

University of Venice “Ca’ Foscari” - Graduate School of Education

Giuseppe Longo - g.longo@unive.it

Research project

Teaching literature: a challenge for a brain-based education.
Comprehension and interpretation of metaphors emotionally
connoted in poetic literary discourse: a new way to educate the
emotional competence?

“But if we lose them (the most disadvantaged students), school is no longer school. It is a hospital which tends to the healthy and rejects the sick”.

From *Letter to a Teacher* (The Schoolboys of Barbiana, 1970).

SOME PRELIMINARY QUESTIONS

-Emotional response in reading symbolic and metaphorical texts: can teachers use this assumption in educating the emotional competence?

-If there is an emotional response in reading literature, what elements are involved in determining it? Perhaps are they determined by constructing the meaning on the base of previous knowledge emotionally characterized?

-Is the problem of the inferences in comprehending texts connected also with a sort of emotional inferences, that condition and determine the comprehension, making it an interpretation?

-Do the emotions derive also from the cultural context, due to the fact that reading a poetic verse in L1 language triggers different emotions from reading a poetic verse in L2 or a translated verse?

-Some previous cognitions provoke determined emotional inferences in some students, not in others, even if they have the same background: why?

-Is the interpretation the highest form of comprehension (**Perkins, 2006**), because it is enhanced by emotions?

-If the literary text deals both with emotions and imagination, we cannot comprehend it without perceiving emotions. And if the emotions are connoted by culture, from an anthropological point of view, why students endowed with similar cultural background are emotionally impressed in different way by the same literary text, so that one is moved and his/her schoolmate seems indifferent?

BACKGROUND

- Reading requires effective timing and integration of multiple networks (**Fischer, Immordino-Yang, Weber, 2007**) aiming at recognizing patterns, planning strategy, and feeling through the growing activation of the limbic system and its connections to cognition (**Wolf, 2007**).
- Fictional entities can arouse our emotional system even when they are recognized as fiction (**Harris, 2006**), because emotion and the biological machinery underlying it are the obligate accompaniment of behaviour, conscious or not (**Damasio, 1999**).
- Emotions are important in situation models of comprehension (**Therriault and Rinck, 2007**), either in text processing or in mental representation (**Kneepkens and Zwaan, 1994**).

-The RH plays an important role in the construction of a coherent representation - emotion is part of this representation - and in processing “complex” and “polysemantic” structures (**Tapiero and Fillon, 2007**).

-The ventral aspect of right PFC appears to mediate the generation of set-shift hypotheses, whereas the dorsal region of right PFC appears to mediate the executive aspects of the creative process (**Vartanian and Goel, 2007**).

-Metaphoric utterances resulted in significantly higher levels of activation in the left inferior frontal gyrus and in bilateral inferior temporal cortex than the literal and ironic utterances (**Eviatar and Just, 2006**), even if other data suggest that processes in both hemispheres can support metaphor comprehension, although not via identical mechanisms (**Kacirik and Chiarello, 2007**).

- When we understand abstract concepts metaphorically (**Gallese and Lakoff, 2003**), two groups of neurons (the source and the target) in the brain are activated at the same time (**Kovecses, 2005**).
- Emotional expressions can be characterized, and even predicted, by specific dynamical patterns of interaction between brain, body, and world (**Gibbs, 2006**).
- Readers fill in the gaps through their emotional responses. Responding emotionally is a form of understanding and that an interpretation (**Robinson, 2005**).
- Literature is probably the first home of the emotional intelligence (**Mayer and Salovey, 1997**).
- Emotional competence emphasizes emotional skills that we need to successfully adapt and cope within our immediate and social environment. These skills can include reasoning, but the emphasis is

on adaptive emotional functioning. The skills of emotional competence are learned (**Buckley and Saarni, 2006**).

AIM OF THE STUDY AND HYPOTHESIS

-The expected results will probably highlight different emotional responses of the readers, either about the cognitive or about the physiological processes (some will be likely less emotionally affected than others by reading the literary text).

-The ultimate goal of the study: can literature really contribute to the improvement of the emotional education and usefully enhance the emotional awareness of students in recognizing either their own or others' emotional state, i.e. their emotional competence?

-The hypothesis is that literature can be a powerful psychological tool (Kozulin, 1993), which can be used to activate measurable processes of emotional education suitable to concretely modify the students' mind-brain system and consequently their behaviour.

PARTICIPANTS

-Twenty “consecutive” students, native-speakers of Italian, who share a homogeneous middle-class social background and whose age is no more than 15, involved from two different 10th grade classes in the same high school in Venice. They will be self-designated volunteers with no history of psychiatric or neurological illnesses and experience caring relationships with parents.

-The first group during the 9th grade *will have been trained to analyze the literary discourse and the poetic text, and to comprehend and interpret the metaphors from a rethorical point of view.*

-The second group *will have been trained to face the abovementioned literary work with an additional one, aimed at recognizing the emotional content of the metaphors and comparing it with students' personal feelings and reading experience concerning the literary context.* To sum up, the second group is able to interpret the poem more in depth from a psychological point of view.

-The two classes will be taught by the same Italian language teacher, experienced, motivated, and used to collaborative planning of his or her classroom activities. Both the groups will be previously

prepared to understand the refined lexical expressions of the 19th-century Italian poetry.

MATERIALS

- The three stanzas of the poem *L'assiuolo*, by the Italian author Giovanni Pascoli.
- The fMRI scanning machinery.
- The previously adapted versions of the questionnaires “Multifactor Emotional Intelligence Test” (**Mayer et al., 1998**), aiming at assessing ability to perceive, understand and manage emotions, and “Larsen and Diener Affect Intensity Measure” (**Larsen & Diener, 1987**), aiming at measuring strength of emotions.

PROCEDURES

-All the participants will read the same three stanzas of the poem *L'assiuolo*, by the Italian poet Giovanni Pascoli. Each stanza is composed of eight verses; the poem presents four metaphors related to nature, fear and death. These stanzas will be chosen because they can be understood alone, without having read previous poems of the author, and they imply a number of symbolic interpretations beyond the explicit meaning, around the ideas of the participation of nature to the human grief and anguish. It is therefore assumed that the poem would stimulate different responses in the readers.

-This study uses functional magnetic resonance imaging (fMRI) to examine how the brain processes tasks involves poetic language and emotion in normal healthy students.

So after reading the three stanzas of the poetic text, every student will undergo fMRI scanning while reading the four metaphorical verses (the metaphors are pearly dawn, milk-fog, windy sigh, the locusts shook so fine silver sistrum). During this procedure, subjects will lay supine in the MR-scanner and the four verses will be presented visually on a translucent screen viewed by the subjects via a mirror, each verse in one line with black letters on a grey background.

This procedure will allow to measure and value the amount of activation of the brain regions connected with reading activities, and the correspondent emotional arousal derived from processing particular poetical metaphors involving imagery, imagination and the affective response of the reader.

-Then, in two different quiet and comfortable testing rooms, each group will be administered the aforementioned tests. Students will have been instructed to read each item very carefully and complete them by indicating all their choices and preferences.

The scores and the meaning of these tests will be compared with the results of the fMRI, to verify if and how the different psychological background of the two groups has influenced their brain's physiological status and if this possible change is confirmed also by

the results of the questionnaires as far as the ability of managing emotions – the emotional competence - is concerned.

EXPECTED RESULTS AND EDUCATIONAL IMPLICATIONS

-The prove of an increased level of emotional intelligence, competence and education, based on an individually perceived and experimentally tested change of the readers' ability in recognizing, using, understanding and managing their own and others' emotional states.

-To reach this goal will be necessary to value what kind of brain areas are activated by reading determined metaphorical verses of a poetry, either about comprehension or about emotional arousal.

-Therefore it will be valued if the involved brain regions show a switch off effect or a gradual activation, so that the result can be compared with the related literature and with the scores of the psychological tests.

-It will be verified if the intensity levels of activation of determined areas, for instance in the RH and in the limbic system, corresponds to the reading of the metaphors which belong to the first, the second or third stanza, and if, given the results connected to the different figures of speech, the brain different regions are activated more by the figurative content or by the emotional one of the stanzas.

The educational implications are supposed to be interesting: they could confirm the role of teaching literature in the educational setting of the emotional intelligence, due to the particular characteristics of the literary discourse.

This and the texts are based on the figurative language of the metaphor, so that its domains are imagination, imagery and emotions, which seem to be also an important base of thinking processes. Improving them is one of the tasks also of teaching literature and the way in which it can influence positively the students' personality.

Furthermore emotional intelligence enhances the prosocial aptitudes, the way of reading and the relation with the subjects: the study wants to emphasize the role of literary texts in reinforcing an educated use of the emotional responses to improve the relationships with the self and with the others.

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Correspondence to: Dr. G. Longo - University of Venice “Ca’
Foscari - g.longo@unive.it