

APPLYING THE SCIENTIFIC METHOD TO TRANSLATION STUDIES: PROBLEMS AND SOLUTIONS IN RESEARCH INTO TRANSLATION COMPETENCE

Grupo PACTE

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Principal researcher: A. Hurtado Albir

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I. INTRODUCTION

OVERALL OBJECTIVE

Acquisition of Translation Competence

PHASES

1st Translation Competence (TC)

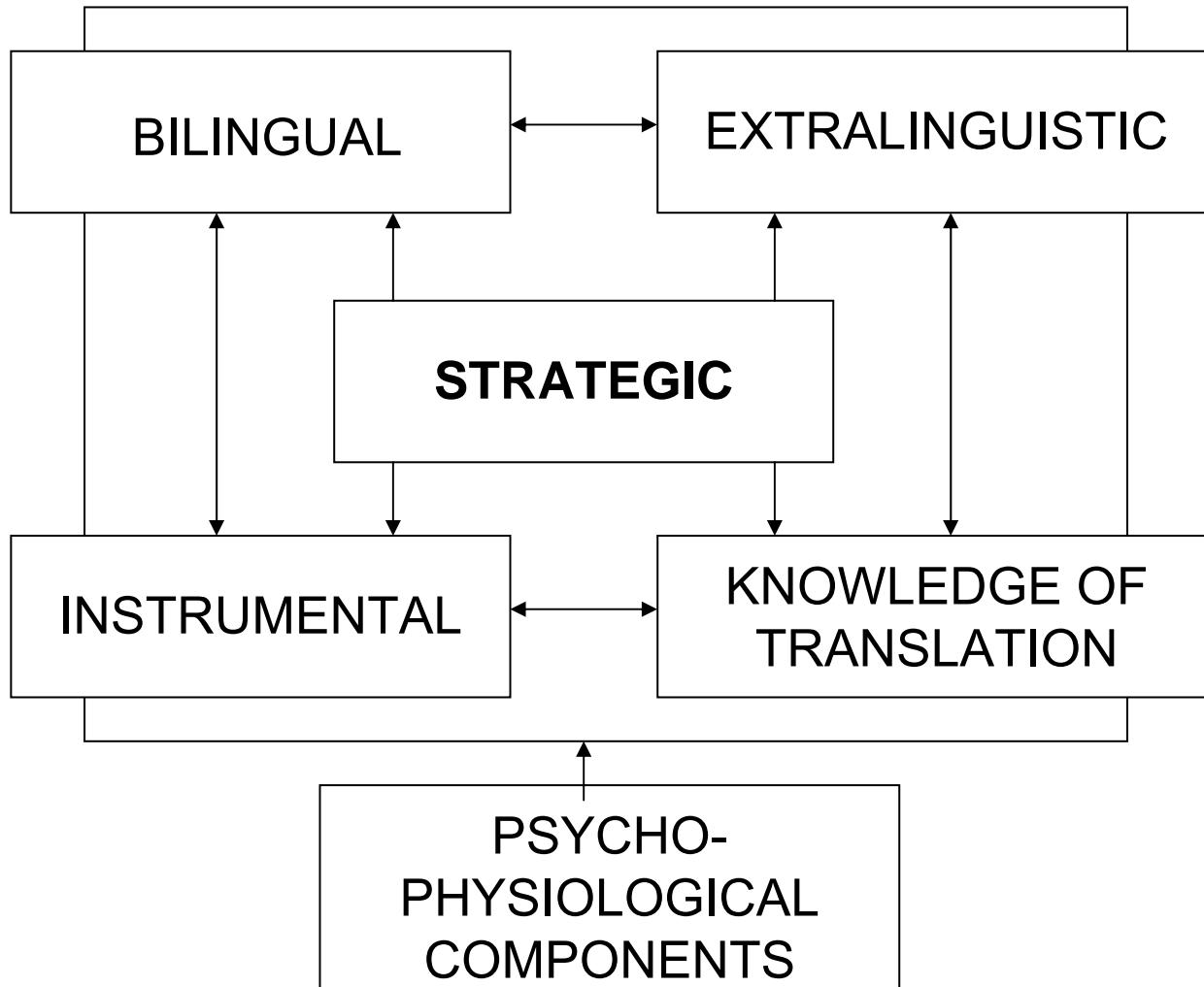
2nd Acquisition of Translation Competence (ATC)

RESEARCH

Empirical-experimental

Process and product

6 LANGUAGE COMBINATIONS



II. PROBLEMS RELATED TO EMPIRICAL RESEARCH IN TRANSLATION

- Define variables: conceptual and operative
- Define indicators
- Design instruments
- Guarantee viability of the research
 - During the experiment (Are the instruments and experimental tasks adequate?)
 - Does the data (observed tendencies) measure what we want to measure?

- Scarce research tradition lacking points of reference (previous results, instruments, hypotheses, etc.)
- Difficult to apply experimental methods and assure:
 - Ecological validity
 - Experimental economy

- **Ecological validity:** the subjects aren't aware of the experiment, the situation for them is as close as possible to what we want to measure, i.e. a real translation situation:
 - How can we disguise the situation: translation brief, instructions, payment?
 - How can we collect the data without interfering in the translation process?
- **Experimental economy:**
 - How can we design the experiment so the results are valid and can be extrapolated?

**III. PREPARING THE PACTE
TRANSLATION COMPETENCE
EXPERIMENT**

- **Before the experiment:**
 - Define type of study
 - Comparison of two representative samples
 - Formulate general hypothesis
 - The degree of expertise of the translator influences the translation process and product
 - Design experimental tasks and instruments
 - Exploratory tests
 - (June 2000-January 2001)
 - Pilot test
 - (February-April 2004)

- **Data collected and tendencies noted**
 - actions, sequences of actions
- **Instruments Tested**
 - Proxy and Camtasia
 - Texts
 - comparability of French German and English texts
 - Need to concentrate on rich points
 - Questionnaires
 - Translation problems (B-A/A-.B)
 - Knowledge of Translation
 - Standardised retrospective interview
 - Direct observation of subjects reduced

- **Experimental tasks established**
 - direct translation (B-A)
 - completion of a questionnaire about the problems encountered in the translation;
 - inverse translation (A-B);
 - completion of a questionnaire about the problems encountered in the translation;
 - completion of a questionnaire about translation knowledge;
 - participation in a retrospective interview.

IV. THE PACTE TRANSLATION COMPETENCE EXPERIMENT

- Who is observed?
- What is observed?
- How is the data collected?
- How is the data represented?
- How is the data analysed?

- Define the experimental universe
 - Professionals working with foreign languages:
- Establish the independent variable ‘expertise in translation’
 - Two categories of expertise
 - (+) ‘expertise’: Translators with 6 or more years professional experience of translating texts in a variety of fields
 - (-) ‘expertise’: Foreign language teachers with 6 or more years of professional experience, but no experience of translation
- Select the sample
 - Two initial questionnaires:
 - For translators
 - For foreign language teachers

Dependent variables

- Knowledge of translation
- Efficacy of the process
- Decision-making
- Translation project
- Problem-solving
- Use of instrumental resources
 - Variable added during the experiment

Indicators

- Knowledge of translation
 - **Dynamic index and coherence coefficient**
- Efficacy of the process
 - **Total time taken; time taken at each stage of the translation process (orientation, development, revision)**
- Decision-making
 - **Types and sequences of actions**
- Translation project
 - **Dynamic index and coherence coefficient**
- Problem-solving
 - **Nature of problems identified,**
 - **Conceptualization of problems,**
 - **Solving procedure as explained by the subject (subcompetence activated),**
 - **Subject's degree of satisfaction with the solution found, degree of difficulty of the text**
- Transversal indicator
 - **Acceptability**

- Types of Indicators
 - **Data obtained directly from the data collection instrument:** Total time taken; time taken at each stage, etc.
 - **Data collected and interpreted by PACTE:** acceptability of results, dynamic index, coherence coefficient, sequences of actions, etc.
- Importance of “acceptability”

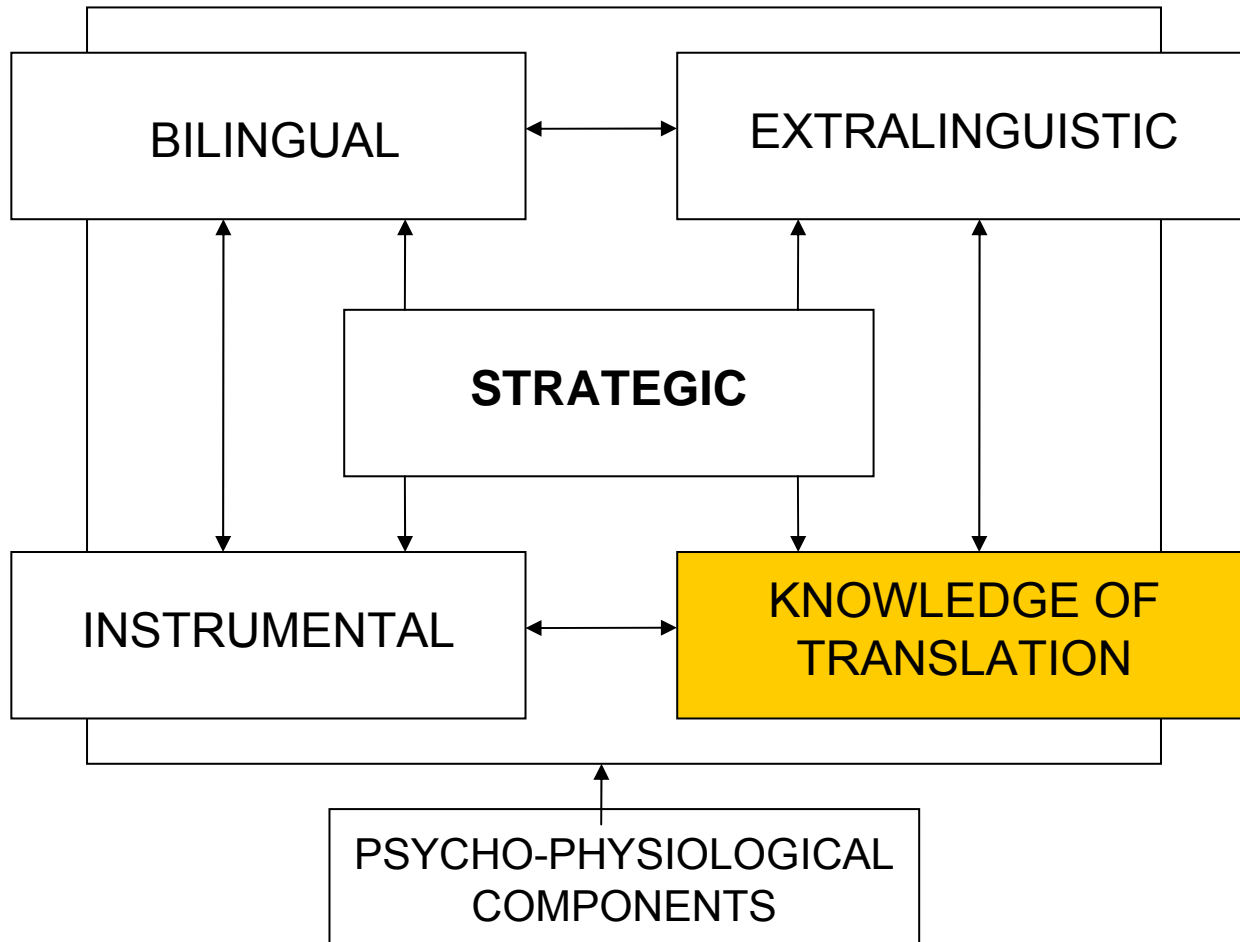
This indicator is used to measure all variables

Instruments

- **Observation instruments:**
 - **Software:** Proxy and Camtasia
 - **Direct observation chart**
- **Questionnaires:**
 - **Initial questionnaires** (translators and teachers)
 - **Translation problems questionnaires** (BA and AB)
 - **Knowledge of translation questionnaire**
- **Retrospective interview**
- **Texts:**
 - **‘Rich points’**
 - **Criteria for acceptability, semi acceptability and unacceptability of solutions**

Examples of instruments developed:

- **Knowledge of translation questionnaire**
- **‘Rich points’**



- Search the literature:
 - Is there an existing questionnaire we can use?
 - No
- Decide to construct a questionnaire based on:
 - 6 categories:
 - Translation and translation competence
 - The translation unit
 - Types of problems
 - Stages in the translation process
 - Methods and procedures
 - The function of the translation brief and the reader
 - 2 approaches:
 - Static translation
 - Dynamic translation



- Collect items.
- Select items respecting the criteria of Item Response Theory.
- Choose a scale for the subjects to give their opinions on each item.

Likert Scale

I strongly disagree	I disagree	I agree	I strongly agree
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- Exploratory tests to perfect the questionnaire



- 1st exploratory test:

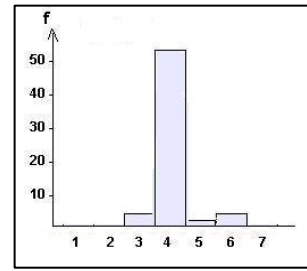
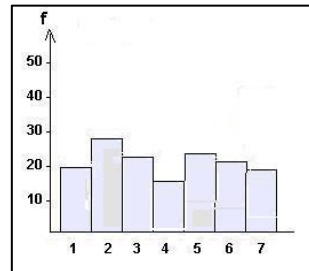
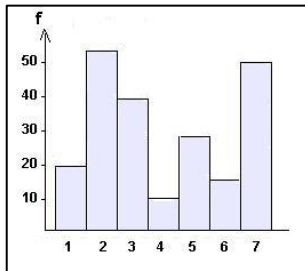
- Testers: the other members of the research group
- Results: seemed to work

- 2nd exploratory test:

- Testers: 25 3rd and 4th year FTI students
- Purpose: to eliminate inadequate items (Scale construction theory)

- **Inadequate items (Scale construction theory)**

(e.g., when a homogeneous sample gives a bimodal distribution, or a very high standard deviation, or the mode is in the centre and the standard deviation is very low, or many subjects do not answer, etc.)



- **Result: 36 items (6 for each category)**

- 18 “dynamic”
- 18 “static”

- **Pilot test (to prepare the experiment)**
 - **Subjects:**
 - 6 foreign language teachers (EOI)
 - 6 professional translators
 - **Method:**
 - Numerical values given to the replies: I strongly disagree = 0; I disagree = 1; I agree = 2; I strongly agree = 3
 - Sum values of dynamic items and subtract values of static items (Σ 'dyn' – Σ 'stat.')
 - **Result:** No significant difference between groups (slight tendency to dynamism)
 - **Correction:**
 - Eliminate items answered identically by 9/10 subjects (measuring the obvious)
 - Eliminate items not answered by more than one subject (badly formulated item)
 - **Result:** No significant difference between groups!

- **Problems with the knowledge of translation questionnaire**
 - **Why doesn't the knowledge of translation questionnaire show any difference between translators and teachers?**
 - **Hypothesis:**
 - Foreign language teachers are just as likely to have a dynamic concept of translation because they are always changing from one language to another
 - **Test to validate the hypothesis:**
 - Subjects: 10 translation users (maths and physics professors)
 - Result: No differences

- **Where have we gone wrong?**
 - Questionnaire based on a value judgement, 'dynamic is good and static is bad'?



– **New hypothesis:**

- 'Language experts' are likely to have a 'coherent' concept of translation.'

- The original questionnaire does not distinguish between the three groups of subjects

BUT

Pruning the questionnaire (Scale and item response theories) and only measuring 5 conceptually contradictory pairs of items led to the Coherence coefficient.

	Dynamic questions	Static questions
I	<p style="text-align: center;">3</p> <p>It is the client who decides how the translator has to translate a text.</p>	<p style="text-align: center;">24</p> <p>When you translate a text, you should not be influenced by the target reader.</p>
II	<p style="text-align: center;">10</p> <p>A text should be translated in different ways depending on who the target reader is.</p>	<p style="text-align: center;">4</p> <p>The aim of every translation is to produce a text as close in form to the original as possible.</p>
III	<p style="text-align: center;">23</p> <p>If you begin to translate a text using certain criteria (e.g. respecting the format of the original text, adapting the text to target reader, etc.) these should be kept to throughout the text.</p>	<p style="text-align: center;">11</p> <p>All translated texts should keep the same paragraphs and divisions in the target text as in the original text.</p>
IV	<p style="text-align: center;">14</p> <p>When translating a specialized text, terminology is not the biggest problem.</p>	<p style="text-align: center;">5</p> <p>Most translation problems can be solved with the help of a good dictionary.</p>
V	<p style="text-align: center;">27</p> <p>If you find a word in a text that you don't understand, you should try to work out its meaning from the context</p>	<p style="text-align: center;">16</p> <p>As soon as you find a word or expression you don't know the meaning of, you should look it up straightaway in a bilingual dictionary</p>

- Result
 - The 5 conceptually contradictory pairs of items distinguish between the three groups of subjects

- Advantages
 - Economy of effort (only 10 items)
 - When one item is 'missing', its pair is eliminated

‘Rich Points’

- **Premise:** Translation is a problem-solving process.
- **Decision:** Focus data collection and analysis on text fragments considered translation problems or “Rich Points”.
- **Methodological advantages of ‘Rich Points’**
 - data collected on a range of conceptually representative translation problems
 - in-depth analysis of the results for the same ‘rich point’ obtained from several indicators.
 - the triangulation of data obtained from multiple sources facilitated
 - the same data analysis techniques can be used for B-A and A-B translation in all language combinations, thereby eliminating explicit distinction between language pairs
 - greater experimental economy guaranteed, and data analysis facilitated.

Types of translation problems taken into account when identifying the 'rich points' in each text:

- **Linguistic problems:** lexical (non-specialised) and morphosyntactic.
- **Textual problems:** coherence, cohesion, text type and genre, style, intertextuality.
- **Extralinguistic problems:** cultural, encyclopaedic and subject-domain knowledge.
- **Problems of intentionality:** difficulty in understanding the source text (*speech acts, presuppositions, implicatures*).
- **Problems relating to the translation brief and/or the target text reader** that, from a functionalist point of view, would affect all the 'rich points'

Indicators and indexes

– Examples of indicators:

- The transversal indicator of acceptability
- Types of actions and sequences of actions
- Index of dynamism and coefficient of coherence

Indicator of acceptability

- Three parameters of acceptability:
 - meaning of the ST
 - function of the TT
 - language use
- Three values of acceptability:
 - Acceptable solution (A)
 - Activates all relevant connotations in the ST
 - Semi-acceptable solution (SA)
 - Activates some of the relevant connotations in the ST and maintains the coherence of the TT
 - Non-acceptable solution (NA)
 - Does not activate any of the relevant connotations in the ST or those that it does activate are not coherent

Indicator of acceptability

Resulting permutations and categories

Meaning	Function	Language	Category	Numeric value
A	A	A	A	1
A	A	SA		
A	SA	A		
A	SA	SA		
SA	A	A		
<hr/>				
A	A	NA	SA	0.5
A	SA	NA		
A	NA	A		
A	NA	SA		
SA	SA	A		
SA	SA	SA		
SA	A	SA		
<hr/>				
A	NA	NA	NA	0
SA	SA	NA		
etc.				

Types and sequences of actions

- **Exploratory test: Catalogue of actions (PACTE 2002)**
 - **Directly observed activities:**
 - first-time reading of the source text
 - re-reading of the source text
 - revising the target text; underlining
 - making notes
 - comparing source text and target text
 - consultation of printed materials
 - **Activities observed using PROXY:**
 - immediate solution to a translation problem
 - non-immediate solution to a translation problem (after a pause, consultation, etc.)
 - pause
 - no solution to a translation problem (postponed solution)
 - solution of a postponed solution
 - temporary solution
 - final solution of a temporary solution
 - on-line consultation
 - use of new technologies (Internet, text processing)
 - corrections (lexical items, grammar, cohesion, coherence, etc.)

Types and sequences of actions

- **Pilot test: Actions** (PACTE 2005a, 2005b)
 - **P**: pause (+ 5 seconds)
 - **PS**: provisional solution
 - **DS**: definitive solution
 - **CON**: consultation (classified as simple or complex)

Types and sequences of actions

- **Pilot test: Sequences of actions** (PACTE 2005a, 2005b)
 1. **Internal support.** No external support is used. The Definitive Solution (SD) is reached by using internal support alone.
 2. **Internal support predominant, with recourse to external support (ISD).** Complex documentation searches are made, but these do not lead to a definitive solution. The Definitive Solution is the result of internal support.
 3. **Balanced interaction between internal and external support (IS-ES).** Both internal and external support is used and the Definitive Solution is the result of interaction between both.
 4. **External support predominant, combined with internal support (ESD).** Complex consultations are the basis for a Definitive Solution which is the result of external support.
 5. **Simple External Support (ES).** Bilingual dictionaries are consulted and the solution provided is accepted. The Definitive Solution is the result of external support alone.

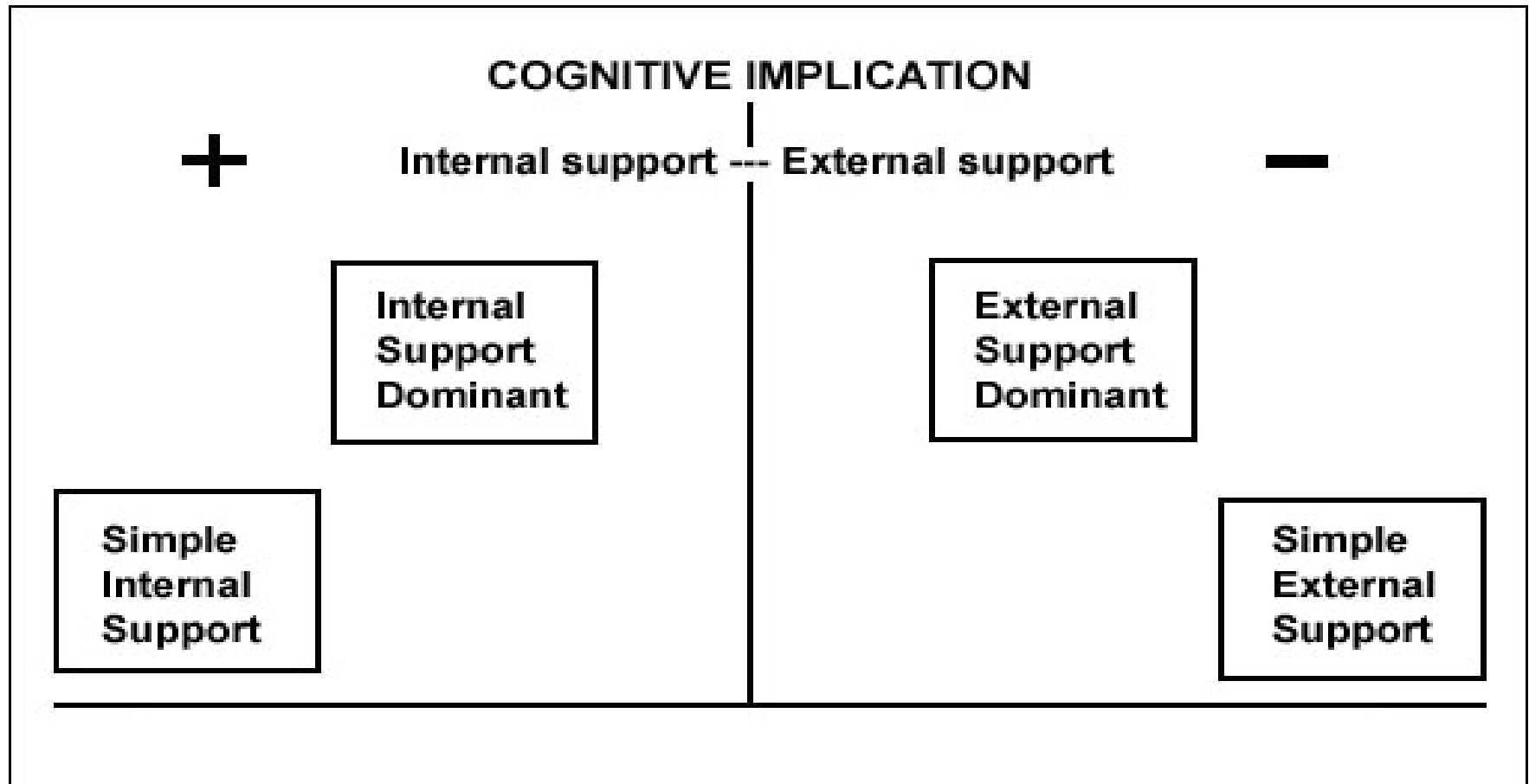
Types and sequences of actions

- **Experiment: Actions** (PACTE 2009)
 - **PS**: Provisional solution
 - **DS**: Definitive solution
 - **CON**: Consultation
 - **CON BL** (Bilingual Dictionaries): less cognitive implication
 - CONBL-C
 - CONBL-NC
 - **CON AL** (All Others): greater cognitive implication
 - **CON-0**: No consultation

Types and sequences of actions

- **Experiment: sequences of actions (PACTE 2009)**
 1. **Internal Support (Simple Internal Support).** The Definitive Solution is based on Internal Support only: CON-0.
 2. **Predominantly Internal Support.** The Definitive Solution is based essentially on Internal Support: any combination of consultations that does not contain CONBL-C.
 3. **Predominantly External Support.** The Definitive Solution is based essentially on External Support: any combination of consultations that contains CONBL-C.
 4. **External Support (Simple External Support).** The Definitive Solution is based exclusively on CONBL proposals that are accepted by the subject : only consultations CONBL-C.

Experiment: sequences of actions



- **Dynamic index:**
 - Static: linguistic and literal concepts
 - Dynamic: textual, communicative and functional concepts
- **Coherence coefficient:**
 - This indicator measures the subject's degree of coherence
- **The dynamic index and the coherence coefficient are used in two variables:**
 - Translation knowledge
 - Translation project

Models of Analysis

- Example:
 - Knowledge of translation

Translation Knowledge Questionnaire Model of Analysis

Group 1



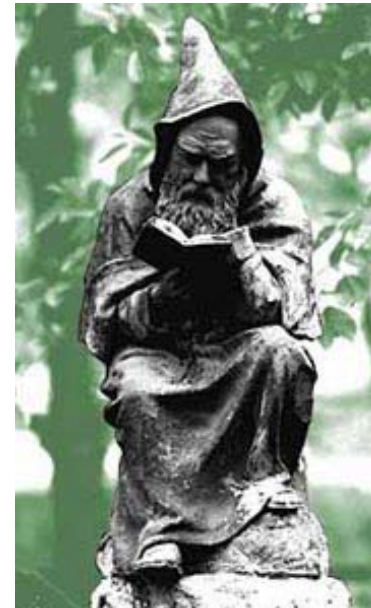
35 professional translators

Group 2



24 foreign language teachers (EOI)

Group 3



**10 users of translations
(Science professors)**

- **The translation knowledge questionnaire** permits answers of the type:
 - I strongly disagree; I disagree; I agree; I strongly agree.
- To analyze the results of the experiment a fifth category was added, 'missing', and the numerical values of the answers were reclassified:
 - Missing = 0; I strongly disagree = 1; I disagree = 2; I agree = 3; I strongly agree = 4
- **The dynamic index** is calculated by using 5 'pairs' of questions that reflect the static/dynamic contrast. If one of the items is 'missing', the other half of the pair is discarded.

	Dynamic questions	Static questions
I	<p style="text-align: center;">3</p> <p>It is the client who decides how the translator has to translate a text.</p>	<p style="text-align: center;">24</p> <p>When you translate a text, you should not be influenced by the target reader.</p>
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DYNAMIC INDEX

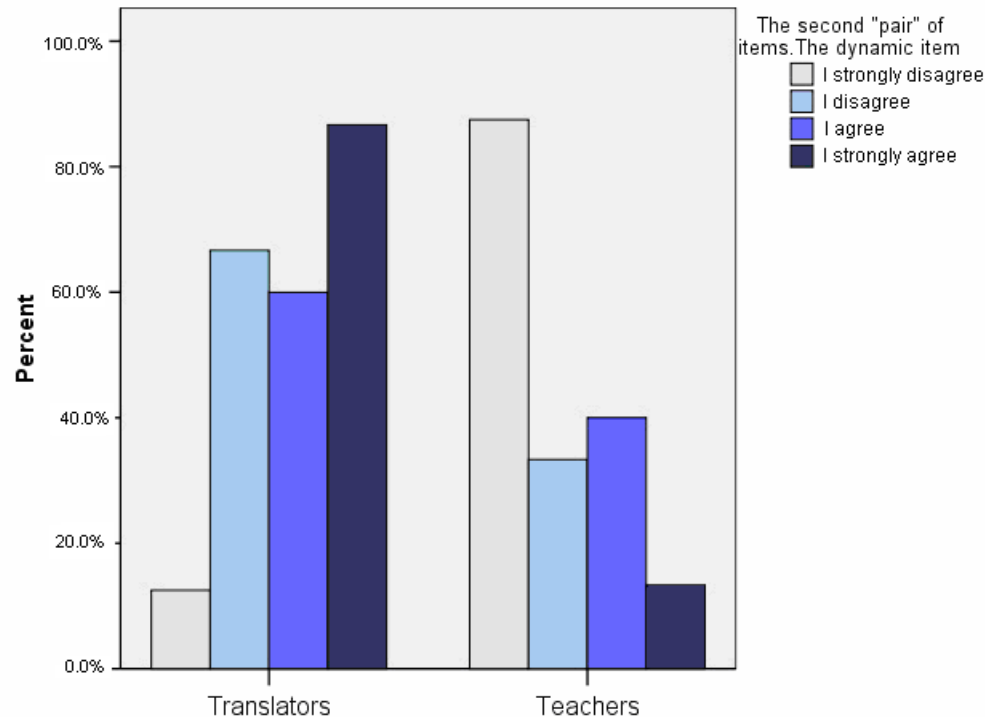
Categories of dynamism **Values of scales**

Reclassified answers Dynamic; Static questions	Categories of dynamism/pair/subject: -1; -0.5; 0; 0.5; 1 points of dynamism
4; 4 4; 3 3; 4 3; 3 2; 2 2; 1 1; 2 1; 1	0 points of dynamism
4; 2 3; 2	0.5 points of dynamism
4; 1 3; 1	1 points of dynamism
2; 4 2; 3	- 0.5 points of dynamism
1; 4 1; 3	- 1 points of dynamism

Evidence

The second “pair” of items (related to translation methods)

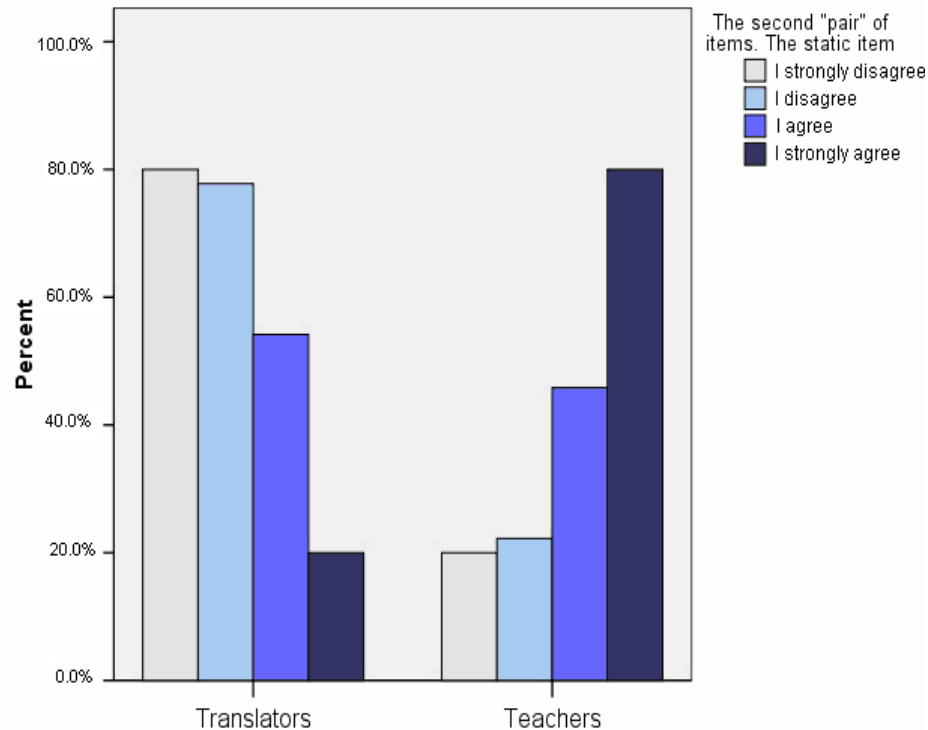
Dynamic item: “A text should be translated in different ways depending on who the target reader is.” I strongly disagree, I disagree, I agree, I strongly agree.



Evidence

The second “pair” of items (related to translation methods)

Static item: “The aim of every translation is to produce a text as close in form to the original as possible”. I strongly disagree, I disagree, I agree, I strongly agree.



Dynamic index: descriptive statistics

Shows differences between the three groups of subjects

	Mean	Median	Max.	Min.	Standard Deviation
Translators	0.273	0.200	0.900	-0.200	0.204
Teachers	0.088	0.150	0.625	-0.400	0.261
Users	-0.200				

Dynamic index: contrastive statistics

Dynamic Index per subject	
Mann-Whitney U-test	259.500
Wilcoxon W	559.500
Z-test	- 2.511
Significance	.012

CONCLUSION

The dynamic index of the translators is significantly higher than that of the teachers (at the significance level 5%).

Coherence coefficient

Reclassified replies: Dynamic - Static questions	Categories of concept of translation /pair/subject
4 – 4 4 – 3 3 – 4 3 – 3 2 – 2 2 – 1 1 – 2 1 – 1	Dynamic – Static (D – S)
4 – 2 3 – 2 4 – 1 3 – 1	Dynamic (D)
2 – 4 2 – 3 1 – 4 1 – 3	Static (S)

Categories of coherence

- Sum the categories D and S of the concept of translation /pair/subject. Calculate the coherence coefficient from the difference between the majority and minority concept (We are not interested in whether it's dynamic or static, only if it's coherent) following the formula:

$$D < S \rightarrow \sum S - \sum D$$

$$\text{i.e.: } |\text{sumaS} - \text{sumaD}|$$

$$S < D \rightarrow \sum D - \sum S$$

- the **coherence coefficient** is defined with 3 categories:

SUMA 0 – 1: 0 points; no coherence

SUMA 2 – 3: ½ point; average coherence

SUMA 4 – 5: 1 point; maximum coherence

Coherence coefficient: Comparing the groups

C-square test

	Value	Degrees of freedom	Significance
Pearson C-square	3.028	2	.220
Likelihood	4.459	2	.108
Number of valid cases	59		

Confirms new hypothesis:

There is no significant difference in coherence between the groups of translators and teachers, but the users are different.

Methodological commentary

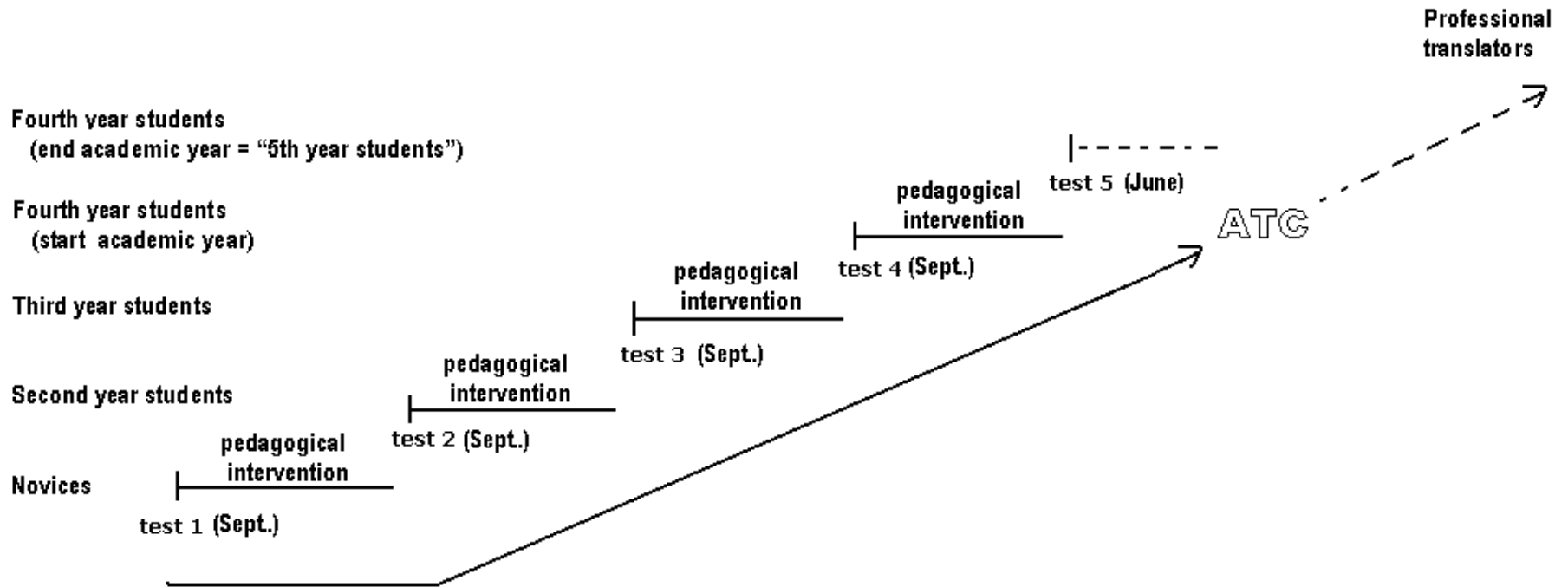
- The instrument and the methodology (indicators) were validated within the experiment, therefore:
 - Experimental economy
 - Results less likely to be distorted
- The dynamic index and the coherence coefficient are not only useful to measure Knowledge of Translation, but also the Translation Project

- Crossing data:
 - Contrasting translators and teachers
 - Contrasting direct and inverse translation
 - Integrating acceptability indicator
 - Contrasting different variables
 - Contrasting global translation projects with 'rich points'
 - Contrasting the 'best' and the 'worst' subjects

**V. DESIGNING THE PACTE
ACQUISITION OF TRANSLATION
COMPETENCE EXPERIMENT**

- What type of study?
- Who is observed?
- What is observed?
- How is the data collected?
- How is the data represented?
- How is the data analysed?

- A longitudinal study with repeated measurements?
 - Repeated measurements taken from one sample of students over 5 years
 - Technical problems
 - 5 years needed to collect the data
 - Parallel instruments needed for each measurement (texts, questionnaires, etc.)
- A simulacrum of a longitudinal study.
 - ‘Repeated’ measurements from samples of students taken from each promotion
 - Advantages
 - Data collected in one year
 - Validated instruments available from the TC experiment
 - Technical problem
 - Assure comparability of promotions



- To prepare the ACT experiment and validate the new instruments:
 - Exploratory test (15 students)
 - Pilot test (15 students)

- Experimental universe
 - 150 students from different years of the FTI/UAB undergraduate degree in translation and interpreting
 - 6 Language combinations (= TC experiment)
- How is the sample selected?
 - Initial questionnaire to act as filter
 - (e.g. to have passed all the subjects in the previous year, to be a Spanish or Catalan NS, not to have transferred from another degree programme)
 - Students that have passed the filter
 - Random selection of 5 from each year
- Control group
 - The 35 professional translators from the TC experiment

- Independent variables
 - Experience in translation (six categories):
 - Novices
 - Second year students
 - Third year students
 - Fourth year students
 - Recent graduates
 - Professional translators
 - Types of pedagogical intervention:

- Dependent variables = TC experiment
 - Knowledge of translation
 - Efficacy of the process
 - Decision-making
 - Translation project
 - Problem-solving
 - Use of instrumental resources

- Instruments validated in the TC experiment
 - **Observation instruments:**
 - **Software:** Proxy and Camtasia
 - **Questionnaires:**
 - **Translation problems questionnaires** (BA and AB)
 - **Knowledge of translation questionnaire**
 - **Texts:**
 - **'Rich points'**
 - **Criteria for acceptability, semi acceptability and unacceptability of solutions**
- New instruments for the ATC experiment
 - **Questionnaires:**
 - **Initial questionnaire**
 - **Standardised retrospective interview**
 - **Corpus software:**
 - **WordSmith Tools**

- Indicators validated in the TC experiment
 - The transversal indicator of acceptability
 - Types of actions
 - Sequences of actions
 - Index of dynamism
 - Coefficient of coherence, etc.
- New indicators for the ATC experiment
 - Indicators based on corpus methodology to compare
 - ST and TT
 - TT from different language combinations
 - TT from students at different levels
 - TT by students and professional translators

- Models of analysis validated in the TC experiment:
 - Efficacy of the process: total time taken and acceptability (division of the sample)
 - Knowledge of translation
 - Translation project, etc.
- New models of analysis for the ATC experiment:
 - Corpus methodology models of analysis

Áreas de la Ciencia (Aristóteles)



Sócrates Platón



Traductología



Astronomía



Gramática



Geometría



Retórica



Dialéctica



Música



Aritmética

THE END

PACTE