible about something
- Research means accumulating more information about a particular topic
- Research is something you do when you want to collect information
- Research is just a particular method for collecting information

# Histogram (scori data delimited editedv7.sta 90v\*230c)

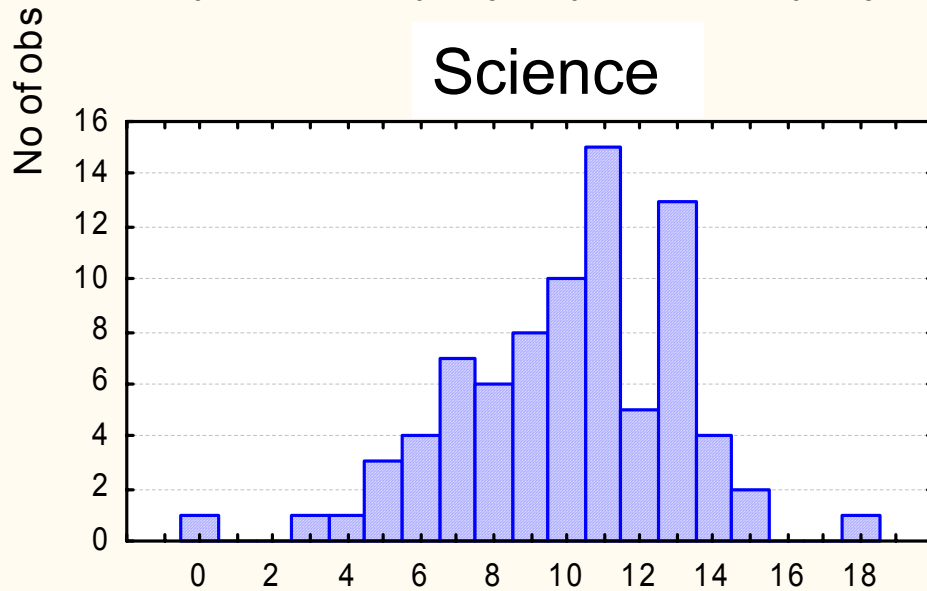
Include condition: v4=1



Science



Arts & Humanities



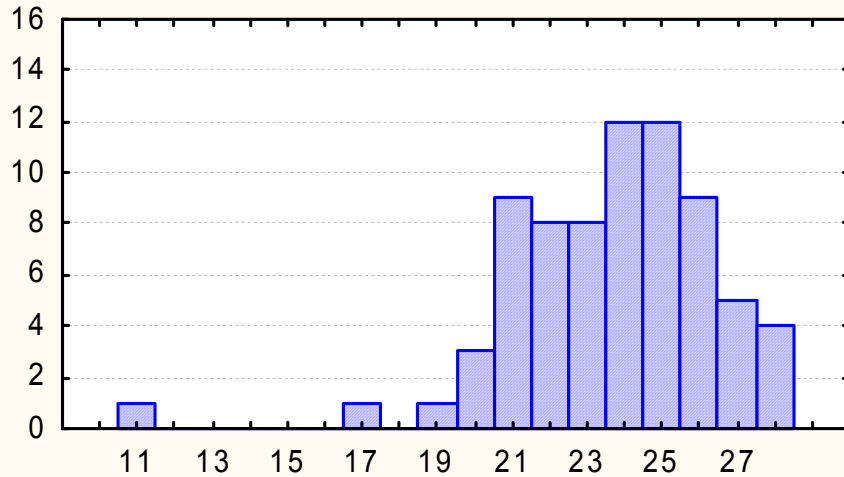
Social Sciences

# 5 Insightful process

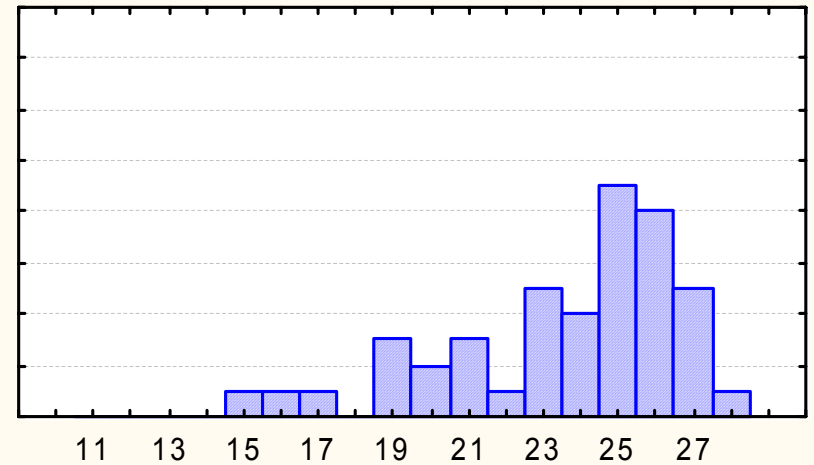
- Research means an in-depth study of a particular topic
- Research extends current concepts to obtain deeper understanding
- Research stimulates further interest of work in a particular topic
- Research provides a deeper insight into a particular topic
- Research alters how we think about new things

# Histogram (scori data delimited editedv7.sta 90v\*230c)

Include condition: v4=1

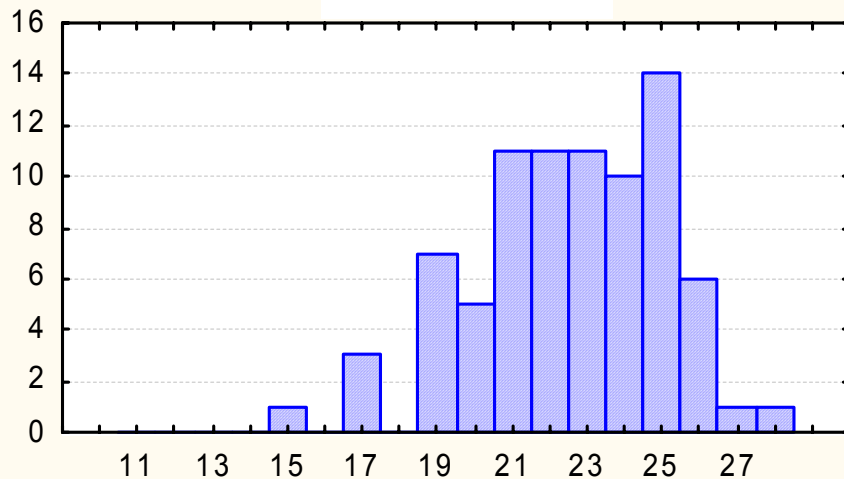


Science



Arts & Humanities

No of obs



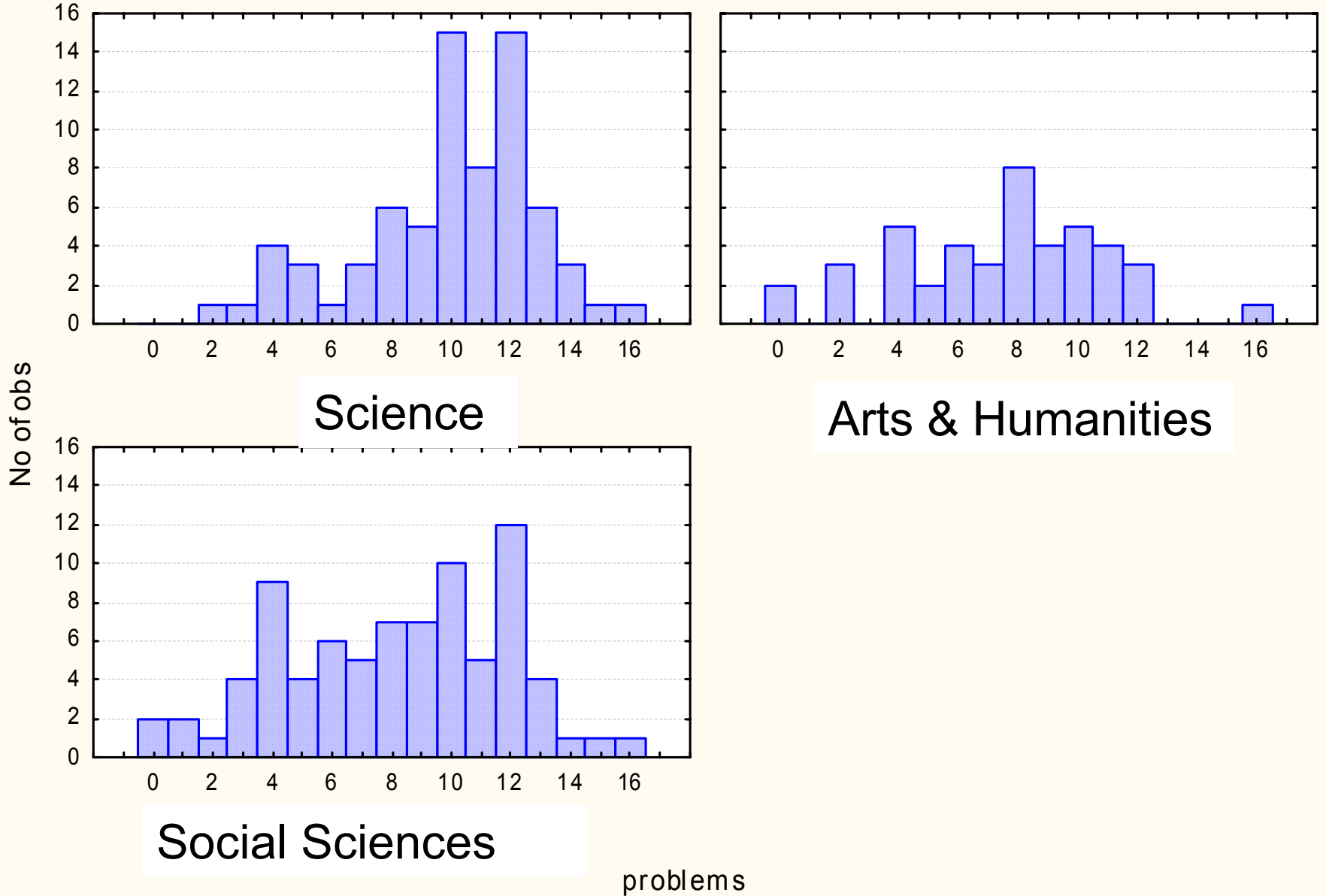
Social Sciences

# 6. Problem solving

- Research is basically about solving problems
- Research is about finding solutions to problems
- The main purpose of research is to identify problems that need to be solved
- Research means collecting data to help solve a particular problem

# Histogram (scori data delimited editedv7.sta 90v\*230c)

Include condition: v4=1

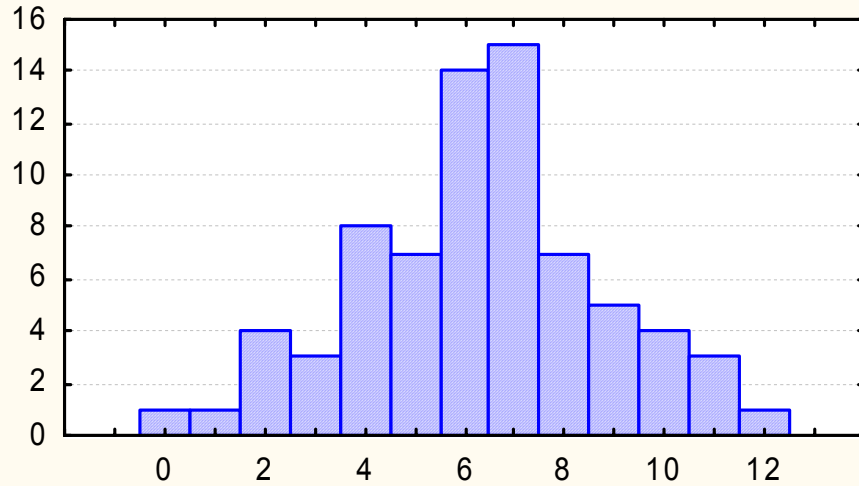


# 7 Science

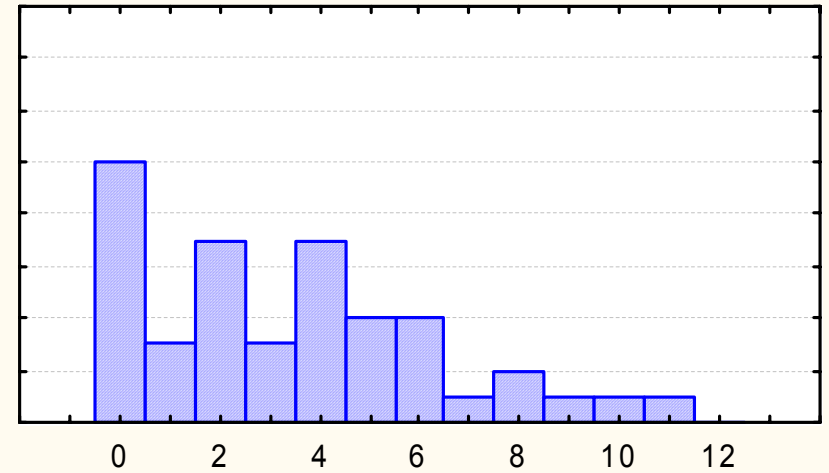
- Research is fundamentally a scientific method and procedure
- Research that is not scientific is not real research
- Research is basically nothing more than finding “information” in a scientific way

# Histogram (scori data delimited editedv7.sta 90v\*230c)

Include condition: v4=1

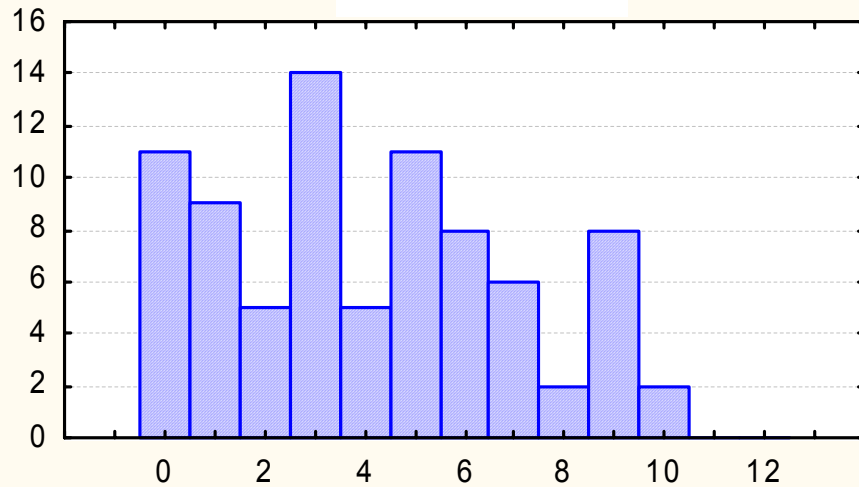


Science



Arts & Humanities

No of obs



Social Sciences

science

# Categories of variation 1

- Overseas and English as a first language  
(Combine together can be used to identify geographical origin of students and as an indicator of potential cultural variation)

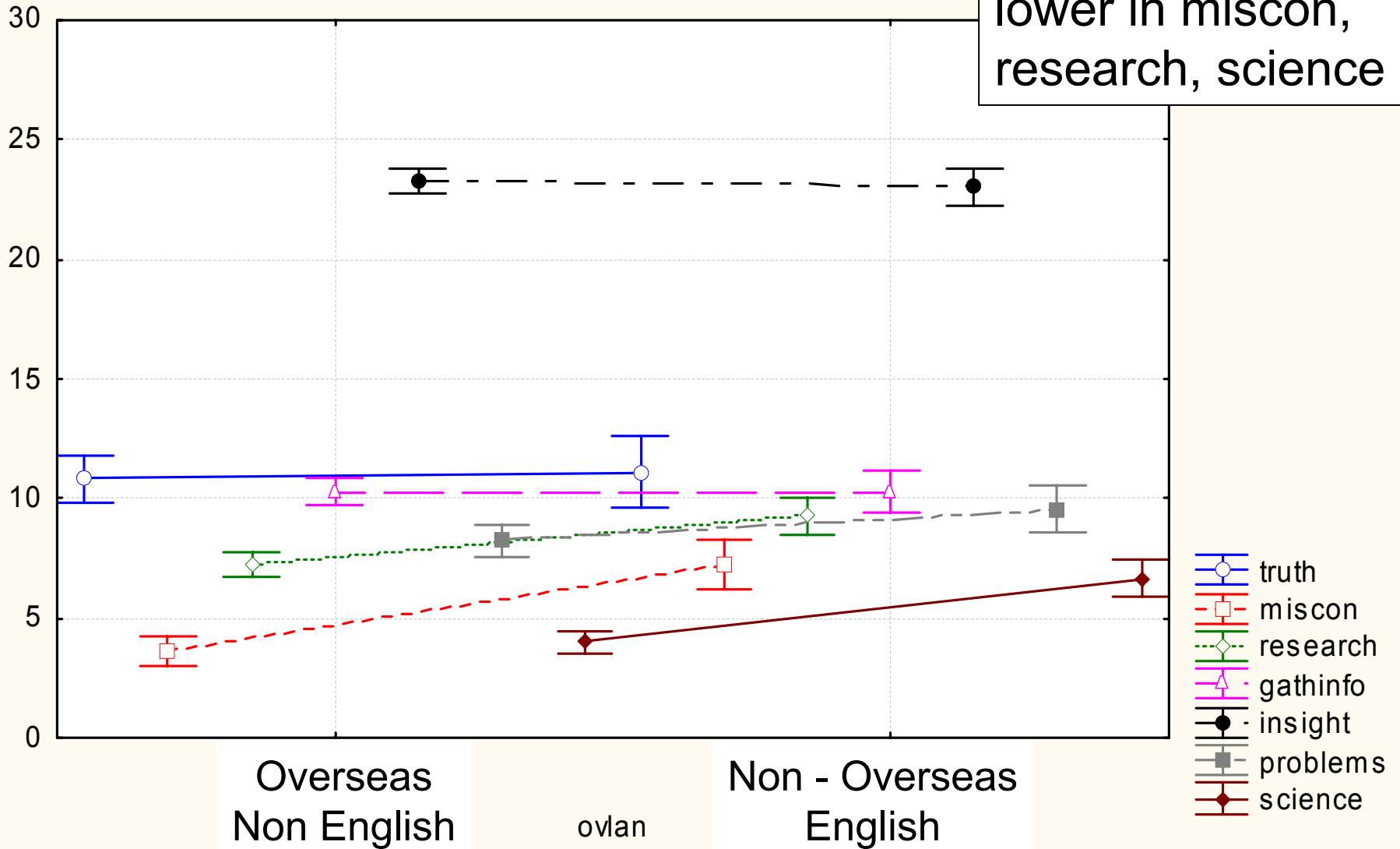
ovlan; LS Means

Wilks lambda=.65573, F(7, 156)=11.700, p=.00000

Effective hypothesis decomposition

Vertical bars denote 0.95 confidence intervals

O/S Non English  
lower in miscon,  
research, science



# Categories of variation 2

- Gender

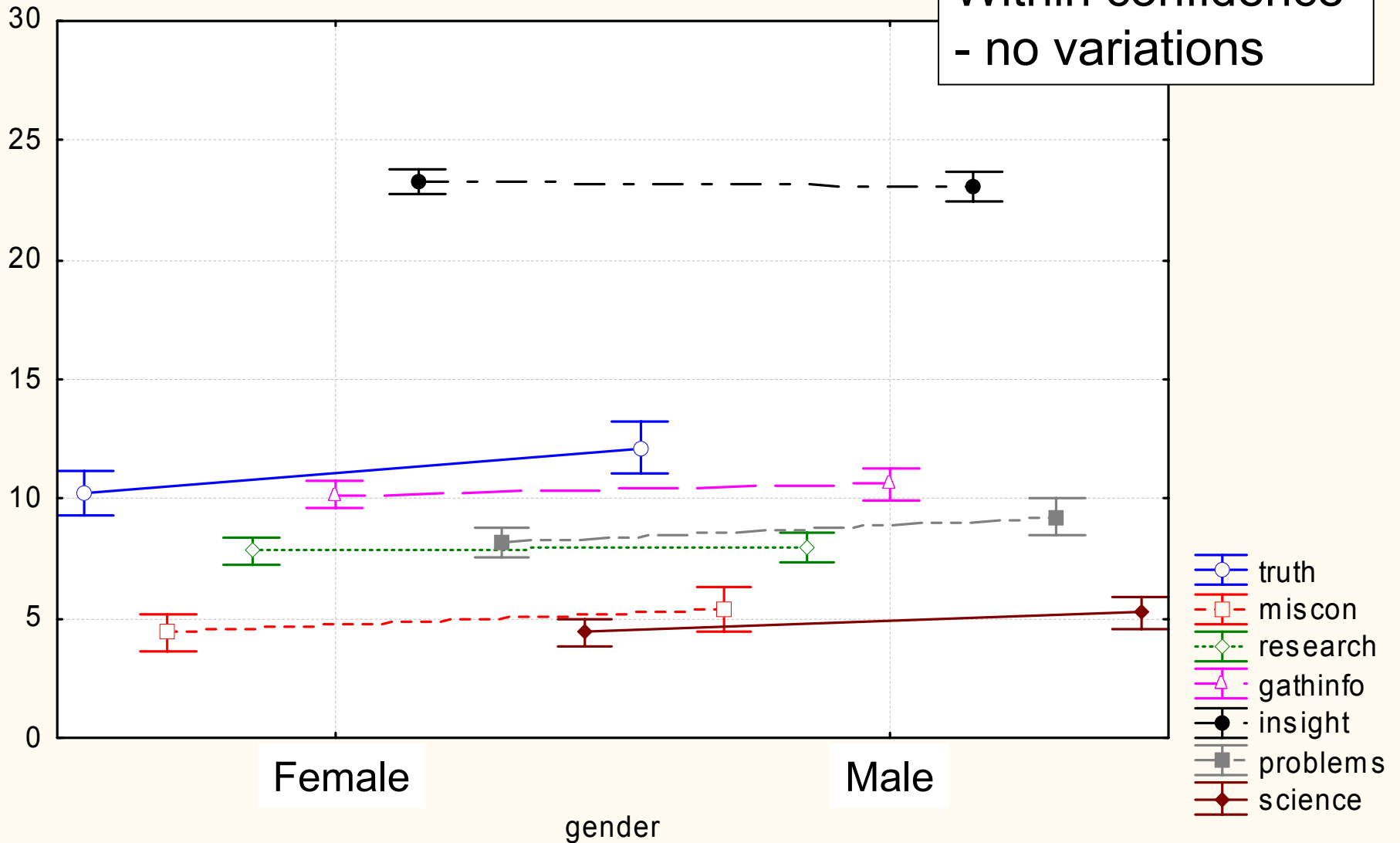
gender; LS Means

Wilks lambda=.94577,  $F(7, 190)=1.5563$ ,  $p=.15076$

Effective hypothesis decomposition

Vertical bars denote 0.95 confidence intervals

Within confidence  
- no variations



# Categories of variation 3

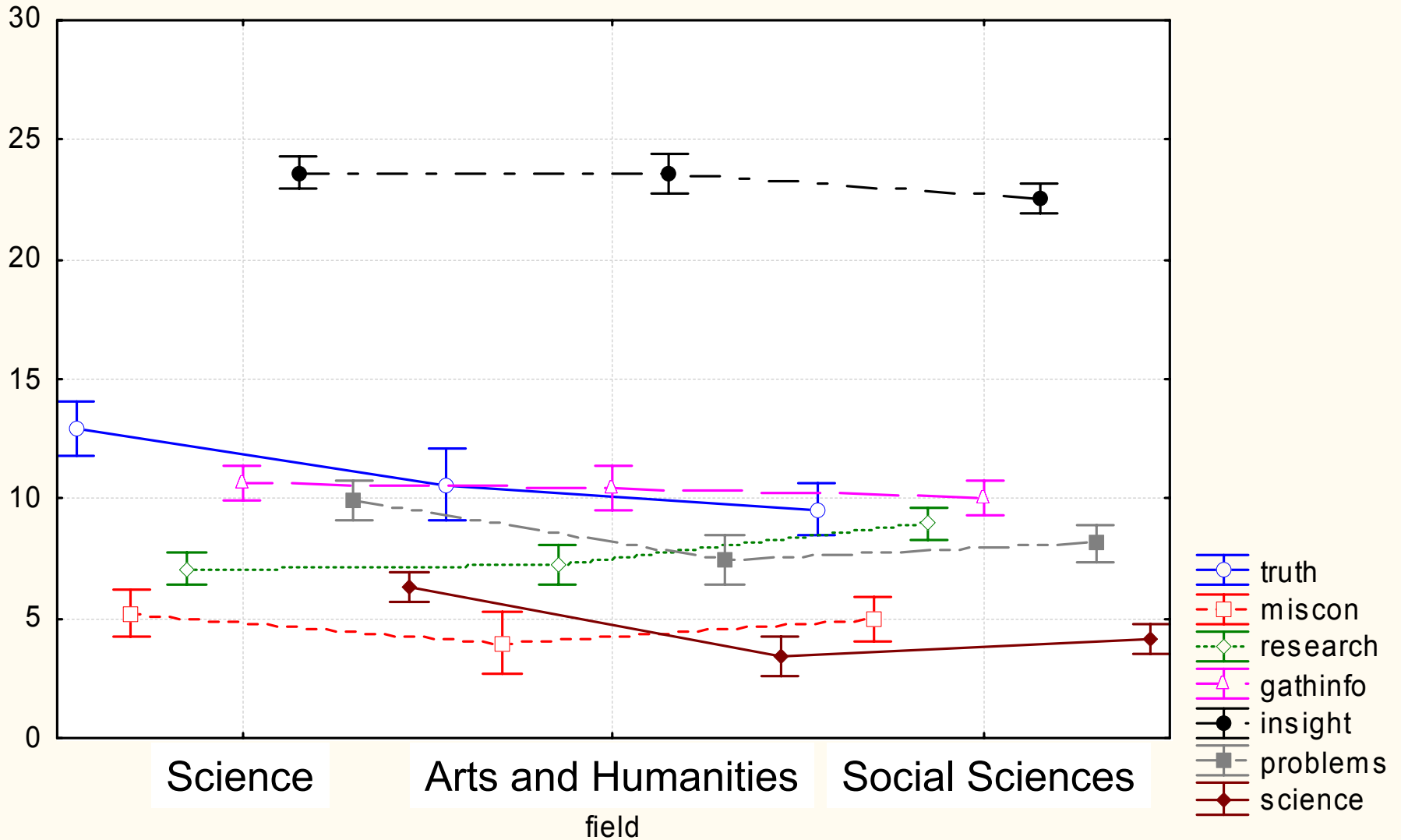
- Faculty of study
  - Science
  - Arts and Humanities
  - Social Sciences and Health

field; LS Means

Wilks lambda = .60621,  $F(14, 378) = 7.6778$ ,  $p = .00000$

Effective hypothesis decomposition

Vertical bars denote 0.95 confidence intervals



# Some Interesting Associations

- Misconceptions vs re-search for Arts and Humanities

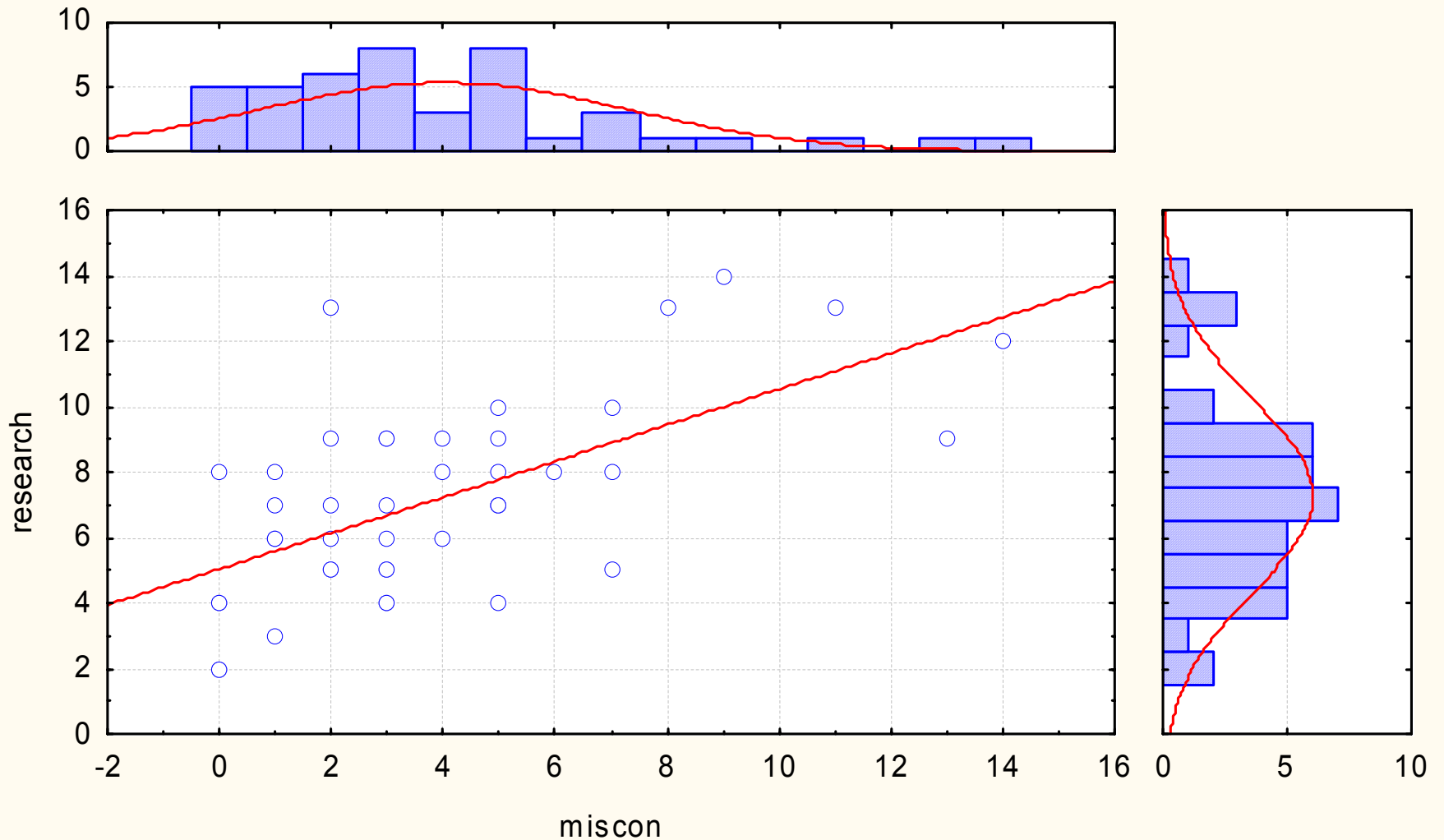
# Scatterplot with Histograms (scori data delimited edited v7.sta 90v\*230c)

Include condition: v4=1 and v7=1

Histogram =  $44 \cdot 1 \cdot \text{normal}(x, 3.9773, 3.2954)$

Histogram =  $44 \cdot 1 \cdot \text{normal}(x, 7.2273, 2.9084)$

Scatterplot =  $5.045 + 0.5487 \cdot x$



# Interesting Associations

- Problem solving and finding the truth:
  - Science and Engineering
  - Social Science and Humanities

# Scatterplot with Histograms (scori data delimited edited v7.sta 90v\*230c)

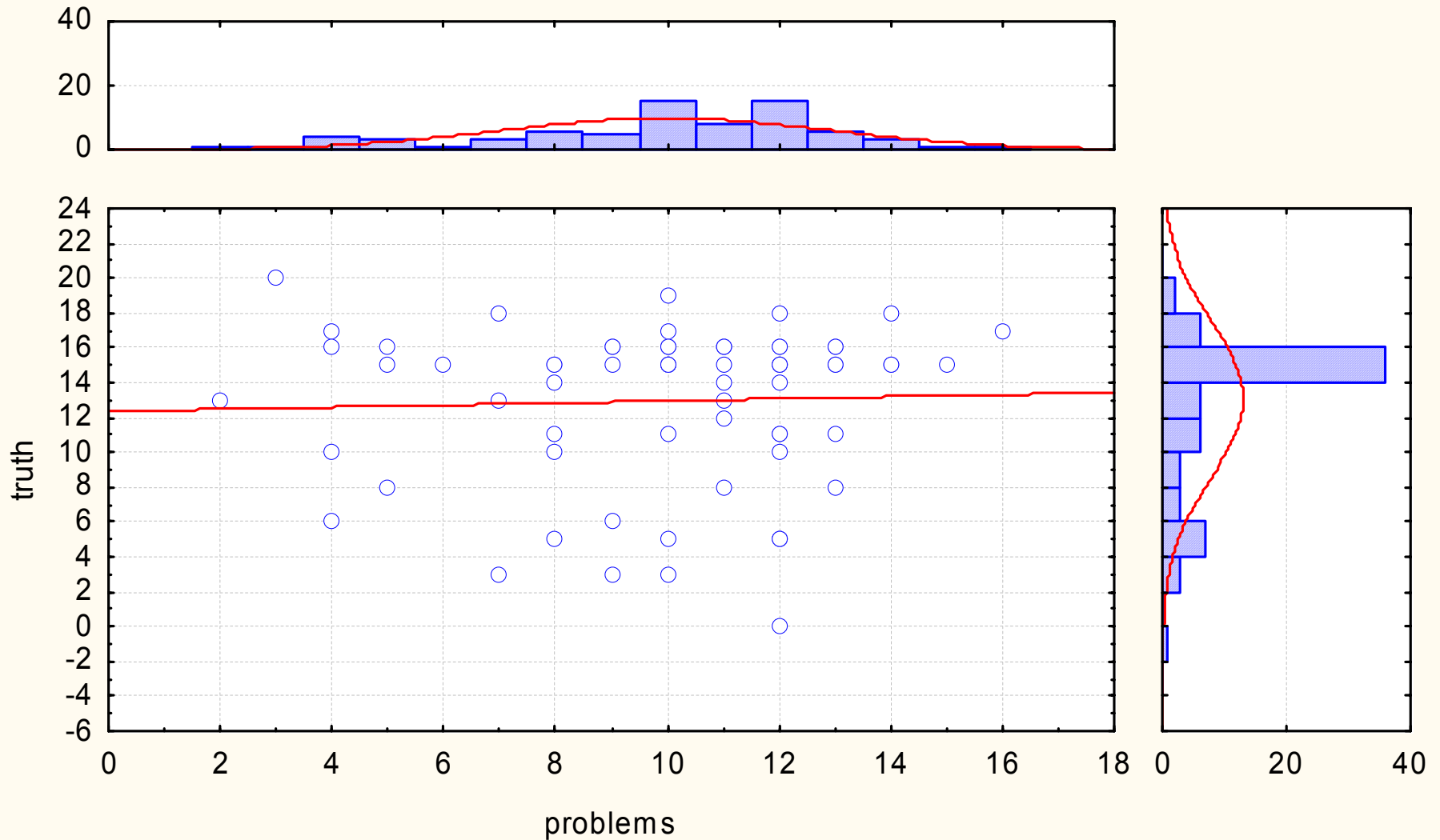
Include condition: v4=1 and v7=0

Histogram = 73\*1\*normal(x, 9.9315, 2.969)

Histogram = 73\*2\*normal(x, 12.9589, 4.4642)

Scatterplot = 12.3675+0.0596\*x

## Science



# Scatterplot with Histograms (scori data delimited edited v7.sta 90v\*230c)

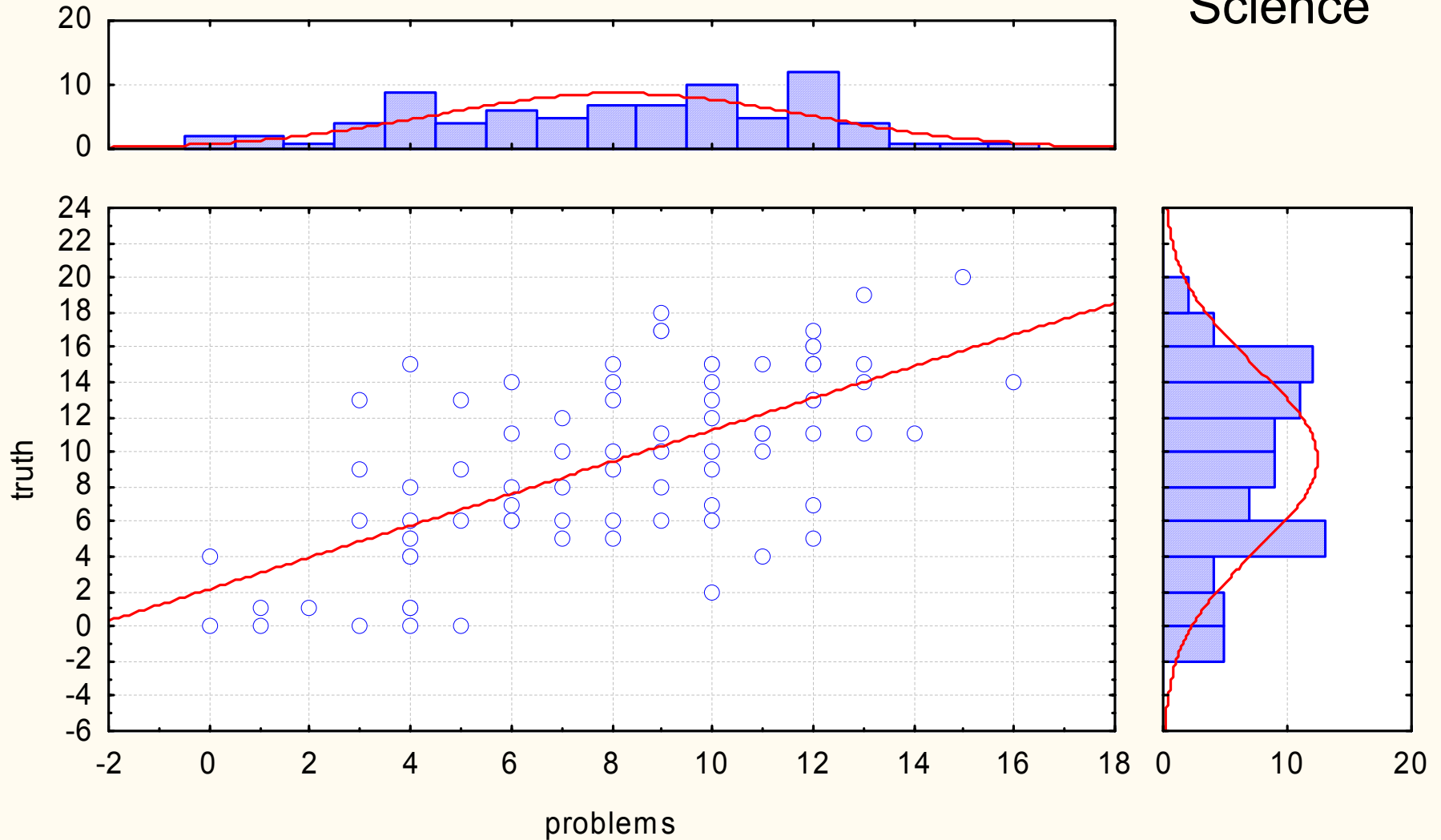
Include condition: v4=1 and v7=2

Histogram = 81\*1\*normal(x, 8.1235, 3.7128)

Histogram = 81\*2\*normal(x, 9.5556, 5.2082)

Scatterplot = 2.149+0.9117\*x

## Social Science



# Some Tensions

Equity of experience  
Broader training  
National curriculum for PhD  
Demonstrating consistency  
Supportive environment  
Homogeneous  
Uniformity  
Compliance

**Assurance**



**Enhancement**

Range of mode of study  
Academic standards  
Subject diversity  
Pedagogic variation  
Independent learners  
Heterogeneous  
Alignment

# Conclusions

- Observable differences in range of groups
- Identified patterns of association
- Refine inventory further – reduce questions
- Develop further – collaboration?
- Larger data set
- Implications for “training” of research students
- Pedagogy of research supervision
- Role of Graduate Schools (Bologna Process – key element of 3<sup>rd</sup> cycle)
- Monitoring – conceptual self evaluation
- Identify dissonance in perceptions
- Admissions .....

**Thank you for your attention**