SEMANTIC DEPRIVATION.

AN EMPIRICAL INQUIRY ON MAKING SENSE[*]

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Abstract

This study investigates how subjects make sense in experimental conditions defined as "semantic deprivation", where they are requested to accomplish a well defined and repeatable task, but lacking a definite sense. Locus of control, a personality variable that may be related with subject' s control of situation, first was tested. Then Ss. were assigned to three groups. This procedure served to manipulate subjects' confidence to be able to cope with the following task, where mock subliminal instructions were given. Behaviour exhibited during the task was observed and videotaped; a questionnaire and semantic differentìal were used to ascertain cognitive and affective reactions to the situation. Results are analyzed and discussed in detail.

Introduction

The present study aims to propose a new experimental paradigm to investigate the ways in which subjects manifest the need to find meaning in the experiences they encounter. We propose to examine the construction of meaning in a particular laboratory situation, which appears "meaningless" to subjects but is set up in such a way as to be completely standard and repeatable.

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[*] English translation of the original paper “Greco A. (1997) La deprivazione semantica. Una indagine empirica sulla nascita del senso. *Ricerche di Psicologia*, 4, 21, 81-115).

This situation, which will be described here in detail, is characterized by the lack of an explicitly predetermined task and by the fact that in different groups of subjects the belief in the possibility of operating a construction of meaning is fostered to varying degrees. Unlike other types of research in which nonsense material has been used (as in the case of the nonsense syllables with which Ebbinghaus studied memory and which many others have used to study other cognitive processes), in this case the indeterminacy does not concern the stimuli but the situation as a whole. Another, more important, difference is that the situation itself is not context-free (nor does it have a congruent context) but rather has a weak, non-coercive context. We propose to define this situation - in analogy with classical research on sensory deprivation (Bexton, Heron, & Scott, 1954), and in accordance with the hypothesis of the existence of a need for meaning (Bruner, 1990) - as one of "semantic deprivation."

Theoretical Assumptions

The theoretical assumptions of the research have been discussed in more detail elsewhere (Greco, Siri, Spinelli, 1994). Here we will limit ourselves to a brief discussion.

The issue we are dealing with can be framed within the problem of the subjective construction of reality, on which a debate has developed in the past involving epistemologists (see Arbib and Resse, 1992 for a discussion), psychologists (Olivetti Belardinelli, 1974 and 1986), sociologists (Berger and Luckmann, 1966). Currently, there is a renewed interest in this problem, after a period in which it seemed to be stuck on the solutions proposed in the cognitivist field. The cognitivist approach has had the merit of bringing the issue of the construction of reality back into the realm of empirical research and of focusing attention on the concrete ways in which it is elaborated, going beyond any generic reference, whether to individual-

environment or individual-society relations, or to undefined psycho-physiological processes. Its typical approach according to which the study of the subjective processes coincides with the analysis of ordered sequences of processing stages has had considerable influence.

However, cognitivist empirical research has been directed towards a mostly formal study of cognitive processes, in the sense that the processing modalities matter more than what is processed (the knowledge contents, the meanings). Rather than a true constructive activity, they were talking about processing, which essentially consists in the formal manipulation of symbolic representations according to certain rules. From the methodological point of view, the most discussed problems have been mainly related to the access by a subject to his internal states and the reliability of the public account of these states (Nisbett and Wilson, 1977; Ericsson and Simon, 1984). In this debate, however, a basic assumption was never questioned: that subjective experiences are "given", that they exist outside of any context, that they are there ready for the subject to access and report. This assumption has also undoubtedly been encouraged by the cognitivist tendency to disregard the study of representations that are static by nature (see, e.g., Bowers, 1991) and by the success of theories about the accessibility or "availability" of mental representations (Tversky and Kahneman, 1973), which have been frequently referred to in order to explain phenomena as diverse as decision-making, reasoning, and attribution. These mental representations and their mode of elaboration appeared to be independent of any context, including the situation in which most of the research was done (the laboratory). In essence, the subject seemed to be passive, crushed by the processing machine inside him (cf. Greco, 1995). In this way, talking about "subjective construction" did not seem possible.

Recently, however, there has been an emerging questioning of these assumptions and the importance of avoiding treating internal experiences as data without context has been highlighted. According to this perspective, one should try to take more account of the meaningfulness of context for the person. These issues have been proposed in particular by some trends in social psychology, such as social constructivism (Gergen, 1985) and social representation theory (Farr and Moscovici, 1984), discursive theory of mind (Harré and Gillett, 1994), and by some of Bruner's reflections (Bruner and Haste, 1987; Bruner, 1990). Some of these critical remarks go back to proposing in general terms the need to broaden horizons to include social or cultural factors (as Bruner himself does, 1996), in a way that is difficult to translate into empirical research. But Bruner himself, since the *New Look*, was one of the first to show the need for meaning, which manifests itself, for example, in the pervasiveness of hypothesis formulation in out-of-the-ordinary contexts or in finding rules where there are none (cf. Bruner, 1973; Haste, 1987). It is interesting that today there is a tendency to emphasize more and more how much categorization goes beyond the simple identification of regularities. This is the line taken by the ecological perspective (Neisser, 1987), by the non-symbolic theory of categories (Harnad, 1987) and by what emerges from the most recent experimental research. Think of the phenomenon of "self-perpetuating coding distortions", whereby identified regularities continue to influence the interpretation of new stimuli even when they have been suspended (Lewicki, Hill, Sasaki, 1989).

The context

The assertion that the construction of meaning does not occur outside of any context is easily shared, but when it comes to specifying which contexts influence it and how to take them into account, things become more complex. It is clear that the traditional

choice to make investigations as acontextual as possible was not dictated by chance.

Context should be understood as the set of possibilities and constraints that a subject has in a given situation. With a gross simplification, we can identify two relevant types of context, which we define respectively *proximal* and *distal*. The proximal context is the one that includes all the constraints related to the particular situation in which a subject finds himself. Distal context is instead the one that incorporates the constraints related to his personal, bio-psychological and cultural history. It can be hypothesized that the construction of meaning (like most psychic phenomena) arises from the interaction of the variables that belong to these two contexts.

The adoption of the experimental methodology for a study of the origin of meaning, if it does not want to be a-contextual, cannot take into account the context in the abstract, but must do so in a concrete context. In other words, this is possible only through an operational delimitation and definition of the context itself. In the case of a laboratory situation, the proximal context includes instructions, stimuli, the task, and whatever else is going on, such as whether the experimenter is liked or disliked. The distal context includes knowledge, expectations, beliefs about psychology labs, and thousands of other things. An investigation that takes all variables into account simultaneously is simply impossible. It is essential in any case to make a selection of those judged most relevant, that is, to include those aspects of the context that are actually important to the phenomenon under investigation. This is normally done through the control or manipulation of some variables and assuming that the possible effects of all other variables (intervening) are statistically controllable. Of course, in a laboratory situation the contribution of that context which we have called distal (expectations, values, etc.)

can only be assessed indirectly, through the control of proximal aspects.

Sometimes, in order to study the subjective interpretation of reality, ambiguous stimuli or stimuli that can have different interpretations are presented (a paradigmatic example is the well-known Rorschach, 1921), or in conditions of perceptual impoverishment (confused, tachistoscopic, subliminal stimuli, etc.), or even by making the proposed task not coincide with the real one (this is the case of some classic social psychology researches such as Asch, 1956 or Milgram, 1965). In all these cases, however, beyond the *construction* of meaning, what is actually studied is the *attribution* of meaning, since it is always possible to evaluate the gap between what is perceived by the subject and the "objective" meaning, i.e. what most commonly emerges from an intersubjective analysis.

The idea behind the present research is instead that the construction can be better studied by manipulating not the stimuli but the situation as a whole. The experimental situation is taken for what it is (a laboratory situation, in fact), in almost ecological terms, but we try to act on the proximal context, so as to remove as much as possible the directive elements present in it and create a sort of semantic vacuum. The aim is to analyze with both quantitative and qualitative tools the ways of reaction and orientation in such a situation.

In order to avoid misunderstandings, it should be pointed out that our research did not aim to create a situation absolutely devoid of sense (which is obviously impossible both from the point of view of the subjects and of the experimenters themselves). On the contrary, we tried to create a setting that, while presenting to the subjects, at least in appearance, characteristics of conformity to expectations regarding what is done in a psychology laboratory, also had

characteristics of unusualness that, making the attribution of a sense problematic, could trigger a process that would allow to study this attribution in itinere. The important role that discrepancy with expectations plays in cognitive processes is now well documented (see, e.g., Bruner, 1990; Stangor and McMillan, 1992; Schank, 1979, who considers discrepancy with expectations as one of the essential criteria for understanding and interest in stories), as is the manifestation of spontaneous attributional activity in the case of unexpected events (Weiner, 1985).

Methodological framework

Definition of the phenomenon and variables investigated

The first problem for an investigation of this kind concerns the precise definition of the phenomenon under investigation. In fact, it is not clear which dependent variables can reflect the subjective experiences related to the "construction of meaning". In an experimental context, this then translates into the methodological problem of which empirical indicators to choose for these variables.

Two possible aspects of the phenomenon, related but different, are:

(a) experiencing a situation as meaningful tout court. From this point of view, it is necessary to detect verbal and behavioral aspects that express the degree of conviction that the situation has a meaning;

b) attributing a specific meaning to a situation. With regard to this aspect, even if one can obviously detect which sense has been attributed, the most interesting way - the one we have actually pursued in our research - is to identify, again through the examination of patterns of particularly relevant verbal and

behavioral elements, the individual styles followed in giving meaning and the connotative dimensions of the experience.

With the expression "construction of meaning" we shall refer, in the following, to this operational redefinition. The specific empirical facts, which we have used to detect the variables mentioned here in general terms, will be set out in the section on the methodology of data analysis.

The choices we have made are, of course, not the only ones possible. For example, alongside this type of analysis, others of a more interpretative nature are possible, such as those that could be done, following Bruner's (1987, 1990) indications, by drawing on narrative protocols related to the experience.

As mentioned above, we are also interested in considering the relationship between these variables and broader contextual factors. Among the many that could have been considered, we focused our analysis on two in particular.

The first concerns the reliance that subjects place in general on their own abilities to construct meaning. This is a personality variable that concerns individual differences in the "attribution of control" (*locus of control*) to oneself (internal) or to the situation (external) (Rotter, 1966). From a perspective pertinent to the "distal" context, it seems legitimate to ask whether or not the construction of meaning in a situation of semantic deprivation is linked to a subjective evaluation of the possibility of personal control of the situation. Rotter himself (1966, 1975), proposing the concept of locus of control, hypothesized that expectations of control have the greatest influence in situations that are ambiguous, new or difficult.

The other factor relates to the confidence that subjects have in being able to construct a meaning in that specific situation. This variable,

pertaining to the "proximal" context, can be manipulated by directly providing subjects with information of a different tenor about their personal ability to meet the requirements of the situation itself.

Description of the situation

Even though the methodological framework adopted is the usual one, the presented situation differs from that of most psychological experiments in the way the instructions and the task are characterized. In an experimental situation, instructions should normally be as clear and explicit as possible, since their function is to describe the task to the subjects, i.e. what they are expected to do. In our case, however, the situation does not offer the possibility of a univocal interpretation, but with the advantage of remaining in an objectively standardized and repeatable context.

To achieve this experimental setting, we resorted to the following technique. Reference was made to a task to be performed but subjects were told that instructions would be given in the form of subliminal acoustic stimuli. Instead of these stimuli, however, simple white noise mixed with random unintelligible phonemes was actually presented.

Subjects, who at the time of recruitment were administered a *locus of control* scale, were randomly divided into three groups. Those who belonged to group A received, on a mock subliminal perception test, results that indicated their particular receptivity to subliminal stimuli; members of group B, on the other hand, were told to be particularly unaffected by such stimuli. The commentary read by the experimenter presented the results, in both cases, as a demonstration by the subject of positive personal qualities (for group A the term used was *sensitivity*, not "dependence on subliminal

stimuli"; for group B *independence*, not "insensitivity"). This was done in order to encourage subjects, while avoiding inducing an anxiety component to the test or making them feel negatively judged. Group C (control) was not subjected to this test. In this way, the subjects' assessment of their ability to make sense of the situation on the basis of their own personal abilities was monitored. For the sake of brevity, we will call “confidence” this variable: note that it refers not only to an affective factor but also to a cognitive-rational one. If we want to express in propositional terms the idea that the manipulation intended to establish, in group A it was "I could know", in group B "I cannot know", in group C "I do not know".

The pseudo-task, carried out by the subjects in pairs, consisted of an interaction in front of a computer set up in such a way as to provide, at each pressure of any key, the same sequence of letters, numbers or spots, identical for all subjects. In some cases, messages appeared indicating that a choice had been made that was "not congruent with the aims of the experiment", in order to give the impression that the presumed task involved correct or incorrect choices.

The choice was made to have two subjects interact in order to stimulate the production of verbal and behavioral exchanges - revelatory of the processes followed - under more natural and less intrusive conditions than simple individual thinking aloud (see Ericsson and Simon, 1984, for the difficulties of the latter technique). The two subjects who constituted the tested pair were treated equally with regard to confidence and were chosen in such a way that they were as homogeneous as possible with regard to locus of control.

Treating the two subjects as uniformly as possible constitutes an obvious limitation for an eventual analysis of the protocols from the point of view of the interaction in the pair, but it was adopted both

to simplify the experimental plan and in consideration of the methodological reasons just stated that led to the creation of the pairs. Therefore, in some analyses which, as we shall see, were carried out on situations rather than on individuals, the pairs were considered as a single subject.

At the end of the test, the subjects, again individually, gave a definition of the experience they had just had by means of a semantic differential, and were finally invited to answer a structured questionnaire, with open-ended answers, on the same subject. The last part of the latter was completely open-ended. Overall, the questionnaire constituted a stimulus for a true guided narrative. This form of compromise was chosen based on the results of a pilot experiment, which had revealed a completely open-ended request for narration of the experience to be less productive. In particular, the intention was to focus the responses on points that had emerged as relevant in the pilot experiment, and to avoid that the protocol would be excessively affected by individual differences in the determination to respond and in expressive abilities.

Method

Participants

The sample consisted of 126 subjects, volunteer college students, unaware of the nature of the research. At the recruitment stage, subjects were individually administered the *locus of control* scale known as the Nowicki-Strickland scale for adults (Nowicki and Duke, 1974). The scale, which we translated, consists of 40 questions, related to beliefs, with a possible YES/NO response (see Appendix 1). The score can vary from 0 to 40 (the higher the score, the more external the locus of control). This served, in addition to obviously

having information regarding this personality variable, also to induce greater interest in participating in the experiment.

Distribution of subjects. Regarding the locus of control, which in our sample obtained scores from 4 to 28 (m = 12.28; = 4.09), we grouped participants into three groups:

Locus of control	Scores	n	%
External	14-28	44	34.9
Medium	11-13	40	31.7
Internal	4-10	42	33.3
		126	10.0

The following table shows how participants were randomly distributed across the three confidence conditions following pairing for locus scores no more than 4 points apart.

	Confidence			
	High (A)	Low (B)	Control (C)	Total
Locus of Control				
External	21	14	9	44
Medium	10	16	14	40
Internal	19	16	7	42
Total	50	46	30	126

Procedure

Presentation. At the beginning of the actual session, the research was presented to the subjects as concerning subliminal perception, a phenomenon of which a brief explanation was given in the first written instructions. These instructions also informed the participants about the conduct of the experiment, indicating that they would first undergo a test with the aim of measuring their personal capacity for subliminal perception. The next part of the instructions referred to other information that would be communicated later.

Confidence manipulation. This part was carried out in an individual form and consisted of an apparent test of subliminal perception, actually manipulated by the experimenter.

Each subject was required to put on headphones and listen to stimuli termed "subliminal" (see Appendix 2). In reality white noise was presented interspersed with unintelligible phonemes. The test was divided into three parts. In the first part the subject had to indicate, for each stimulus, the word that he thought he recognized by flagging it on a list of 12 words pre-printed on the answer sheet. A sequence of 6 stimuli was presented, varying in duration between 1170 and 1750 msec and increasing in length from three to eight letters. In the second part, three stimuli were presented, with a duration between 760 and 1400 msec; after each stimulus the subject had to write directly the word that he thought he had heard. Finally, in the third part, also composed of three noises, lasting between 3110 and 4780 msec, the subject had to indicate the "number of stimuli" heard.

The outcome of the test was processed immediately. The subject read the answer sheet to the experimenter who entered the data on a computer. At the end of the input of the answers, from the printer came out a form on which were reported, next to the answers given

by the subject, the "correct" ones, and the subject was asked to derive its score. We proceeded in this way in order to present the results in a less impersonal way and make the evaluation more credible by involving the subject himself. In the meantime, on the experimenter's monitor - visible to the subject - very technical messages appeared concerning the processing in progress and then a series of codes and graphs difficult to understand but with a suggestive effect. Finally, the following message appeared at the bottom of the screen (the parts between the square brackets were alternative according to the group - what was said about expectations was the same for all): "Considerations. The subject shows high qualities [of independence from any subliminal stimuli] [of sensitivity to subliminal stimuli] - Expectations. The values of Ramoc's picture and the psychoattitudinal gradient suggest a strong presence of the Hj factor. Intuitive and creative aspects should therefore stand out in the subject's written account." The remarks were read in the presence of the subject, without further comment.

Subjects belonging to group A were given positive results (9 correct answers out of 12), indicating an extreme sensitivity to subliminal stimuli; those belonging to group B, on the other hand, were presented with very poor results (1 correct answer out of 12) as an indication of their independence from any subliminal influence. The third group of subjects, control (C), was not subjected to this phase and therefore did not experience any influence.

Pseudo-instructions. In the next step, subjects were examined in pairs and the session was videotaped via an unseen camera. The pairs were formed in such a way that they had locus of control scores that were as similar as possible (it was ensured that the distance between the two scores was no more than 1) and that - with regard to confidence - they belonged to the same group (A, B, or C).

The written instructions presented at this point were very generic. They basically informed the subjects that the real instructions about the task would be transmitted in subliminal form over headphones and that they would then have to "perform the task using the keyboard." Instead of the subliminal stimuli that should have contained the instructions, however, simple white noise was presented, interspersed with random phonemes that could not be understood, for a duration of 28 seconds.

Pseudo task. After the presentation of the alleged subliminal instructions, the subjects were offered the opportunity to interact with each other in front of a computer that provided answers apparently related to the use of the keyboard, but in fact at each pressure of any key (step) showed the same identical stimuli, in the same sequence, to all subjects regardless of the key pressed.

In particular, the test was divided into two parts: in the first, which included a predetermined sequence of 50 steps, each time a letter or number of different color appeared or disappeared on the monitor in various positions. In the second, which included 94 steps, the same thing happened for dense aggregations of dots that constituted spots of different color. Letters, numbers and spots were completely identical, also with regard to colors and positions, for all subjects. Between the first part and the second part, the message appeared: "The first section of the program has been passed successfully". At some predetermined steps of the sequence (steps 8 and 28 in the first part; 21,28,58 and 81 in the second part), which were also the same for all, a window appeared, which overlapped transparently on the existing screen, with the message: "This type of choice is not consistent with the purpose of this program. Try a different alternative". The window with the message disappeared at the next step. At the end of the pseudo-task the message "The second section of the program has been passed successfully" appeared.

Semantic Differential. Subjects, again individually, were then administered a semantic differential to define the experiment (*Choose from the following list of adjectives those that you think can best characterize our experiment*). The scale, containing 28 pairs of adjectives, had 6 points, eliminating the central point so as to force a bias toward one of the two polarities. There was an example related to the first pair of adjectives (sensitive/insensitive): 1 Very sensitive, 2 Sensitive, 3 Slightly sensitive, 4 Slightly insensitive, 5 Insensitive, 6 Very insensitive. For a list of the pairs of adjectives used see Table 1.

Questionnaire. In conclusion, the subjects were asked, again individually, to answer the questions contained in an open-ended questionnaire (see Table 2). The experimenter verbally motivated the request by stating that, since it was a new experiment, therefore to be perfected, it would have been useful to have some indications to improve it. The questionnaire began with the following sentence: "In this last phase it is important that you answer the questions in the questionnaire in a comprehensive manner. Your point of view can be helpful to us; in refining the experiment, and to other students in understanding its meaning".

Table 1 - Semantic Differential

Sensitive-Insensitive	Disorderly-Methodical	
Strong-Weak	Own-Others	Rich-Poor
Isolated-Sociable	Charming-Rough	Understandable-
Cheerful-Sad	Indecisive-Decisive	Incomprehensible
Subjective-Objective	Indifferent-Ambitious	Calm-Nervous
Fast-Slow	Near-Distant	Impulsive-Reflective
Cold-Hot	Constant-Inconsistent	Rigid-Flexible
Meaningful-Insignificant	Deep-Superficial	Interesting-Boring
Educated-Ignorant	Light-Dark	Honest-Dishonest
Personal Impersonal	Taciturn-Talkative	Banal-Original

Post-experimental debriefing. The nature and purpose of the research required the use of cover stories and subject deception. This could not have been avoided in any way without compromising the outcome of the investigation itself. However, every care was taken to ensure that the subjects were not harmed by this procedure. The same examination of the final questionnaires reveals that no subject felt deceived, at least at the level of awareness. All subjects were told that the purpose of the experiment did not concern their personal abilities and that the performance they had exhibited during the experiment, whether positive or negative it seemed to them, would be evaluated only in relation to the group to which they belonged for the purpose of treatment. Finally, at the end of the research, a debriefing meeting was called to which all participants who wished to be invited were invited, during which the aims and real nature of the investigation were explained in detail, as well as the reasons why it was necessary to use ploys.

Table 2 - Questionnaire
1. What did you expect from this experiment? 2. Describe any discrepancies between expectations and what actually happened 3. What prior knowledge did you have about the subject of the experiment? If you didn't know anything about it, what did you imagine? 4. Did you feel comfortable? Tell about your state of mind. 5. What effect did the stimuli have on you? 6. Do you think you performed the task adequately? 7. In what ways do you think you followed the subliminal cues? 8. If you had to tell what the significance of this experiment is and why it was so contrived, what would you say? 9. Fill in these lines by writing anything that crossed your mind.

Results and discussion

Method of data analysis

We have already mentioned the difficulty of translating a phenomenon as elusive and indefinable as "sense" into precise dependent variables. On the basis of the theoretical considerations made in the introduction, however, it can be stated that the identification of dependent measures is an important, but not exclusive, moment in the definition of the phenomenon under investigation. In order to distinguish clearly from the methodological point of view plans that cannot be confused, we have determined three levels of analysis of the situation that has been described.

The first level, which we call *analytical*, is the closest to the canonical experimental point of view. At this level, in addition to the usual simple descriptive surveys, it is possible to carry out a multivariate analysis aimed at relating certain sense indicators - operationally defined - to the personality dimension that has been observed (attribution of control) on the one hand, and to the degree of confidence resulting from the manipulation we have carried out on the other.

The second level, which we define as *synthetic*, concerns the way in which verbal or behavioral regularities manifest themselves during the process of meaning construction. The aim of this investigation is to highlight individual and general styles of reaction to the situation of semantic deprivation. This type of analysis, however based on quantitative data, is not incompatible with the previous one, since the styles identified can subsequently be related to the variables controlled with regard to the subject and the situation.

The third level at which our data can be read is of a more qualitative or interpretative nature, and can make use of methods borrowed

from clinical investigation. For example, it is possible, in order to reconstruct the experience of the subjects, to interpret the choices made during the situation of semantic deprivation as elements that reveal emotional states or dimensions of an affective nature. It is also possible to consider the responses to the open-ended questions of the questionnaire as guided narratives, which can be analyzed using hermeneutic or clinical methods.

In the present account, we will limit ourselves to presenting some results that fall exclusively within the first two levels, leaving the exposition of further results and the possible exploration of other modes of analysis to subsequent work.

In the exposition of the empirical elements taken into consideration for the definition of the search for meaning and the psychic manifestations connected to it, it is necessary to distinguish between objective indicators and indicators of subjective awareness. In fact, it is clear that the two dimensions do not necessarily coincide. Among the documents at our disposal, the video recording is the source for the objective analysis of the subjects' behaviors and verbalizations, the semantic differential is a tool for exploring the connotative dimensions of experience, and finally the questionnaire is the access to the subjective "reconstruction" made post-hoc by the subjects.

Dependent measures and multivariate analysis

Video Recording. The video recordings were reviewed independently by three judges who were unaware of the purpose and structure of the research. Each judge was told that the videotape reproduced what subjects had said and done as they "had to solve a problem presented on the computer." The viewing began when the subjects had finished hearing the pseudo-instructions and had removed their headphones, and ended when the message indicating the end of part

II of the pseudo-task appeared on the subjects' monitor. The evaluation was referred to units of time equal to one minute.

For each unit of time, the judges assigned a graded score with respect to the following dimensions conceived as scales (see Table 3 for the scores assigned; in the following, reference will be made to the variables using the names indicated in italics):

- how well the *strategy* in facing the situation appeared defined;
- how much the Ss. showed *conviction* in the choices made during the pseudo-task;
- the degree of *cooperation* shown by the Ss. during the interaction.

A fourth dimension was instead of a categorical nature and concerned the attribution of the difficulties encountered in the situation to the type of stimuli presented by the computer or to one's own errors, those of the partner, or both.

One point was awarded each time, in the time unit considered, the Ss. made explicit observations or comments that expressed an attribution falling into one of these four categories.

It was also noted how many minutes the initial state of disorientation lasted, i.e. the phase in which the two subjects have not yet come to an explicit or implicit agreement on what to do in the situation. The period of *commitment* was obtained by subtracting the period of disorientation from the total duration of the observation. Finally, some particular events were noted: requests for help from the experimenter, the expression of suspicion towards the setting of the experiment, the use of irony in verbal comments, the excessive dominance of one of the two subjects over the other. It was possible

to make separate notes of each occurrence of these facts during the session, but only one note per unit of time was allowed.

Table 3 - Coding of video recordings

Continuous variables:
- Period of *disorientation* and *engagement*
- Degree of *strategy* definition: 0 initial orientation phase; 1 do not address the situation; 2 address without a specific plan; 3 make explicit assumptions.
- Degree of *conviction* with which Ss. express confidence in what they are doing: - 0 absent; 1 low; 2 medium; 3 high.
- Degree of *cooperation* manifested by Ss. in interaction: - 0 absent; 1 low; 2 medium; 3 high.

Each judge's score for strategy was derived by calculating the average of the scores given over the period of engagement, while for the other two variables the average of the scores given over the overall duration of observation was calculated.

Categorical variable:

Type of *attribution of the difficulties* encountered in the situation: - 1 to the computer; 2 to the partner; 3 to themselves; 4 to the couple.

The mean value of the evaluations expressed by the three judges was determined for the continuous variables and the prevailing value for the categorical variable, i.e., the number of times a dimension was detected in agreement by at least two judges. Inter-judge reliability was high (mean r .45, $p<.001$).

In order to make it possible to analyze the video recordings also in relation to the *locus of control*, in view of the fact that the two Ss. might have different scores (although, as we have seen, a maximum deviation of 4 points was allowed) the average score of the two subjects was considered for each situation. There were 22 situations of internal locus (overall average score =8.50), 23 intermediate (m=12.21), 18 external locus (m=16.72).

The average duration of the *disorientation* phase was about 1 minute, with peaks of up to 4 minutes. In about half of the situations (30 out of 63) the period of disorientation was almost zero. In these cases in which a common orientation on how to deal with the situation was

immediately reached (O1), compared to the other cases (O2), a more defined *strategy* was found (mO1=2.17, mO2=2.04; t(61)=2.20, p=.03), and also a greater degree of *conviction* (mO1=l.85, mO2=1.47; t(61)=2.97, p=.004) and *collaboration* between subjects (mO1=2.01, mO2=1.62; t(61)=2.07, p=.04).

These situations in which the period of disorientation resolved quickly, however, are not those of positive confidence, in which, on the contrary, the period of disorientation was longer. Crossing the two rapid orientation/disorientation conditions and the three confidence conditions (A, B, C) shows a clear prevalence of cases (2.3 σ) for the B/rapid orientation and A/disorientation intersections. There were no differences for group C (χ^2 = 5.96, p=.05). [Cross-tabulation analyses, here as below, are based on examining, in individual cells, the highest standardized and normalized residuals (f_o-f_t deviations) (greater than 1 σ)]. Evidently, those who believe they have the tools to cope are disposed to coordinate their resources and are more uncertain in deciding what to do; those who appear to act more quickly, convincingly, collaboratively, are actually those who knew they did not have access to instructions.

Effort expended (i.e., session duration, which quantitatively reflects sense-making attempts) was not directly related to confidence manipulation, but was mediated by personal factors of control attribution: the mean duration for external locus Ss. (18 situations) was 8.11 minutes, for intermediate Ss. (23 sit.) 9.30 minutes, and for internal locus Ss. (22 sit.) 11.36 minutes. The comparison between the extremes was statistically significant (t (38)=2.33, p=.02). This indicates, in general, that those who are more dependent on circumstances in a situation of semantic deprivation tend to give up more easily in their search for meaning, whereas those who attribute control to themselves are more tenacious in this search. *Conviction*

turns out to be an effect that can only be explained by the interaction of locus and confidence (see Table 4).

Table 4 - MANOVA- Dep. var.: conviction

Source of variation	Sum of squares	d.f.	Variance	F	p
Locus of control	.11	2	.05	.19	.82
Confidence	.10	2	.05	.17	.84
LocusXConfidence inter.	2.51	4	.63	2.25	.07

Interestingly, when examining how the general personality datum combined with the proximal locus manipulation (see Table 5), there was a very similar pattern for commitment and conviction. In internal locus situations, the induction of low confidence lowered the level of belief and commitment; in external locus situations, however, commitment and conviction were lower in both groups in which confidence was manipulated (A and B) than in the control group (C); the low value of commitment and conviction for subjects in group A from the external locus is particularly anomalous. Thus, manipulation of confidence had greater effects, positively and negatively, in combination with internal attribution of control; it had less effect on those who were otherwise less likely to believe the situation was controllable.

Table 5 - Average values of commitment and conviction with respect to locus and confidence

	COMMITMENT				CONVICTION			
	Confidence							
Locus	High (A)	Low (B)	Contr. (C)	Total	High (A)	Low (B)	Contr. (C)	Total
Internal	11.90	1.38	12.00	11.36	1.81	1.59	1.77	1.72
External	8.00	7.67	1.00	8.11	1.49	1.50	2.01	1.55

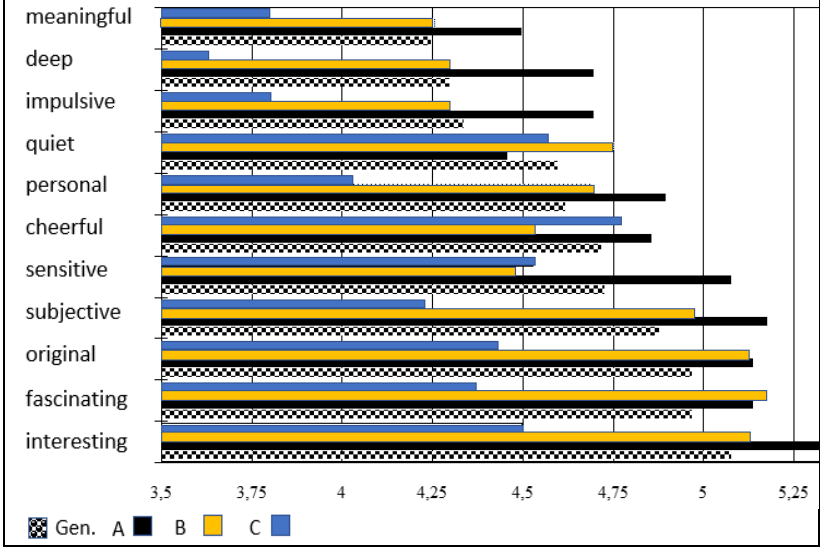
With regard to the attribution of difficulties, the clearly prevalent attribution was to the computer generating the stimuli. In relation to the personality variable, a surprising result emerged with respect to what could be expected at a superficial analysis: the attribution to the computer was higher in situations with internal locus (mean scores attributed: internal locus group=1.50, external locus=.61; t(38)=1.91,p=.06). This seems to be a defense, similar to what happens in cognitive dissonance: those who are used to attributing the place of control to themselves, in a critical situation such as that of "semantic deprivation" would instead tend to attribute the causes of failure to the outside world. In relation to confidence, although the prevalence of attribution to the computer remained unchanged, in group B there was a very low value of attribution of responsibility to oneself (m=.22) and a greater tendency to attribute it to one's partner (m=.56) (t(22)=2.15, p=.04), which does not occur when confidence is high (average values are respectively .40 and .44). Recall that subjects were unaware that their partner had undergone the same treatment as them. This fact suggests that one who believes he doesn't have the tools for constructing meaning can be pushed to rely more on others.

Among special events, a particularly low incidence of suspiciousness emerged in group B compared with group A (mean score A=.36; B=.04; t (46)=1.72, p=.08) and, to a lesser extent, compared with the control group (C=.26). The use of irony was also lower in group B and much higher in the control group (A=.12; B=.04;C=.80), F(2.60)=5.94, p=.004. This can be explained considering that, since group B was induced to have low confidence in their own subliminal perception abilities, they could consider the situation of incomprehensibility more natural and were less induced to comments marked by skepticism and irony. Those who, for their part, had no possibility of putting the experience into a rational context, like the control group,

expressed discomfort through a more aggressive style - revealed by the ironic comments.

Semantic Differential. The average profile was obtained, both general and relative to the various groups (Fig. 1 shows the scales with the highest scores; the adjective prevailing in bipolarity is indicated). ANOVA was performed on the relative averages of the various scales in the groups. Separate factor analyses were also performed for the various groups in addition to the analysis based on the scales of all subjects.

Figure 1 - Profiles at the semantic differential



The ANOVA (SPSS/ONEWAY procedure) calculated on the differences in the mean scores of each scale for the three groups (A, B, C) showed significant differences for the adjectives listed in the following table. A post-hoc analysis was performed using the LSD procedure;

averages differing at the .05 level are marked: the asterisk indicates the average that is different from the other two; the sign" the averages that are different from each other.

polarity	mA	mB	mC	F (2,123)	p
sensitive	5.08*	4.48	4.53	3.72	.03
subjective	5.18	4.98	4.23*	4.49	.01
cold	3.16*	3.85	4.03	4.46	.01
significant	4.50"	4.26	3.80"	3.04	.05
educated	4.36	4.54	3.87*	4.29	.02
personal	4.90"	4.70	4.03"	3.27	.04
methodical	3.92	4.11	3.07*	4.13	.02
own	4.36	4.52	3.70*	3.20	.04
fascinating	5.14	5.17	4.37*	7.73	.0007
close	4.24	3.98	3.17*	5.12	.007
constant	4.06	4.13	3.27*	3.79	.03
deep	4.70	4.30	3.63*	7.67	.0007
dark	3.86	3.48"	4.30"	2.47	.08
impulsive	4.70"	4.30	3.80"	2.68	.07
flexible	3.96"	3.26"	3.97	2.75	.06
incomprehensible	3.48	3.59	4.30*	3.09	.05
interesting	5.38	5.13	4.50*	8.19	.0005
honest	4.64	4.67	3.90*	4.62	.01
original	5.14	5.13	4.43*	4.86	.009

As can be seen, the group that defined the experience in a markedly different way was the control group, which, among other things, saw it as less subjective, less their own, less close, less profound, more incomprehensible, less interesting/original. The group with high confidence (A) differed from the others in that they experienced the situation as more sensitive, warm, meaningful, and personal; the group with low confidence (B) as less flexible (perhaps in the sense of monotonous) but also less dark, in that only in this group was clarity not expected and darkness could be taken for granted.

Factor analysis (principal component analysis, matrix rotated with Varimax method), performed separately for the different groups, allows us to identify the dimensions defined in Table 6, in which for each factor the adjectives that saturate it most (weights > .50) are reported in order. (Of the 9 extracted factors, with eigenvalues > 1, the most relevant ones are reported).

Table 6 - Some dimensions identified at the factor analysis

factor	group	adjectives and their saturation
personally relevant or intraverted experience	A	subjective (.84), strong (.66), personal (.52), deep (.51)
	B	subjective (.86), personal (.63)
	C	personal (.87), subjective (.74), own (.64)
extraverted experience	A	calm (.83), sociable (.67), educated (.51)
	B	warm (.83), sociable (.77), cheerful (.70), talkative (.57)
	C	interesting (.80), cheerful (.71), sociable (.66), meaningful (.57), methodical (.5-1)
quality of experience	A	charming (.80), sensitive (.79), original (.74), rich (.59)
	B	calm (.87), charming (.65), interesting (.54)
	C	sensible (.84), close (.67), strong (.57), rich (.51)
need for understanding	gen.	clear (.79), understandable (.81)
emotionally charged need for understanding	A	dark (.66), incomprehensible (.64), cold(.54)
	B	understandable (.80), rich (.73), meaningful (.72), deep (.69), clear (.60), constant (.57)
	C	dark (.89), incomprehensible(.88), cold (.56)
impulsiveness	A	impulsive (.84)
	B	impulsive (.71), weak (.68)
reassurance	A	close (.87), honest (.62)
	B	close (.75), steady (.60)

The dimensions described here are colored differently depending on the groups. The first dimension gives a reading of the way of personal involvement in the situation: it can be seen that only in group A, bearer of the suggestion of being able to have at an unconscious level the key to reading the situation, *subjective* and *personal* are associated with *strong* and *deep*. For the second dimension, which reveals the modality of intersubjective sharing of the experience, sociability in groups B and C is associated with adjectives expressing qualities of warmth or cheerfulness, while for group A the association is with *calm* and *educated*. Of particular interest is the dimension related to the need for understanding, which we also reported for the entire sample. We note that while at the general level the associated adjectives are neutral (*clear* and *understandable*), the separate analysis by groups reveals how the dimension of incomprehensibility was emotionally connoted with darkness and coldness for groups A and C, while group B stands out by associating *rich, meaningful, deep*, and *constant* with the idea of comprehensibility. This could be an expression of the fact that group B was the only one who had a rational explanation for the situation of semantic emptiness and could therefore have experienced the experience in a less anxious way. This interpretation is also supported by the fact that the quality of the experience for group B appears to be calm and that *impulsive* is associated with *weak*. We will see later that this difference also emerged from the responses to the questionnaire regarding mood. The last dimension, which we have called "reassurance", is linked to the idea of closeness, which is paired with *honest* in group A (this is the second factor for that group in terms of explained variance) and with *constant* in group B. This appears to be in line with the high level of suspiciousness shown by group A in the analysis of the videotapes and together with that may be an effect of the perceived discrepancy between the excellent

result of the subliminal perception test and the perception of the poor manifestation, at least at a conscious level, of these abilities.

Questionnaire. The final questionnaires were first examined in a general way in order to determine the possible types of answers in relation to the variables probed by the questions. Each response given by each subject to the questionnaire was then analyzed in a specific manner in order to assign it uniquely to a category among those provided. The response categories were placed in order based on an assessment of how typical or illustrative they were of a variable, so that the coding of the responses could also be considered a score on a scale.

The information evident from the questionnaire (see Table 7) concerned the degree of specificity of the *expectations* (Question 1) and *knowledge* (Question 3) that Ss. had in preparing for the test, ordered from the vaguest to the most precise; any perceived discrepancies (Question 2); the degree of *anxiety* (revealed by the response to Questions 4 and 5); the degree of *satisfaction* about one's own adequacy in the situation (Questions 6-7); and the degree of *meaning* found in the situation (Question 8). Responses regarding discrepancies have not been considered for the moment; responses to question 9, given its open-ended nature, do not fit into this grid and may be analyzed using different criteria, outside the scope of this article (see below).

The overall result is that there were no well-defined expectations: almost half of the Ss (43.7%) expected either a standardized test or to know themselves better. 46.8% of Ss. report having no prior knowledge. Most (65.1%) stated that they felt relaxed, giving reasons (39.7) or no reasons (25.4) for this feeling. As far as satisfaction is concerned, 57.1% did not answer or did not know; this is followed by a small group (17.5%) who felt satisfied but were unable to motivate

it rationally. Finally, when asked to "recount the meaning of the experiment", most (45.2%) repeated what had been said in our presentation or in the instructions, but a good 27.8% guessed that not understanding was part of the game, or gave a personal meaning.

Table 7 - Coding of the answers to the questionnaire

Expectations. 1 No answer or irrelevant answer; 2 None; 3 Vague or general; 4 Taking a standard psychological test; 5 Knowing oneself; 6 Knowing something about subliminal perception.

Knowledge. 1 Not answered or not relevant answer; 2 None; 3 Vague or general psychological; 4 Specific about subliminal perception.

Anxiety. 1 Does not answer; 2 Unmotivated anxiety; 3 Motivated relaxation; 4 Unmotivated relaxation.

Satisfaction. 1 No, not motivated; 2 No, non-rationally motivated; 3 No, rationally motivated_; 4 No response, does not know, metacommunicates; 5 Yes, rationally motivated; 6 Yes, non-rationally motivated; 7 Yes, not motivated.

Meaning. 1 I Does not answer or responds irrelevantly. ; 2 Thinks he did not understand; 3 Repeats the instructions; 4 It was intrinsic to the situation that it was not understood; 5 Original attribution of meaning.

To relate questionnaire responses to the *locus of control* and *confidence*, the continuous response variables were grouped into simpler classes that were categorical in nature. Cross-tabulations between the levels of those variables and those categories were considered. There appears to be no significant interaction with respect to focus, while manipulating confidence had an effect for satisfaction (χ^2 (4) = 9.50, p<.05) and meaning (χ^2 (4) = 13.21, p=.01). The comments below are based on analysis, in individual cells, of standard residuals above 1σ.

Regarding *satisfaction*, positively influenced Ss tended to be more confident that they were up to the task and gave fewer responses indicating uncertainty; negatively influenced Ss gave more responses of uncertainty. In the non-influenced group (C) there were more uncertainty responses and fewer adequacy responses.

With regard to the *meaning* ascribed to the experiment, those who repeated the instructions were mostly among the treated Ss. (A and B), many fewer in the control group. Moreover, positively influenced Ss. who did not repeat the instructions responded with their own solutions or stated that being unintelligible was part of the experiment. Negatively influenced Ss. tended to give fewer such responses and repeated the instructions more, while the control group responded more often that they found no meaning.

It is interesting that at the cognitive reconstruction of the experience provided through the questionnaire, no differences appear regarding the anxiety perceived in the different groups (those who said they did not feel anxious prevail in all of them), while - as we have seen - at the analysis of the connotative meanings that emerge at the semantic differential, the dimension of the need for understanding appeared emotionally charged with coldness in groups A and C, which could rationalize less. It has, on the other hand, been pointed out repeatedly in the literature that there is no direct relationship between deeming an event uncontrollable and emotional reactions (Folkman, 1984). In the same way, as we have seen, we can explain the similarities in behavior between groups A and C that emerged from the analysis of the video-recorded protocols. Group B is therefore the one that shows a greater correspondence, in this respect, between the objective style of reaction and the perception expressed by means of the questionnaire.

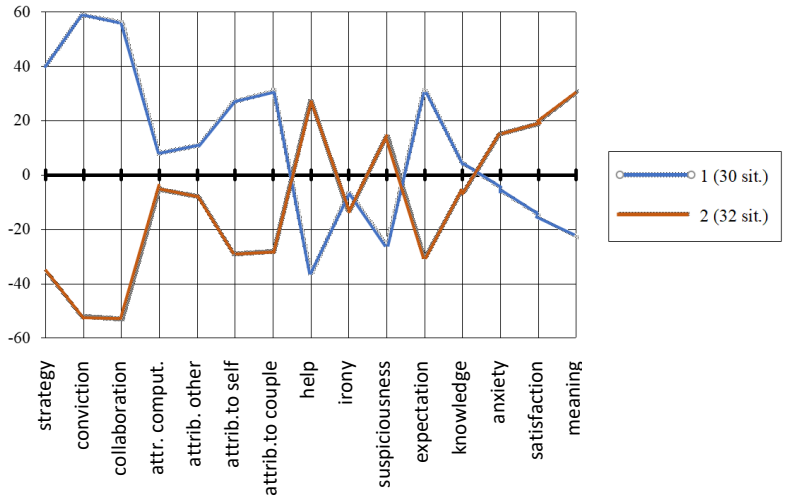
General Styles

This analysis was performed independently of the personality variable and the confidence manipulation. In order to identify general response styles, subjects were grouped through cluster analysis into homogeneous subgroups on the basis of scores expressing reactions in the situation and responses to the questionnaire. To this end, the original scores, which constituted heterogeneous scales, were transformed into z-scores.

A clustering procedure that minimizes the mean distance between pairs of cases in the resulting cluster (SPSS/ Waverage procedure) was used. Two subgroups of situations were thus obtained (see Fig. 2; one situation that constituted clusters of its own was excluded).

In the group indicated with the number 2, which includes 32 situations, the level of strategy, conviction and collaboration among the subjects was high; there were few requests for help and the expression of suspicion; the attribution of difficulties was directed more to themselves or to the couple. On the questionnaire, these subjects revealed that they had approached the test with high expectations but were dissatisfied with their performance and found little meaning. The other group, of 30 situations, practically mirrored the first, and thus in the face of a lower level of strategy definition, conviction, and collaboration, we note that these subjects had started with lower expectations but were ultimately more satisfied and described the situation as more meaningful.

Figure 2 - Groups resulting to cluster analysis



In essence, it emerges that the quality of the reconstruction of the experience is more positive for those who had low expectations and did not give their best. Conversely, the situation appears disappointing and meaningless for those who showed more effort in their search. Although it may seem a paradox, this reiterates the importance of analyzing the relationship between the level of aspiration and subjective feelings of success not only in terms of personality variables (as Burger, 1985, does by relating it to the desire for control) but also in situational terms.

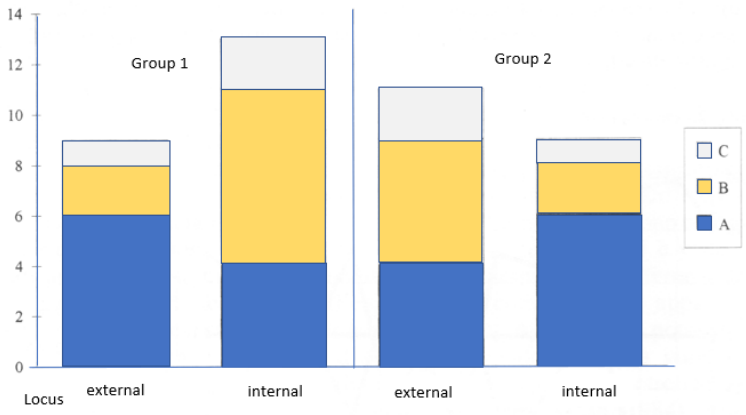
If we analyze the composition of the groups resulting from the cluster analysis (Fig. 3), we see that on the whole the styles identified are transversal with respect to the personality variables and the manipulations performed. However, in group 1 there is a high proportion of situations in which the internal locus is combined with low confidence, in group 2 the internal locus with high confidence.

This is in line with what has been found previously, namely that the effects of the diversity of conditions are more pronounced in the case of attributing control to oneself.

Similar groups can also be highlighted by considering only the questionnaire response variables. In this case it is possible to consider single subjects instead of pairwise interaction situations. A clustering procedure based on the minimum distance from automatically calculated centroids was used through a preliminary step that identifies the most dispersed cases (SPSS/Quick Cluster). These two groups are also characterized by very different styles, to the point that the graph is almost mirrored (see Fig. 4). The first group, consisting of 60 Ss, had high expectations, fair knowledge, a high level of anxiety, and reported low satisfaction. The second group, consisting of 66 Ss., who did not have high expectations and more limited knowledge, also experienced the situation in a less anxious manner and declared themselves satisfied with their performance.

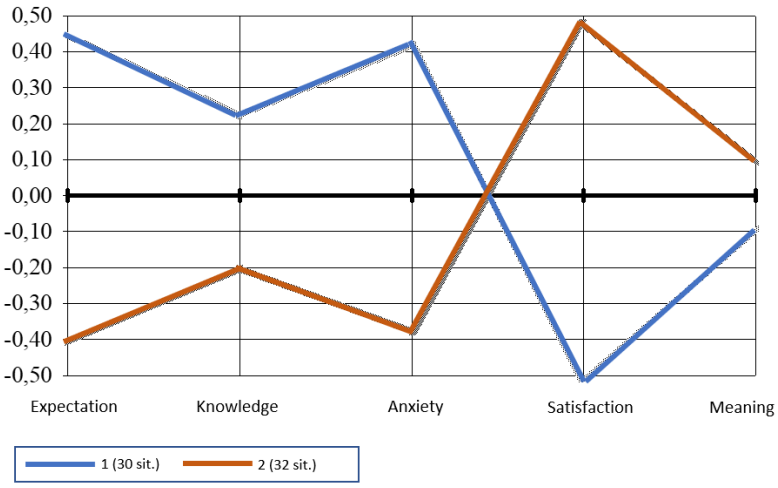
In these groupings, the significance score does not show a large difference, so it was deemed appropriate to examine more finely, qualitatively, the type of responses given by the two groups of subjects, through cross-tabulation (response levels x groups). The cross-tabulations are highly significant (meaning $p < .05$, all others $p < .0001$) except the one concerning knowledge. Examination of the residuals shows that group 1, as far as meaning is concerned, tended to repeat the instructions, i.e. to indicate as the meaning of the situation a "research on subliminal perception"; in group 2, on the other hand, there were many more Ss. who elaborated their own original interpretation or grasped that the situation was intrinsically "meaningless".

Figure 3 - Composition of the groups resulting from the cluster analysis (n. of situations).



For simplicity only the internal and external locus are shown

Figure 4 – Groups resulting to cluster analysis



Conclusions

We have described in detail and presented the first results of an investigation of the ways in which the need for meaning conferral manifests itself in a laboratory situation lacking a clear and explicit task, in which subjects are induced to act without understanding what they are doing. We have defined this situation as one of "semantic deprivation" in accordance with the hypothesis that, in addition to the need for continuous sensory stimulation (Bexton, Heron and Scott, 1954), it is also important that such stimulation be placed in a meaningful context (Bruner and Haste, 1987; Bruner, 1990).

The purpose of the experiment performed was to assess the reactions and styles manifested in such a situation in relation to personal tendency to attribute control (*locus of control*) and in relation to confidence that they had the tools to make meaning in that specific context. Some of our subjects were influenced in such a way as to believe that they had a personal key to interpretation, of which they might nevertheless be unaware; others were made to believe that they did not personally have the cognitive tools for rational understanding; a third group was not influenced.

The meaning of the situation can be read at different levels. At the most immediate level, it is that of any psychology experiment done in a laboratory: there are psychologists who study some psychological phenomenon and subject the participants to some test; they are expected to be asked to do something to eventually show their abilities. But, if we exclude this, a more specific interpretation of what was happening and of the apparent choices that the subjects were induced to make was not possible without an "explanation", to which only some of them (those positively influenced) had access, at least in appearance. In reality, however, all subjects showed that they

had cognitively organized the circumstances, in the most coherent way possible with respect to the context (cf. Duval and Duval, 1983).

The various moments "of the entire session represent the stages of a path of "gestation of meaning". The instructions and the false subliminal perception test delimited the context in that they provided the cognitive-rational framework for the interpretation of the situation. The stimulation, with its apparent interactivity with the machine and the real interaction with the companion, provided the occasion for the manifestation of reaction styles. The semantic differential served to explore, at a deeper level, the affective tone of the reaction in progress. Finally, the questionnaire was intended to give us indications on how the experience is consciously reconstructed.

It was first pointed out that the effort of construction, reflected by the duration of the session, depends more on the personal tendency to attribute control to oneself than on other factors. Being dependent on circumstances, when these are difficult to interpret, leads more easily to renunciation. This is in line with the idea, suggested by several authors, that the effort expended on a task is related to "expectations of efficacy" and the controllability of the task itself (Bandura, 1977; Folkman, 1984). The aspect considered here, similarly to coping (Folkman, Schaefer, & Lazarus, 1979), refers to effort in coping with the demands of the situation from a cognitive and behavioral perspective, regardless of whether it is successful or not.

Manipulation, from the point of view of commitment and conviction, had a clearer effect in subjects from the internal locus of control, who in relation to induced confidence manifested more or less convinced action in their search for meaning than the control group. It can be hypothesized that having a key to interpret a semantically poor

situation is more useful or effective when personality resources are also available to control the course of events. This hypothesis could be tested by controlling for other personality variables presumably related to meaning-making, such as the need for structure (Neuberg and Newsom, 1993), the desire for control (Burger, 1985), and the orientation toward uncertainty (Sorrentino, Short, and Raynor, 1985).

Another aspect that has been found to be related to attribution of control is the tendency to attribute the enigmatic nature of the situation to the way the stimuli were designed rather than to one's own cognitive inability. Attribution studies have long (since Johnson, Feigenbaum and Weiby, 1964) highlighted and empirically confirmed the classic phenomenon whereby people tend - in general - to attribute successes to their personal ability and failures to situational aspects. In relation to the *locus of control*, however, this phenomenon would be confirmed only for outsiders and reversed for insiders (Phares, Wilson and Klyver, 1971; Wang and Anderson, 1994). Our research shows that it was subjects who were accustomed to attributing control to themselves who operated this sort of defensive projection, in line with the general phenomenon but contrary to the findings of the studies cited. We believe that this point can be subjected to further empirical evidence in order to assess whether it is a phenomenon specifically related to the semantic deprivation situation or is more general, as Miller and Ross (1975) hypothesized.

Those who were led to believe that they had access, albeit unconsciously, to the key to interpreting the situation (group A) manifested a "style of reaction" different in some respects from the picture that emerges from the semantic differential and the rational reading of the experience that they exhibited with their answers to the questionnaires. These subjects were objectively uncertain and

slower to overcome initial disorientation, appeared cautious and suspicious, and did not organize a defined strategy. However, the situation was connotatively defined as warm, meaningful, and personal, and these dimensions were found to be associated with the ideas of strength and depth. Analysis of the semantic differential also suggests that the dimension of incomprehensibility for subjects in this group (as for control subjects) was emotionally connoted with darkness and coldness, but questionnaire responses regarding mood did not reveal that a higher level of anxiety was rationally perceived than in the other groups. Similarly, these subjects also tended to respond that they felt satisfied with what they did.

Considering the performance of those who were led to believe that it was not possible for them to receive the key of interpretation (group B), it emerged that the natural exploratory phase, of initial disorientation, found a more ready resolution in this group, whose designation of "low confidence" should not obscure the fact that cognitively it was the one best equipped for an adaptation to semantic deprivation. This is similar to what happens with incongruity perception, where incongruent information is ignored (Neisser, 1976) and remembered less (Stangor and McMillan, 1992). Incongruity cannot be detected by those who do not have sufficient knowledge to understand the elements from which it arises. This group was characterized by a more rational style, less aggressive or marked by suspicions and ironic comments, but also by a tendency to lean more on the partner. From the point of view of affective tone, the experience for these subjects appeared monotonous, predictable, less anxious and paradoxically also less dark. In contrast to Group A, their conscious perception of the experience itself, revealed by their responses to the questionnaire, also corresponds to this picture with regard to the low level of anxiety. Another difference

is that the general perception in group B was one of skepticism about whether they could have been up to the task.

Regardless of the manipulation performed, we identified two different styles of reaction and reconstruction. The situation was paradoxically experienced as more satisfying and meaningful by those who did not have many expectations and who did not put much effort into constructing meaning. Semantic deprivation, in this, is not unlike other critical situations, in which complex interactions between level of aspiration, achievement, and objective and subjective probability of success come into play. A promising extension of the research framework is the development of a model in which these variables can be taken into account in a more timely manner.

The results presented here provide only initial indications, which on the one hand can be further explored and on the other can form the basis for further, more focused research. From the first point of view, it is possible to make a finer analysis of the objective styles of reaction, for example an examination of verbal comments in order to detect the presence of more or less constructive hypotheses, doubtful expressions, refusals, evasion, etc. Protocols can also be used to infer information about metacommunication, tension-relaxation dynamics and other aspects of posture or interpersonal exchange. From the second point of view, the questionnaire in particular offers the opportunity for further content analysis, for example through the identification of key-words that can function as semantic and syntactic organizers. To this end, it would be possible to identify elements that indicate involvement, effort at interpretation, inability to explain, narrative sequences, etc. However, this type of analysis involves special methodological fine-tuning, as the content analysis techniques available to date appear far from refined.

Another line of analysis, mentioned earlier, can be constituted by the consideration of questionnaires as guided narrative protocols, in tune with Bruner's (1990) indications. In this regard, a methodological advantage of the research proposed here is the possibility of highlighting the extent to which the use of narratives constitutes a tool for subjects to *reconstruct* the constitution of meaning. In fact, whether or not we accept Bruner's thesis about the peculiarity of narratives as an expression of a specific mode of thought, we cannot overlook the fact that it is still a finished linguistic product, which does not express the *being* of experience but its reconstruction. It is therefore evident the interest of relating the styles exhibited during the process of construction of meaning with the narrative reconstruction of the situation made by the subjects at the end of the experience.

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Appendix I

Nowicki-Strickland scale of locus of control (Nowicki e Duke, 1974)
(Each question can be answered with YES or NO.)

1. Do you think most problems will solve themselves if you don't worry about them too much?
2. Do you think you can avoid catching a cold?
3. Are some people born lucky?
4. Does getting good grades generally mean a lot to you?
5. Are you often reprimanded for things you are not really to blame for?
6. Do you think that if you study hard enough you can succeed in any subject?
7. Do you think that generally hard work doesn't pay off because things never go right?
8. Do you think that if things start well in the morning, you will have a good day, no matter what you do?
9. Do you think most of the time parents listen to what their children have to say?
10. Do you think luck can make things go well?
11. When you get punished, do you feel like there is no good reason?
12. Do you find that it is almost always difficult to change a friend's opinion?
13. Do you think that cheering, rather than luck, can help a team win?
14. Have you ever thought that it is almost impossible to get parents to change an opinion?
15. Do you think parents should allow their children to make most of their own decisions?
16. If you find a four-leaf clover do you think it will bring you good luck?
17. Do you think that having studied has much to do with the grades you get?
18. Do you think that when a person your age decides to hit you there is little you can do to stop them?
19. Have you ever been touched by luck?
20. Do you think whether or not people like you depends on how you act?
21. Do your parents usually help you if you ask?
22. Have you ever thought that when someone got mad at you, it usually happened for no reason at all?
23. Many times do you think you can change what will happen tomorrow by what you do today?
24. Do you believe that when something bad is about to happen, it will still happen no matter what you try to do to avoid it?
25. Do you think people can achieve their goals if they just persevere?
26. Do you usually think it is useless to try to impose yourself at home?
27. Do you think that when good things happen they happen because one makes an effort?
28. Do you think there is little you can do to change things if one of your peers is hostile to you?
29. Do you think it is easy to find friends who will do what you want?
30. Do you usually think you have little to say about what you eat at home?
31. Do you think that when you have done something wrong there is very little you can do to fix it?

32. Do you think most people are predisposed to sports?
33. Are most of your peers stronger than you are?
34. Do you think that when faced with most problems, the best thing to do is not to think about them at all?
35. Do you think you have many choices in deciding who your friends are?
36. Do you think that when someone doesn't like you there is little you can do about it?
37. Have you ever thought that it was almost pointless to put effort into school because most of your peers were brighter than you?
38. Do you think planning makes things succeed better?
39. Do you usually think you have little to say about what your family decides to do?
40. Do you think it is better to be smart than lucky?

Appendix 2 - Confidence Manipulation Test Instructions

Subliminal Perception Aptitude Test (S.P.A.T.)

This test is designed to measure how sensitive you are to subliminal stimuli.
You will listen in headphones to stimulus words that may seem confusing to you but can still be mentally recorded without being aware of them.
Remember that you do not have to force yourself, the process is not related to attention or effort to understand.
- First of all put on your headphones
- Relax during the presentation
- Immediately mark your answer without thinking about it

Remember that subliminal stimuli act outside of awareness. For this reason you are asked to always give an answer, without bothering to rationalize (the process is automatic).
Write your answers on the following pages.