

A Questionnaire of the Thought and Behavioral Strategies of University Students

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This research concerns the design and trial of a questionnaire surveying the behavior of university students, containing 82 items, whose purpose is to gather data on university students' thought and behaviour strategies. The instrument is based on PNL and, more specifically, on the categorization of meta-programs proposed by Hall and Bodenhamer (1997). Ten scales were obtained by factorial analysis, which were compared with the pace with which students' successfully complete exams. The resulting profiles helped students to improve their approach to studying and to evaluate the benefits and limitations of this approach.

Keywords: NLP, Meta-programs, Neuro-Linguistic Programming (NLP), Learning strategies, Assessment, Motivation, Tertiary education.

This research consists of a preliminary study whose objective is to develop a tool to better understand the interpersonal differences of students to gather data about their thought and behavioral strategies and to verify if these strategies tend to combine themselves to define general profiles.

In this stage, a survey of 82 questions based on the categorization of meta-programs proposed by Hall and Bodenhamer (1997) was developed and a trial of the instrument on an assessment sample of 129 students from the Science of Education and Instruction program at the University of Rome "La Sapienza" was performed. It consisted of a first stage, useful for verifying the instrument constructed.

The preliminary study at the scaling of the instrument consists of a project containing a wider scope with which it is intended to verify if some approaches are susceptible to reducing or increasing students' difficulty during their university

career, in future university plans, and, furthermore, if the contexts of some choices of program of study promote some strategies more than others. The intent is to verify the possibility of transferring elaborate models prevalently in a clinical context within the educational field and verify their effectiveness with an experimental approach.

Once scaled, the instrument will further be able to help students to better understand the type of behavioral strategies that they use, permitting them to evaluate their benefits and limits.

Theoretical Premises

The first problem confronted regards the validity of the contents of the instrument; it not being possible to propose a gamma of a very broad item, a selection was done of behavioral strategies inspired by the descriptions of the study-based meta-programs, based on the model of the NLP (Neuro Linguistic Programming). These

studies, often conducted with methodologies that are not strictly experimental, have, however, merit for having explored, through a clinical approach, important aspects of personality, temperament and character and for having highlighted the role of so-called meta-programs on the quality of the individuals' experience.

For the construction of the instrument, reference was made to the theoretical construction of the Neuro-Linguistic Programming. The NLP was made into a discipline in the beginning of the Seventies and is categorized in the behavioral and cognitive science field. Its founders are Richard Bandler and John Grinder (1975), two students from the University of Santa Cruz in California. Bandler, expert of cybernetics, was working on his PhD in psychology when he met Grinder, linguistics professor, mentored by Noam Chomsky.

These authors were inspired principally by the school of Paolo Alto, by Gregory Bateson (1977) and Paul Watzlawick (1967) to study "the modeling of excellence," that is, the cognitive and behavioral patterns behind the realization of an effective therapeutic report. The Neuro-linguistic Programming was thus born from the intent to systemize linguistic and behavioral models used in therapy.

Bandler and Grinder further developed the method of communication, verbal and otherwise, of groups of psychologists, psychotherapists and of their patients. They were, in this way, able to describe a set of behavioral strategies capable of creating a sympathetic relationship with the patients. From these fundamental observations, the models of mental behavior, showing that they could influence the interpretation of facts and reactions to information, were later highlighted.

Later on, Grinder and Bandler's group quickly included other researchers such as Judith Delozier, Leslie Cameron, David Gordon, Robert Dilts, Todd Epstein, Steve and Connirea Andreas. After having described a communication model inherent to effective therapeutic work, they studied the interdependency between behavioral methods, coding processes, use of personal information and thought patterns.

In 1976, the results of this work were formalized, giving the name "Neuro-Linguistic

Programming" to this discipline:

"with programming, it is intended the organization of the components in a system, in this case the sensorial representations;

- With neuro (from Greek; neuron) we are referring to the cognitive behavior of each individual, determined by neurological processes, in the way with which, through the five sense, the individual comes into contact with reality;

- With linguistic, we refer to language, which represents, orders, and puts cognitive processes into sequence and allows, by observing how it is used, us to modify it and therefore modify ourselves through our behavior" (Bettoni e Lopriore, 2000, p. 117).

The meta-programs of the NLP are a part of our mental paradigms (Kuhn, 1962) and they determine our characteristic way of acting and reacting to situations. "By definition, we define the Meta-Programs as those programs above the everyday thoughts-and-emotions that we experience. In terms of levels, the everyday thoughts-and-emotions operate on the primary level as the content that describes what we think-and-feel. In these content programs we have specific details and strategies. Above the content of our thoughts, we have other thoughts-and feelings, ones that operate more out-of-consciousness. These "programs" function as the sorting and perceiving "rules" that thereby govern how we think-and emote" (Hall e Bodenhamer, 1997, p. 4).

The definition of meta-programs is modelled after the "psychological types" by Carl G. Jung (1921). The terms "extroverted" and "introverted" of the Jungian dichotomy were used before the release of his book, but their use in modern psychology related to his concept of these criteria. Jung is distinguished by his use of these two axis to connote the psychical "functions" of "feeling, thought, sensation, and intuition."

The term "meta-programs," was coined by John C. Lilly (1967) in his book *Programming and Metaprogramming in the Human Biocomputer*. Like the majority of cognitivists, Lilly considers man to be an elaborator of information and makes use of the metaphor of the computer to explain the mind.

The founders of the NLP, more interested in how to resolve problems and conflicts than in

finding out why they took place, constructed their hypothesis of work on the theoretic basis of cognitivism. As opposed to behaviorism, for cognitivism, the mind is an active agent that participates both in the management of the input that comes from the environment as well as in the behavioral response in a determinate way. Despite this, this intervention is sometimes thought of as the result of the “stimulus-response” relationship, or rather of a process reflected between thought and behavior.

The “Encyclopedia of Systemic NLP and NLP New Coding” brings the description of meta-programs in the work of Richard Bandler (end of 1970) and of Leslie Cameron-Bandler (1982), together with David Gordon, Robert Dilts and Maribeth Meyers Anderson back up.

Rodger Bailey and Ross Steward, two students of Cameron-Bandler, continued the research at the NLP Center for Advanced Studies in San Francisco. They devised a data gathering instrument with thirteen categories and they commercialized it with the name LAB Profile. The LAB Profile is based on the classifications of Cameron-Bandler and on the MBTI ((Myers-Briggs Type Indicator) published in 1962, which return to the Jungian typologies.

Shelle Rose Charvet (1995), one of Grinder’s students, further extended their work and wrote the book “Words That Change Minds” (1995), about her experience regarding the use of this instrument. In 2000, in the wake of the LAB Profile, the iWAM questionnaire was constructed.

Researchers Tad James and Wyatt Woodsmall (1988), Bob G. Bodenhamer and Michael Hall (1997), instead worked both to group the different meta-programs identified as well as to revisit their definition and organize them into categories.

The study of meta-programs remains a field of study open to revision and to betterment and needs experimental confirmation. “The domain of Meta-programs exists as an open field. NLP and the cognitive/perceptual psychologies have only begun to identify numerous patterning sorts that people use in structuring their perceptions” (Hall e Bodenhamer, 1997, p. 26).

The experimentations in NLP were not oriented towards the verification of the psychological reality of these mental processes. These hypothetical constructions, which have to do with per-

ception, are assumed only when they become reality for the person that thinks by way of this modality; “they are the programs which guide and direct other thought processes. Specifically they define common or typical patterns in the strategies or thinking styles of a particular individual, group or culture” (Dilts e Delozier, 2000, p. 756). Their reality is relative to the way of thinking of a person in a given context and is verified by way of the behavior that results from it. The pragmatic philosophy that subtends the NLP brought its researchers to develop familiarities that have a practical use and that can become instruments of favorable change and progress. The important thing for the NLP, therefore, is not to know if the mental processes, which are derived from a person or a culture’s own view of the world, have a reality or not, but rather to understand if this model is useful and functional and, if it’s not, to see how it could be exchanged for a different one.

The theoretical assumptions that we picked up in the elaboration of the survey can be summarized into four points: “the map is not the territory”; the mental and behavioral strategies adopted depend on the context; the mental representations influence the set of mental life, affective and behavioral; and finally, learning, success in exams, and the ease with which one studies are all expressions of self and are influenced by the personal view of the world and of the self and of the relation to others.

In this research, the interest was focused on the accord and the cohesion between the strategies used in a university context and on the formulation of hypothesis with respect to their implications in the benefit obtained at university.

We know that if the mental representations (or patterns) act on inhibition or on the facilitation of expression of our motivational systems they, in turn, determine the quality and the quantity of our memory. In other words, the concepts that were memorized talking of the self, of what intelligence is, or of what the university-centered goals are, configure a belief on the possibility of reaching or not reaching university objectives. So, the idea of being able to obtain results is necessary to the expression of a motivation. The action will be motivated if the proposed experience (or the interpretation of it) corresponds to the expectations of

realization, to the person's own objectives (what makes sense for this person and what eventually defines the desired identity). "Motivation in a scholastic context is a dynamic state that has its origins in perceptions that a student has of himself and of his environment and that incite him to choose an activity, to dedicate himself and persevere to his realization with the goal of reaching an objective" (Viau, 1997, p. 7).

The instruments used for the identification of meta-programs doesn't focus, however, on behaviors, but rather on contents of discourse and on the linguistic forms used. The LAB Profile uses a semi-structured interview in which verbal structures used are noted together with subjects discussed. The iWAM is a survey with set questions that have to do with aptitudes and motivations in the context of work.

Characteristics of the instrument

The Questionnaire on Metaprograms (QM), finalized at the evaluation of the meta-programs in an educational environment was custom-made starting from the categorization of Hall and Bodenhamer (1997).

Since the objective of the research is to reveal the mental, behavioral, emotional, and motivational strategies of students in the context of university studies, the classification of Hall and Bodenhamer's meta-programs was chosen to identify the set of strategies to consider and to identify questions to specify.

Hall and Bodenhamer described fifty one meta-programs, classifying them into five macro-categories:

- Mental meta-programs linked to cognitive strategies;
- Emotional meta-programs that regard the emotional management of information and responses;
- Volitional meta-programs on the orientation of attention and volition;
- Behavioral meta-programs (External Response), or rather behavioral responses;
- Meta meta-programs (Meta-states) that are the values, beliefs, and Kantian structures like space, time and categories.

The survey, still, was not organized according to these categories, but rather in accordance with the tendency of each strategy to connect to others to form tendential profiles.

The context analyzed in this research is an academic one and the majority of the questions were constructed in such a way as to explicitly make reference to problems with studying, behavior during examination or with inter-colleague relationships.

It was indispensable to try to reduce the items, in such a way that the compilation of the questionnaire did not require more than around fifteen minutes, so as not to discourage those surveyed from completing the task.

Most of the meta-programs describe a strategy accompanied by another opposite one, and, sometimes, by a third that corresponds to the intermediate tendency. Some meta-programs refer to different tendencies that are not opposing and that contain more than two options. Only six meta-programs are present in a single item; in this case, the opposing strategy corresponds to the negation of the item.

The choice to analyze a meta-program was made on the basis of its usefulness (ability to describe strategies that have not yet been researched) and of the possibility to analyze it through closed-ended questions.

Individualization and classification of the items in the survey

There are 82 questions relative to meta-programs. The questions were formulated according to the modality of the Likert scale. Each item corresponds to the affirmation that describes the behavior that was desired to be researched. Together with each affirmation, the possibility to choose between four alternative answers that express the degree to which the student was in agreement with the affirmation of the item was given. It was decided to use a definite scale of terms of agreement: strongly agree, agree, don't agree, strongly don't agree. To illustrate the modality with which the items were constructed starting from the classification of reference, some examples will be proposed.

"Mental" Meta-programs

Mental meta-programs describe the way in which attention is present and participates in the cognitive elaboration and which type of information it tends to select.

Meta-program 1, *Chunk size (General – Specific; Global – Detail)*, regards the tendency to

be more brief or analytical. This meta-program is manifested in three different ways.

- a) *Global sorting, deductive*;
- b) *Detail sorting, inductive*;
- c) *Lateral sorting, abductive*.

Global sorting, deductive: People that adopt this meta-program prefer synthetic and concise discourses that go straight to the point and avoid details. They become quickly bored of meticulous descriptions. In general, they tend to begin with an idea, a concept or a global vision to then pass to the action.

Item 9: "During an exam, I prefer to remain in general terms without getting into details".

Item 80: "During an exam, I prefer to speak of the subject in general terms".

Detail sorting, inductive: This modality corresponds to a person who considers being specific important. The individual that uses this meta-program insists on using detail when he speaks, while synthetic discourses seem to him reductive or botched. He starts from concrete fact to analyze the situation, get an idea, and act.

Item 24: "During an exam, I prefer that the teacher asks specific questions".

Lateral sorting, abductive: This typology was not taken into consideration. It refers to the ability to connect more than one level of perception through analogy, metaphor, or the use of symbols. This aptitude did not seem to us to enter into contradiction with the two preceding abilities, but to be able to associate itself with one or the other strategy indifferently.

"Emotional" Meta-programs

This category groups meta-programs that, according to Hall and Bodenhamer, describe cognitive processes that influence the formation of emotion and the way of emotionally interpreting situations.

Meta-program 14, *Frame of reference or Authority sort (Internal – External; Self-referent – Other-referent)*, has to do with how decisions are made, with reference to the internal or external.

Self-referencing people make their decisions based on what believe to be most just in accordance with their personal reflection. Their evaluation depends only on their judgment.

Item 26: "The decision to sign up for this degree was influenced only by personal reflection."

This typology was considered, in the survey, under two prospective. A second item describes

the capability of someone who makes decisions on the basis of their own considerations, but further demonstrates an openness of the mind that allows him to use other points of view to enrich his reflection.

Item 41: "The decision to sign up for this degree was influenced by information that I went in search of."

Other-referencing people make decisions depending on judgments formed by others. They give priority to outside opinions to evaluate a decision, an idea, or a fact. They have a strong need for advice and feedback.

Item 72: "The decision to sign up for this program of study was influenced only by personal reflection."

The evidence put to the test

The survey was administered online through the Moodle platform on program of study Science of Education and Instruction's website; participation was voluntary. The survey was operational for twenty days (from 05/16/2011 to 06/04/2011). They were preceded by questions about their specialization, their year, the number of exams sustained and the number of credits obtained.

The Science of Education and Instruction students at the University of Rome "La Sapienza" participate as the sample during the 2010/2011 academic year.

It is useful mentioning that, given the inherent limits, especially in terms of subjects to whom the trial was given, the analysis and the statistics adopted only have an indicative value. In this sense, it will only hint at tentative facts to obtain a summary of variables (profiles) through statistical analysis.

One hundred and twenty nine students answered the questionnaire of which 120 were female and 9 were male. The referred set for this explorative analysis is constituted by 107 students from the Science of Education and Instruction department and 22 Masters students from the same department and students from the school of education specializing in pedagogy and science of instruction.

Eighty three percent of students from the research are bachelor's degree student and sixty percent of them are in their first or second year, while thirty percent are in their third or fourth year, while ten percent are in their fifth, sixth, or seventh year.

Masters students and school of education students represent seventeen percent of the examined set.

The analysis of the averages obtained for each question gives us a description of the characteristics of the Science of Education students. The choice to sign up for this program of study appears to be strongly motivated by social reasons and by an open mind. Students especially tend to recognize themselves in the affirmations that describe aspects of curiosity (item 13: "I get the most satisfaction from learning something I didn't know") and sociability (item 53: "It's essential that work allow me to be in contact with other people") and reject those that reflect dependency, ability to be influenced (item 72: "The decision to sign up to this program of study was influenced by what I heard about it") or the tendency to not take responsibility for themselves (item 54: "Others are at fault for things that have gone wrong in my life").

The scale created from the questions on the survey

To make a summation of results obtained, an examination of the correlations between the questions was first carried out and then we identified the groups.

After the explorative analysis, we continued by constructing scales summing up the results of the questions whose contents could reasonably define more complex strategies and verifying the internal

coherence of these scales with the Cronbach's Alfa. In the composition of the scales, inverting the point system of some items became necessary, adopting the content backwards in the scale.

On the tables that follow, when the name of a question is preceded by the letter R, it means that the question was recoded, attributing a score of 4 at "strongly disagree" with the affirmation proposed and 1 at "strongly agree" with the affirmation proposed.

There are ten scales obtained from the study. We tried to attribute a name to each scale.

- Scale 1: Diligent and methodical (alfa .688)
- Scale 2: Curious (alfa .673)
- Scale 3: Decisive and Planner(alfa .668)
- Scale 4: Cooperative (alfa .633)
- Scale 5: Empathetic and Sociable (alfa .625)
- Scale 6: Competitive (alfa .603)
- Scale 7: Reflective (alfa .593)
- Scale 8: Careful (alfa .573)
- Scale 9: Skeptical and untrusting (alfa .561)
- Scale 10: Follower (alfa .457)

Scale 1. Diligent e methodical

A high score on scale 1 indicates agreement with items 6, 15, 24, 25, 29, 32, 76 and disagreement with items 3, 9, 10, 56, 58, 59, 80. The items describe a particularly diligent subject in their studies who confronts tasks adopting a defined and tententially rigorous methodology.

Table 1

Scale 1. Correlations between questions and Scale. Cronbach's Alfa of the scale

Diligent and Methodical	Scale 1
Ritem 59 I generally prepare exams at the last minute	,637**
Ritem 10 Sometimes I start reading a book and don't finish it.	,553**
Item 15 When I prepare an exam, I start studying from the first lessons	,545**
Item 25 When I prepare an exam, the joy of learning prevails	,525**
Ritem 9 During an exam, I prefer to be vague rather than getting into details	,511**
Item 29 I have my own method to prepare for exams and I know how to get good grades	,457**
Item 76 Before I start a new book, I always finish the one that I was reading	,446**
Item 32 When I go to class, I take notes on everything the teacher says	,394**
Ritem 58 The important thing isn't which exam to take, but taking as much as possible	,378**
Ritem 3 I don't like having to plan exams	,375**
Ritem 56 My method for studying changes depending on the timing and the subject matter	,361**
Item 24 During exams, I prefer that teachers ask me specific questions	,360**
Ritem 80 On exams, I prefer talking about a topic in general terms	,352**
Item 6 I can relax only after having finished the things that I have to do	,339**
Cronbach's Alfa	,688

** Correlation is significant at the level: 0,01 (2-code).

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Scale 2. Curious

People that obtain a high score in scale 2 express agreement with items 27, 28, 43, 44 e 68.

The scale, as seen here, expresses curiosity, the desire for adventure and new stimuli and willingness to question oneself.

Table 2

Scale 2. Correlations between questions and Scale. Cronbach's Alfa of the scale

Curious	Scale 2
Item 44 Adventurous situations attract me	,756**
Item 43 I like meeting lots of different people	,724**
Item 28 I like using new technology or new materials	,677**
Item 27 I am ready to question things in which I believe	,586**
Item 68 When I study, I like to discover things that are different from what I already know	,555**
Cronbach's Alfa	,673

** Correlation is significant at the level: 0,01 (2-code).

Scale 3. Decisive and a planner

Scale 3, composed of items 26, 41, 42, 45, 50, 53 e 65 associate questions that describe thought and behavioral processes that refer to the ability to make decisions autonomously and

according to one's own objectives. Students that have a high score on this scale chose majors that corresponded to their aspirations by searching for the necessary information on their own.

Table 3

Scale 3. Correlations between questions and Scale. Cronbach's Alfa of the scale

Decisive and a planner	Scale 3
Item 42 I chose this major for my professional plans	,714**
Item 41 The decision to sign up to this program of study was influenced by information that I went searching for	,658**
Item 65 My past experience determined the choice of this program of study	,610**
Item 26 The decision to sign up to the program of study was influenced by personal reflection	,564**
Item 45 When I chose this program of study, I considered the opportunities that it could offer me	,510**
Item 53 It is essential that my job allow me to be in contact with other people	,497**
Item 50 The goals that I'd like to reach motivate me to move forward	,475**
Cronbach's Alfa	,668

** Correlation is significant at level: 0,01 (2-code).

Scale 4. Cooperative

People who obtain a high score in scale 4 express agreement with items 38 and 51 and disa-

greement with items 4, 8, and 46. The scale, as seen here, describes strategies that are linked to the desire to socialize and study with others.

Table 4

Scale 4. Correlations between questions and Scale. Cronbach's Alfa of the scale

Cooperative	Scale 4
Item 51 I study with other students and we help each other	,708**
Item 46 When I study, I like to be in an isolated and silent environment	,678**
Item 4 I study alone; I neither give advice, nor do I ask for i.	,622**
Item 38 When I'm going through hard times, I prefer to have people around	,596**
Item 8 To work well, I need a well-organized space	,580**
Cronbach's Alfa	,633

** Correlation is significant at level: 0,01 (2-code).

Scale 5. Empathetic and Sociable

The scale, composed of items 7, 30, 33, 55, e 57 associated elements of emotional expan-

sion, communicability and sociability. It defines, therefore, a profile in which openness to others is prevalent.

Table 5

Scale 5. Correlations between questions and Scale. Cronbach's Alfa of the scale

Sociable and Empathetic	Scale 5
Item 30 Sometimes i give advice to other students about how to prepare an exam	,648**
Item7 I generally tend to trust people that I meet	,637**
Item 33 I expect that people can change	,632**
Item 55 Everything that I think can be seen; I can't hide anything	,592**
Item57 People tend to confide in me	,531**
Cronbach's Alfa	,625

** Correlation is significant at level: 0,01 (2-code).

Scale 6. Competitive

People that obtain a high score on scale 6 express agreement with items 16, 20, 22, 60, 78

and disagreement with items 18 e 19, 69 e 81. The scale, as seen here, expresses a strong motivation for success and the desire of social recognition.

Table 6

Scale 6. Correlations between questions and Scale. Cronbach's Alfa of the scale

Competitive	Scale 6
Item 22 It's important to try to be the best	,573**
Ritem 69 Only the thought of speaking in front of people makes me feel sick	,555**
Ritem 19 I prefer to not have big expectations so that I'm not disappointed	,503**
Item 60 I prefer to repeat an exam rather than accepting a bad grade	,500**
Item 78 I like to be at the center of attention	,491**
Item 20 I am satisfied only when the obtained result is the same as my initial objective	,476**
Ritem 18 If I've done my best, I'm happy even if the result isn't perfect	,464**
Ritem 81 It's more important to finish a task than to get a good result	,437**
Item 16 When the objective is more difficult to obtain, I'm more motivated	,385**
Cronbach's Alfa	,603

** Correlation is significant at level: 0,01 (2-code).

Scale 7. Reflective

Scale 7, composed of items 13, 17, 37 rec, 48,63, 64, 73, 75 associated items referring to a reflective type profile that tends to examine prob-

lems and to choose after having evaluated their pros and cons. Studying, for these subjects, is important as an instrument of evaluation and solution to problems.

Table 7

Scale 7. Correlations between questions and Scale. Cronbach's Alfa of the scale

Reflective	Scale 7
Item 48 If I have a problem, I remain calm and I analyze the situation	,594**
Item 75 In the choosing of my bachelor's program, I considered the difficulties and risks that I could encounter	,545**
Ritem 37 In general, I first react and then reflect	,532**
Item 73 When faced with a problem, I first want to understand the different aspects	,521**
Item 64 I learn by studying	,456**
Item 63 When faced with a problem, I first want to know how to resolve it	,446**
Item 66 If I talk about something that happened to me, I tend to tell it without any particular emotional involvement	,440**
Item 17 While I'm in class, I try to reflect on what the teacher is saying	,428**
Item 13 I get the most satisfaction from learning something that I don't know	,394**
Cronbach's Alfa	,593

** Correlation is significant at the level: 0,01 (2-code).

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Scale 8. Careful

People that get a high score on this scale express agreement with items 47, 49, 70, 77, 79. It was not easy to find a name that summarized the strategies present in this scale. The described student actually seems to be in a position of lis-

tening to people more expert than themselves, prefers to find themselves in a safe environment to which they try to adapt, and waits to express themselves in order to evaluate the people with whom they interact. For this, we decided to call this scale "careful."

Table 8

Scale 8. Correlations between questions and Scale. Cronbach's Alfa of the scale

Careful	Scale 8
Item 47 Before speaking, I prefer to know what other people think	,666**
Item 70 I learn only by experiencing what is being taught	,662**
Item 49 When I study, I like to come across things I know	,596**
Item 77 It's essential for me to feel safe and among friends	,559**
Item 79 I adapt my behavior to the contexts in which I find myself	,550**
Cronbach's Alfa	,573

** Correlation is significant at level: 0,01 (2-code).

Scale 9. Skeptical and untrusting

Scale 9, composed of items 2, 36, 52, 54, 62 e 67, describes a person equipped with rigid beliefs that lead him to consider the environment

and other people as potential threats and causes of difficulty and, upon adopting a passive behavior, he or she tends to turn responsibility over to others.

Table 9

Scale 9. Correlations between questions and Scale. Cronbach's Alfa of the scale

Skeptical and untrusting	Scale 9
Item 67 The more I go ahead, the most I realize that things don't change	,661**
Item 36 When I meet a new person, I keep my distance	,586**
Item 54 When things have gone wrong for me, other people have been at fault	,542**
Item 62 I have a strategy for studying that could be useful to others, but I don't give advice	,541**
Item 52 If a conversation goes on too long, I like to intervene to change the subject	,526**
Item 2 I decide on the basis of things that I'd like to avoid	,499**
Cronbach's Alfa	,561

** Correlation is significant at level: 0,01 (2-code).

Scale 10. Follower

Students that obtain a high score on scale 10 express agreement with items 5, 34, 61, e 74.

This scale seems, overall, to delineate a strategy of dependency on authoritative references.

Table 10

Scale 10. Correlations between questions and Scale. Cronbach's Alfa of the scale

Follower	Scala 10
Item 5 To decide to take a class, I go listen to a few lessons	,695**
Item 61 I prefer to learn by using someone I believe to be skilled as a model	,606**
Item 34 To study, I prefer to be advised by the teacher or by other students	,588**
Item 74 When i want to know something, I refer myself to experts in the field	,560**
Cronbach's Alfa	,457

** Correlation significant at level: 0,01 (2-code).

Prevalent profiles among Science of Education students

After having examined the scales created by the survey, and their reciprocal relations, we analyzed the average score had by the various scales.

Scale 3, 'Decisive and a Planner (average 3.18 with a standard deviation of 0.46),' and scale 2, 'Curious (average 3.15 with a standard deviation of 0.47),' obtain the highest average scores. From this we can see that singing up to this program of study is product of an individual choice according to a professional product linked to the world of education. A distinctive openness to the new and different and a sense of adventure seem to be characteristics of the prevalent thought strategies and behavioral strategies among the students.

Scale 8, 'careful,' follows with an average equal to 2.95 and a standard deviation of 0.44. A scale that reflects the relationship that girls who attend the Science of education program of study have with the university. In general, it shows desire for attention, but not necessarily to be the center of attention, with a strong dimension to listen to the teachers and lots of care when exposing oneself to communicate one's own points of view.

Scale 7, 'reflective (average 2.87 with a std. dev. 0.35),' empathetic and sociable (average 2.86 std. dev. 0.49),' and 1, diligent and methodical (average 2.82 std. dev. 0.37) present very

similar vales and they highlight some traits of thought and behavior present in students in the program of study.

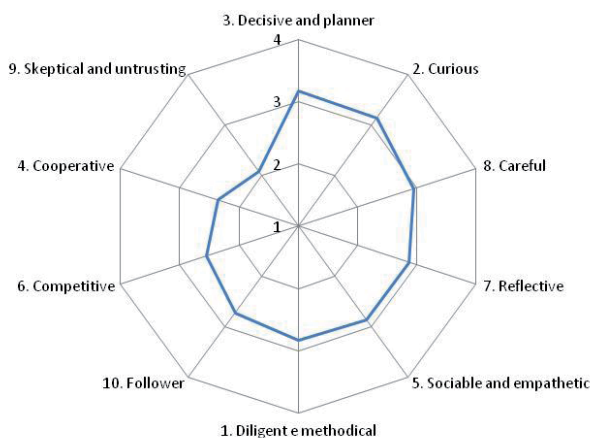
Average values slightly lower are present in scale 10, follower (average 2.72 with std. dev. 0.50).

It's interesting to observe scale 4, 'cooperative,' obtain an average of only 2.36 and therefore be one of the less chosen scales and to obtain a slightly lower concordance than scale 6, 'competitive (average 2.55 and std. dev. 0.41).'

While sociability seems to be associated with the choice of career that implicates relationships with others, these two approaches do not appear to be linked to a cooperative tendency. Cooperation, in this research, was evaluated only in its application to study and it's important to repeat that the same way of being are not used in all contexts. A person could, in fact, prefer to study alone, not help others at the university and, instead, at work, with the family, or in other environments, collaborate, help, and interact with others.

The scale that had the lowest average was scale 9, 'skeptical and untrusting (average 2.8 std. dev. 0.43).

Graph 1 summarizes the pace of the scales and represents a map of average values of how the students in the science of education program of study represent their thought strategies and behavioral strategies.



Graph 1. Average score of students in Science of education by scale

Regularity Factor

The regularity factor per year was obtained with factor analysis, which put together the number of exams per year with the number of university credits per year into a single factor.

Scores had for this factor were, then, transformed into points t ($100z + 500$). In the same way, to allow for a comparison between the scales and the regularity factor per year, we standardized the scale scores and we transformed them in t points.

The regularity factor doesn't regard merit, only the rhythm of a student's studies. It is based on a quantitative evaluation of exams passed per year of study and of credits obtained per year of study. From these variables, a single factor by way of the analysis factor was calculated. In a later phase of this work, it will be possible to integrate the data with the other indicators available at the program of study and in particular to the occupational results of graduates, obtainable through the data of the obligatory communication that our Ateneo is elaborating in collaboration with the Ministry of Work.

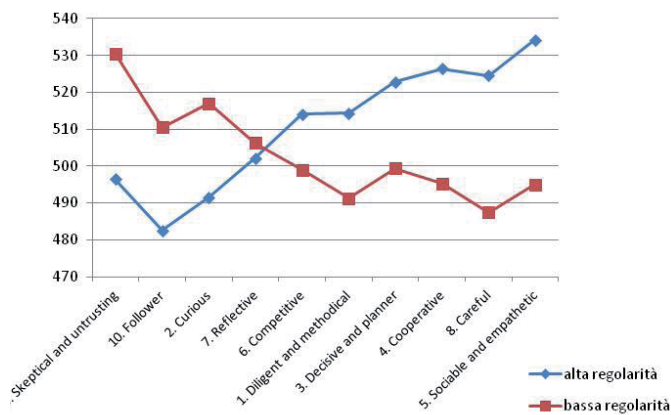
Between the regularity factor and the scales, the only significant correlation is relative to scale 5, empathetic and sociable ($r = 0.21$ sign. 0.02). This scales presents significant correlations with the number of exams per year and the number of university credits per year, also.

We have, nevertheless, tried to verify in what way average values of the profiles of students that are found at the two extremes of the regularity factor compare with one another.

For this analysis, we compared the results of the students in the quartile with the best scores (32 subjects) with those in the quartile with the worst scores and we ordered them based on the interquartile difference.

From this analysis, it is possible to see that the scores in some scales seem to produce a difference in favor of the group with high scores. Examples are scale 5 *Sociable and empathetic* in which the difference between the two groups is one standard deviation, of scale 4 *Cooperative* (94 points difference), of scale 11 *Cooperative*, of scale 5 *Competitive*, and of scale 9 *Diligent methodical*. The score in other scales seems not to produce much of a difference, while it's worth observing that scales 10 *skeptical and untrusting* (58 points difference) and 8 *Careful* (84 points difference) find students in the greatest disagreement and the least regularly in agreement. This has to do with, therefore, a pace that seems to be in harmony with the theoretical model of this instrument.

From these results, we can hypothesize that students that tend to have clear ideas about the job they'd like to have and having chosen a program of study in accordance with both the opportunities that it offers as well as their own past experience, that consider themselves trusting towards other and that show themselves to be open and available to help and that cooperate with their classmates seem to have an advantage when actively proceeding with exams. The student that seems, on the other hand, to encounter greater difficulty at maintaining a



Graph 2. Comparison of averages of scales of students with high and low regularity

rhythm of exams tends not to demonstrate interest in study nor do they demonstrate strong determination; they organize themselves at the last minute and focus on quantity over quality, easily consider people and circumstances unchangeable, attribute the responsibility of what doesn't go well to others and needs verification of information and of learning that occurs through using competent people as a model and to referring themselves to experts.

An ulterior analysis allowed us to highlight which strategies were prevalent among students with a high regularity. For this, we identified the questions that presented significant correlations with the regularity variable. In reality, only four of the 82 questions present this result (table 11). This involves questions that make reference to different scales: question 30, which is part of the sociable and empathetic scale, question 46, which is part of the cooperative scale, question 47, which is part of the careful scale, and question 65 which is part of the decisive and planner scale.

We tried to verify the possibility of adding these four strategies in a score; a score extracted this way presents a correlation with a significant and fairly high (.524) regularity factor.

Students' profiles

The instrument allows us to further obtain a layout for each individual student. To realize this layout, we calculated, for the ten scales, a standardized score that can be proposed as a description of the strategies adopted by each student that can compare his profiles with the average pace of his colleagues. The first case describes a closed student that perceives herself to be methodical but that gets her motivations from a competitive

push, while her curiosity is much lower. The regularity of the student is very low. The second graph is relative to a student with a more that satisfying regularity, the scale in which she is distinguished the most is decisive and planner-

Conclusion

The variability of the situations of the students, of their behavior, but also of how variables of context influence their regularity doesn't yet allow this data to offer explanations. The instrument, nevertheless, seems to have worked in the correct way and thus it is reasonable to use it for trials on a wider sample.

An ulterior analysis on wider samples can allow us to highlight which strategies are prevalent among students with a high regularity versus a low regularity, or which strategies are prevalent among students with a high average in grades obtained versus a low average for the same exams sustained. The most frequent strategies and behaviors in correspondence with positive results in learning can give indication as to how to facilitate formative success (though potentiality of functional behaviors with respect to different individuals).

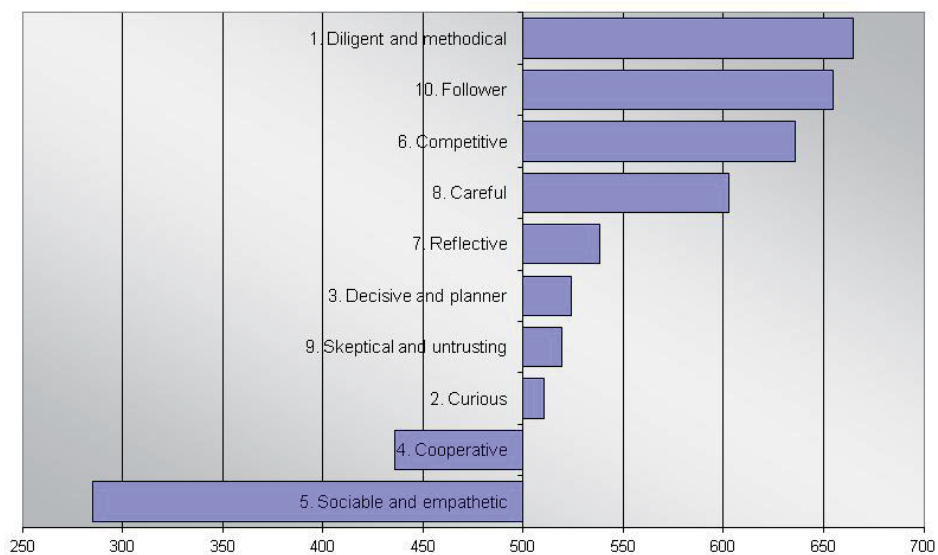
The instrument will necessarily have to undergo ulterior quantitative and qualitative validations. For quantitative validations, it will be necessary to raise the number of subjects and compare the scales obtained with the information on the students in possession of the program of study (socioeconomic survey, pace of exams, data from entrance exam). For the qualitative verifications, interviews of the students will be useful and verifying until what point they recognize themselves in the results of the trial.

Table 11

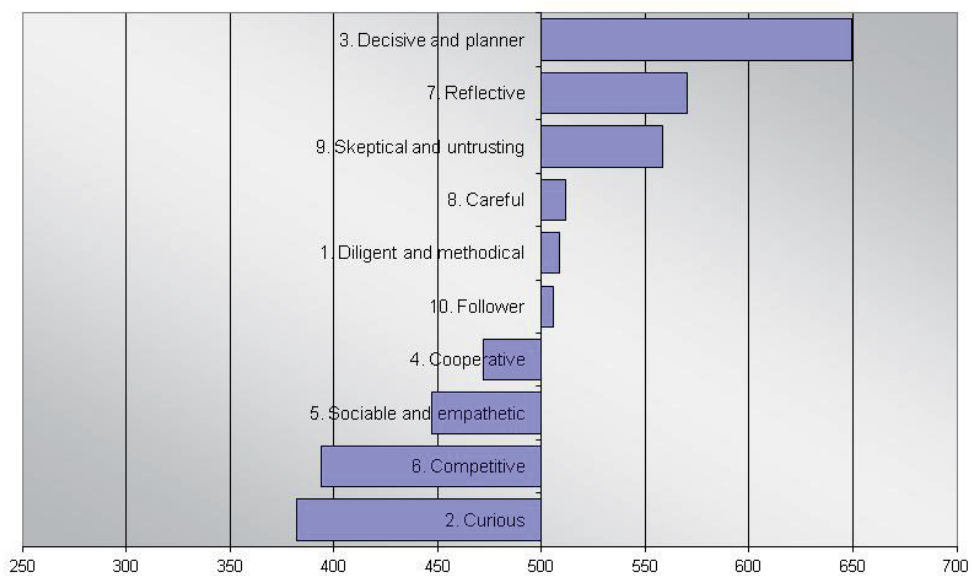
Questions on the survey with significant correlations to the regularity factor

		Regularity factor
Item 30 Sometimes I give advice to other students about how to prepare an exam	r	,303
	Sig. (2-code)	,000
Ritem 46 When i study, I like to be in an isolated and silent environment	r	,292
	Sig. (2-code)	,001
Item 47 Before speaking, I like to first know what other people think	r	,232
	Sig. (2-code)	,008
Item 65 My past experiences determined my choice of program of study	r	,312
	Sig. (2-code)	,000

Du Merac Emiliane Rubat



Graph 3. Profile of a student. Score for each scale in relation to the average of the population examined



Graph 4. Profile of a student. Score for each scale in relation to the average of the examined population

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Опросник стратегий мышления и поведения студентов вузов

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В настоящей работе описаны структура и процедура апробации опросника, направленного на изучение поведения студентов вузов с целью получения данных о стратегиях их поведения и мышления. Опросник состоит из 82 высказываний. Он основан на PNL, в частности, на предложенной Холлом и Боденхамером категоризации мета-программ (Hall, Bodenhamer, 1997). При помощи факторного анализа были выделены десять шкал, которые соотносились с темпом, в котором студенты успешно выполняли задания письменных экзаменов. Полученные профили позволили студентам усовершенствовать их подход к учебе и оценить преимущества и ограничения данного подхода.

Ключевые слова: НЛП, мета-программы, нейролингвистическое программирование, стратегии обучения, оценка, мотивация, высшее образование.