

## **Do I choose ?**

### **Attribution & control in students of a technical school**

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#### **Introduction**

Our age is marked by the idea of change. Reference is often made to the technological, economic and social mutations that industrialized nations are undergoing. There is question of establishing new production methods which are more competitive and offer greater flexibility. This will have an impact on the evolution and complexity of knowledge that people need to acquire. The new challenge for education is providing interactive, individualized training, centered not only on the learning of contents, but also on the acquisition of skills. Changes in the meaning and value attributed to work are also at issue. It is hoped that people's increased participation in their own training will bring about a new relationship to work.

In a sense, the ideal individual is considered to be one who knows what he wants, who is able to project himself into the future, anticipating his actions, in short, an individual who

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makes choices and is not governed only by circumstances. Learning by repetition and conditioning are replaced by creativity, innovation, and a spirit of initiative. Discourses of order are giving way to discourses of autonomy and performance (Ehrenberg, 1992).

This new emphasis on the role of personal action and the individual's control over his own environment is an issue that relates to an important field of study in psychology, attribution of causality. We will briefly recall some of the principles and findings of research in this domain, and present some results that indicate the important role people play in determining what happens to them. We will then discuss these issues in relation to education in a professional technical school in which we carried out a study. We will try to highlight discrepancies that can exist between discourse and reality. Although the documents issued by the official professional associations that we consulted place considerable emphasis on the importance of fostering student autonomy and skills in communicating, the results of our study show that the students enrolled in the technical school tended to place value on traditional learning methods based on imitation and rehearsal. What then becomes of the role ascribed to the agent in making choices?

Globally speaking, the students in our study preferred to maintain that their professional choices were dictated by personal characteristics rather than circumstances. This seemed to suggest that they placed value on explanations of their own behavior in which they play an active role, and that they know these values are in line with the spirit of our time. However, we found that the intensity with which these views were expressed depends on the status of the program in which the students are enrolled. Thus, the students in the higher status program showed a more voluntarist position than the other students. Do these differences reflect stable or invariant personality traits, or are they elicited by the social and institutional context?

Although we recognize that our results do not provide a decisive answer to this question, they do bring forth the complexity of the problem, in particular with respect to the different levels of analysis and explanation involved in accounting for the emphasis placed on the role of the actor in determining events and outcomes.

## Research on attribution

Making predictions and having control over one's environment, involve separating out that which is due to chance and that which results from stable effects. The process of explaining the causes of events has been the focus of two main fields of research in psychology. The first, generally subsumed by the term "attribution of causality," stems from the work of Heider (1958), and later of Jones and Davis (1965) and Kelly (1967). Its aim is to gain an understanding of how people make inferences about their behavior. The second field concerns "locus of control" (LOC); it is interested in people's generalized expectancies for internal versus external control of reinforcement (Rotter, 1966). In the first field, the focus is on people's explanations of behavior, whereas in the second it is people's expectations about the control they have over the reinforcements they receive, and this within a differential perspective, leading to the design of tests for measuring individual differences in perception of control. Admittedly, it is not always easy to draw this distinction, especially in the case of studies that bear upon the reasons people invoke to explain their success or failure (see for example, Weiner, 1979, 1986).

As various authors have pointed out (Apfelbaum & Herzlich, 1970-1971; Hewstone & Jaspars, 1982; Deschamps, 1983), in both fields the theoretical explanations of inference processes usually do not take into account the role of social factors and relations between groups. Studies on causal attribution quickly led to the finding that individuals do not conduct themselves altogether rationally, tending to make internal attributions related to personality factors, rather than external attributions involving circumstances (see for example, Jones, Davis & Gergen, 1961; Steiner & Field, 1960; Jones & Harris, 1967). This so called "fundamental attribution error" (Ross, 1977) was considered to show that individuals can be characterized by stable traits that lead to specific biases in their explanations of behavior.

However, later studies, in which social factors were taken into account, concluded that the attribution error does not manifest itself in a regular fashion, that it depends importantly on the type of interaction between individuals and between groups, as well as on the status attributed to them (for a review, see Deschamps & Clémence, 1990). The tendency to

overestimate dispositional factors in explanations of behavior is particularly characteristic of disadvantaged individuals and groups in situations characterized by an asymmetry of status (Thibaut & Riecken, 1955). It has also been shown that subjects modulate their causal attributions in order to preserve their social identity, accentuating their personal merits, or those of the group to which they belong, when engaged in a socially valued enterprise (Taylor & Jaggi, 1974; Deaux & Emswiller, 1974).

Whereas many studies point to the necessity of taking social factors into account, it seems that matters present themselves differently for locus of control (LOC). This field of work, as already stated above, is affiliated with differential psychology since it is concerned with the determination and measurement of differences between individuals regarding causal explanation. Although this approach is more descriptive than explanatory, it provides useful leads for carrying out interventions in institutional settings. As Dubois (1994) points out, the findings that individuals with the highest internality scores on the locus of control scales are more successful in their studies (see Findley & Cooper, 1983), and that internality scores correlate positively with professional success (see Eichler, 1980), lead to questions about the nature of the relation between success and belief in internal control. It appears that correlation between intellectual abilities (as measured by tests) and responses on locus of control scales is weak (Dubois, 1994). If internal attributers succeed better, even though they are not necessarily more intelligent, we need to find out which contextual factors work to their advantage. Py and Somat (1991) have shown that school children with the highest scores for internality are judged more favorably by their teachers from an emotional standpoint. Thus, it is possible that internal attributers benefit from some sort of "Pygmalion effect" (Rosenthal & Jacobson, 1968).

Also close to the locus of control approach is research on "control belief" (Kontrollmeinung), which bears upon people's subjective representation of their ability to exert control (Flammer, Grob & Lüthi, 1989; Flammer, 1992, 1994). This work shows in particular that control beliefs are constructed during ontogenesis, that they affect self-esteem, and that there are cultural variations in feeling of being in control.

This last point brings us back to the question of the meanings associated with the concept of fundamental attribution error. The cultural differences in control belief evidenced by the work of Flammer and his collaborators, as well as Beauvois' theoretical analysis using the concept of "norm of internality" (Beauvois, 1984) suggest that the overestimation of the importance of dispositional factors in explanations of social behavior is in actual fact a socially learned norm: subjects recognize that people place value on explanations of psychological events in which there is emphasis on the actor as a causal factor. Hence, Dubois (1988a) shows that minor variations in task instruction are sufficient to provoke a change in attribution. For instance, a self-valuing instruction results in an increase of internality scores, whereas a self-devaluing instruction results in decrease of these scores.

The institutional context also seems to play a role. Le Poulitier (1986), working in an education center, and Dubois (1988b) working in the context of a training program for hospital staff, both observed an increase in internality scores between the beginning and the end of the program.

Social status also modulates interpretations of behavior since people from socially disfavored classes tend to be significantly less internal with respect to matters of control over reinforcements than members of upper classes (Claus, 1981). Similar effects were obtained in research conducted in schools and vocational training, but this time in relation to students' status within the institution (Doise, Meyer & Perret-Clermont, 1976; Bell & Perret-Clermont, 1984; Bell, Perret-Clermont & Baker, 1989; Clémence, Deschamps & Roux, 1986; Kaiser, 1997).

All the studies we have mentioned underline the important role of social and cultural factors in people's explanations of behavior and reinforcement, and in the degree to which they overestimate dispositional factors.

### **A study in the context of a technical school**

The rapid transformation of techniques and knowledge, as well as an incessant need to increase productivity, have profoundly modified the current demands placed on technical

professions. Flexibility and innovation of production systems are becoming viewed more and more as a guarantee for competitiveness.

Gaining knowledge of the full range of new technologies, and acquiring total mastery in using them, seems to be an unrealistic educational goal. A global understanding of production procedures mobilizes students' cognitive and social capacities. Furthermore, what is learned during initial training risks becoming obsolete very quickly. Consequently, it has been suggested that initial vocational training should focus on fostering a state of mind that allows for continual revision and questioning of what is learned during professional life, and that it should encourage the future professionals to play an active, autonomous role in their own education, viewed as a continuous process.

We think that a different relation to knowledge would to be established. Rather than transmitting traditional techniques in an authoritative, planned fashion, one has to equip students with general skills that allow them to move their way around actively in a continually changing and ever more complex landscape of knowledge and know-how (Golay Schilter, 1995).

What might such general skills be? They should of course comprise expert knowledge and practices, but also general problem-solving skills, which often call for an ability to manage social relationships and communication methods effectively, and to consider others as opportunities for learning rather than as models to imitate. There are connections to be drawn between the focus on autonomy and personal initiative and the previously mentioned studies on causal attribution and internal versus external locus of control.

For our present purposes, the main question is whether students really feel that they play an active role in their studies or training, which seems to be the wish of the people in charge of the professional schools. Furthermore, are there differences according to the students' membership to the different professional categories within the institution, when certain categories enjoy a higher status than others?

Our survey, using a questionnaire, was carried out in a technical school which trains practitioners in mechanics and electronics to a national certificate level (Certificat Fédéral de Capacité) and technicians to a post certificate level (post-CFC). Students were questioned about the reasons for their vocational choices, their feelings of control over their environment, their implicit representations of the learning process, as well as their ways of interpreting success and failure at school (for details, see Kaiser, Perret-Clermont, Perret & Golay Schilter, 1997). There were 129 students present on the day of the survey, 43 practitioners in mechanics, 38 in electronics and 37 technicians. The mean age of the participants, all males, was 19 years.

### **Reasons for vocational choices**

One part of the questionnaire was aimed at determining the main dimensions that underlie students' choice of vocation. The participants were presented with a set of twenty-one reasons from which they had to choose the seven reasons that best reflected their own situation and the seven questions that did so least. Their response were analyzed by performing a cluster analysis on response patterns of conjointly rejected or accepted reasons. The principle groupings evidenced by this analysis are presented below in a synthetic form.

### **Principal groupings resulting from a cluster analysis of the reasons for choice of vocation**

*External reasons, focused mainly on  
circumstances*

*Internal reasons focused mainly on personal  
characteristics*

It's what I was advised	It fits with my personality
It corresponds to my parents' wishes	I like to work independently, the way I want
It was closest to home	It allows me to learn a trade
It bored me the least	It allows me to do further training afterwards
My schooling doesn't leave me any choice	It will give me access to jobs of the future
It allows me to meet people	I just like it
I like team work	It is a profession in which you constantly learn new things
It will give me access to higher positions	It is a profession in which there are always new challenges
I can find work more easily	I like anything that's technical
I can get a well paid job	I like finding solutions to problems
	I like to build objects, to make things

A first main subdivision was found between reasons referring mainly to circumstances and reasons involving personality or own interests. The reasons of the first category could be further subdivided to distinguish reasons involving the advice of others and school performance from reasons related to job prospects and pay. The reasons involving more personal characteristics could also be subdivided: reasons involving personality traits and reasons referring to personal interests or the career perspectives that the profession has to offer.

To evaluate the weight of the different categories of reasons indicated by the cluster analysis, we compared the frequency of "positive" and "negative" choices within each category, depending on whether subjects chose a reason as being most or least in line with their own. For all participants combined, internal reasons were chosen "positively" more frequently than "negatively" ( $p < .01$ ). In contrast, external reasons were more often rejected than accepted. ( $p < .01$ ).

However, these general trends fluctuated according to the sub-samples. Thus, internal reasons, chosen "positively" by all students, were favored more by technicians than

practitioners in mechanics and in electronics ( $p < .03$ ). Reciprocally, external reasons were refused more often by technicians than practitioners in mechanics and in electronics ( $p < .02$ ).

Probably for reasons of social desirability, the majority of students chose items that indicate they made choices based on personal will. Internality, a norm which is valued by society and favors individual autonomy, was clearly acknowledged by the majority of the participants of our study. Nevertheless, adherence to this norm varied according to the subsamples: internal factors were chosen positively less often by practitioners in mechanics and electronics than by technicians.

### **Control beliefs**

The different types of logic with respect to vocational choices, as evidenced by our study, can be related to students' views on educational situations. Here, our goal was to investigate the degree of control subjects believed they had on their immediate or future environment. Since, as we saw above, practitioners in mechanics and electronics were less inclined to evoke internal reasons for choice of vocation than technicians, we hypothesized that they would also feel less in control of their environment.

Using items from a questionnaire elaborated by Flammer for doing research on control beliefs (see Grob, Bodmer & Flammer, 1993; Flammer, 1994), the participants in our study were requested to imagine three situations. The first concerned a situation of finding a job, the second learning in school settings, and the third general modes of conduct in everyday life. In each case, participants had to estimate the influence they would have over the situation, both at present and in three or four years time.

Globally, control was judged to be lowest for the school situation, followed by finding a job, and then by general situations of personal life, in which control was perceived to be highest. These estimations of control were generally shared by all the participants, and did not vary significantly according to present and future situations.

Thus, contrary to our predictions, we did not observe differences in perception of control between the subgroups of our sample. What was even more surprising, however, was that students considered control to be lowest for the school learning situation, a result that was also obtained in a study by Flammer, Grob and Lüthi (1989). This certainly does not seem congruent with the educational goals of autonomy and active participation desired by the school authorities.

### **Success and failure in school**

Another means of evaluating the participants' representations regarding their feelings of control over their environment consisted in analyzing the reasons they gave for success and failure in school. Previous studies on causes of success and failure show that there is a general tendency to attribute success to factors within the subject's control, such as invested effort. In contrast, failure is more often seen to be the result of uncontrollable factors, such as insufficient capacities (Luginbuhl, Crowe & Kahan, 1990; Rotter, 1966; Weiner, 1979, 1986). The same trends were observed by Perret (1981) and Goslin (1992), and discussed by Carugati & Selleri (1996) in relation to teachers' explanations of the mediocre results obtained by students.

Our questionnaire presented two sets of reasons, one for success in school and the other for failure. Students had to choose the three reasons that corresponded most closely to themselves. Each set comprised the same types of explanations, which were adjusted to match the case of failure or success. The explanations presented concerned the degree of interest in the subject matter, the quality of the explanations given by teachers, the amount of effort invested in learning, the level of course requirements, the fact of having a feel for the subject matter, the atmosphere in the classroom, chance and luck, receiving help from a fellow student, and the appeal of the teacher.

In the case of success, the three most commonly chosen reasons were directly related to the contents being taught, namely interest in the subject matter, the quality of explanations provided, and the amount of effort invested. These choices contrasted with reasons which were more closely related to situational factors than course content, namely the role of chance, help

from a peer, or having a good relationship with the teacher. The attitudes toward success were shared by all the students; we did not obtain any significant differences between the subgroups of the sample. It should be noted, however, that of the three most chosen reasons, only invested effort was directly controllable by the subject.

For failure in school we obtained very similar response patterns. Lack of effort insufficient explanation, and too little interest for the subject matter were considered to be the main reasons for failure. This time, however, we obtained differences between the choices of the technicians and the practitioners in mechanics and electronics. The technicians seemed to attribute more responsibility to themselves (lack of effort) in a situation of failure than did practitioners in mechanics and electronics ( $p < .01$ ). Furthermore, having a good relationship with the teacher seemed to be more important for the practitioners in mechanics and electronics than for the technicians ( $p < .01$ ).

On the whole, success and failure were attributed to factors related to the course contents. Although effort, a controllable factor, was given greatest importance for explaining success, and especially failure, it rests that the other two reasons—quality of explanations and interest in subject matter—are not directly in the learner's control: it is easier to make more effort than to change the teacher's contribution, or the nature of the subject matter. Finally, the appeal of the teacher, a more or less uncontrollable factor, seemed to be relatively more important for mechanics than practitioners in electronics.

### **Implicit representations of learning methods**

Although educational institutions have objectives of transmitting knowledge and techniques, instilling modes of reasoning, or even social norms, they also aim to foster a certain state of mind that one might qualify as creative, communicative, critical and constructive. These objectives reflect two different conceptions of the learner: in one he is a passive receiver, in the other an active agent. Consequently, in order to reach these goals, educational institutions should not only be places where knowledge is transmitted but also environments for gaining experience in applying acquired knowledge, as a preparation for future vocational activities.

Now, the question is whether a single didactic approach is suitable for both the acquisition of knowledge and the gaining of practice? In this connection, research indicates that cognitive acquisitions are related to the social conditions that prevail in the educational situations (see for example: Perret-Clermont & al., 1984; Monteil, 1989; Perret-Clermont & Schubauer-Leoni, 1989). Practice in implementing these cognitive acquisitions are dependent on the social conditions in the situations that are encountered later on (Nicolet, 1995; Perret-Clermont & al. 1994 et 1997; Perret-Clermont & Schubauer-Leoni, 1981 ; Perret-Clermont, Schubauer-Leoni, & Trognon, 1992).

Whereas it is possible to transmit knowledge and skills, or standard problem solving strategies, the student's appropriation of these competencies does not necessarily occur through a transmission process. Didactic situations in which there is a relationship of dependence between "he who does not know" and "he who does " favor the idea of learning as a process of mere reproduction of knowledge and modes of thought. In contrast, didactic situations based on interdependence between teachers, students and subject matter tend to favor the construction of more personalized concepts.

The following questions were designed by direct reference to three models of learning. The first model is that of learning through direct experience and reproduction of responses leading to favorable consequences. This is the so called model of "operant conditioning", in which responses are learned by reinforcement, and repetition plays an essential role. The second model is that of learning through observation of people performing correctly. What the learner acquires is inferred from the behavior of the model, who serves as a guide for behavior. A third model is one in which learning results from socio-cognitive conflict (Doise, Mugny, & Perret-Clermont, 1975; Perret-Clermont, 1979/1996; Doise & Mugny, 1981; Perret-Clermont & Nicolet, 1986). This model does not emphasize the selection and reinforcement of desirable responses, nor the mere transmission of knowledge; it focuses on situations that allow the active construction of responses and knowledge. The term socio-cognitive conflict refers to situations in which there is cognitive conflict between different ways of conceptualizing or solving problems, and social conflict arising from the relationship between actors. The subject's

cognitive constructions are thus seen to be the result of coordination between the subject's own view points and those of others, and integration of the social relations between individuals or groups (De Paolis, Doise & Mugny, 1987; Carugati & Gilly, 1993).

In our survey, a set of questions asked about the activities that should be undertaken or the attitudes that should be adopted when one encounters difficulties in a theoretical course. The purpose of our analysis was threefold: to examine the students' response patterns and extract the dimensions, or factors, that organize their representations of the learning process (using a principal components factor analysis); to determine which categories of items (activities, attitudes) were judged to be most efficient (by analyzing the mean scores of groups of items corresponding to each dimension); and finally, to analyze the positions of the three subgroups of students with respect to each dimensions (by comparison of the mean factor scores for each sub-group of students).

### **In case of difficulties**

When asked about the most efficient measures for dealing with difficulties in a theoretical course, the students gave answers indicating the presence of four main dimensions, as revealed by the factor analysis. The first dimension grouped items that corresponded to the model of learning through repetition and copying of correct examples; the items that loaded this factor were doing extra exercises, revising the basic notions, and repeating the activity to be learned several times over. The second dimension was more interactional, relating to communication with peers. Items that loaded this factor were asking explanation from a classmate, and working with a classmate who is successful or experiencing similar difficulties. The third dimension might be interpreted as a factor of decentering, since it grouped activities that are related or similar to the target activity, relaxing, and saying to oneself that sooner or later one will catch on. The fourth dimension was organized around the idea of confrontation with a correct model, like the first dimension, but this time in the form of a request directed at the teacher. Thus, contrary to the second factor, which involved interaction in a symmetrical

relationship, the fourth factor involved asymmetrical relations, being loaded by items such as watching teachers perform a demonstration, or asking them for explanations.

When the items corresponding to each factor were grouped together, the ones referring to confrontation with a correct model (factor 1) were judged to be the most efficient. They were followed by the items of factor 4, involving requests directed at the teachers. And next in line we found items referring to confrontation with peers and decentering activities.

Comparison of the mean factor scores of the three sub-group of students showed that the technicians tended to place more emphasis on learning through repetition and confrontation with a correct model than the students in the other vocational groups ( $p < .01$ ).

We also asked students about the most efficient means for dealing with learning difficulties in practical work, as opposed to difficulties in theoretical courses. For these questions we did not obtain any clear trends. The technicians, as well as the practitioners in mechanics and electronics, believed that everything was important: imitation, repetition and asking the teacher were all judged to be suitable strategies. Only one item was clearly rejected: asking support from a classmate who is experiencing similar difficulties.

This last finding might seem surprising, given that interaction between "novices" in a symmetrical relationship has specific beneficial effects due to the decentering they induce, as numerous studies have shown. What accounts for the fact that equal importance was given to all courses of action? Perhaps school ideology is less prominent in the realm of practical courses (although students did believe in the need for an asymmetrical relation with an "expert") since practical knowledge and skills are not easily put into words and transmitted by discourse. Another interpretation might be that students realize teachers need to constantly update themselves with respect to the rapid evolution of professional knowledge and tools, and that therefore they cannot rely on copying others who may also experience difficulties with the task.

## **Conclusion**

The results of our survey underline the great complexity of apprehending the meaning of the emphasis placed on people's active participation. When we examined students' reasons for choosing their professional training, the criteria referring to personal motivations were chosen most frequently than those pertaining to context. This tendency was comparatively stronger in students enrolled in the more highly valued training program. If this means that students with superior status are more "internal," we need to find out why. Do these students share specific personality traits, or are their responses determined by the context? Another possibility is that they have come to realize the importance of playing an active role as consequence of their experiences during the educational settings provided by their school. Flammer (1990) has shown, for instance, that feelings of control are increased through direct confrontation with reality in concrete situations.

A partial answer is provided by the results obtained for the control belief scales in our questionnaire. Contrary to expectations, students enrolled in the three training programs did not differ in feelings of control. On the other hand, we found that it was precisely in the domain of school education that the participants perceived their own influence to be weakest. This result is interesting on several counts. It shows the impact institutional settings have on the perception of control. It may be an effect that works against the development of an increased participation of students in the management of their own learning. Finally, it evidences the discrepancies that can exist between the intentions proclaimed by the people in charge of training program and the attitudes of the students.

As to implicit representations concerning ways of learning and factors that explain success and failure, we found that students' responses reflected a very traditional view. Among the reasons chosen most frequently for explaining success or failure, some are under the students' control, such as personal effort. Such reasons were chosen more frequently by the students enrolled in the more highly estimated program. But we also obtained high frequencies for reasons that are mostly beyond personal control, such as the explanations given by the teacher and interest in the subject matter. Finally, our analysis of students' ideas about the effectiveness of different ways of learning showed a preference for traditional approaches based

on imitation, repetition and confrontation with a correct model. This effect was strongest in the student enrolled in the more prestigious program for technicians, and with respect to learning contexts that are held in greatest esteem by society, namely theoretical courses.

The participants in our study who evidenced the greatest degree of internality—the ones following the more esteemed program—were also the ones who seemed to adhere most strongly to traditional conceptions of learning, conceptions that probably continue to be the main reference for teachers when it comes to educational practices, in spite of the fact that their discourse proclaims autonomy and active participation. Consequently, and following mechanisms of construction of social identity concepts (Turner, 1982), students with the highest status adhere to the group they desire to become part of, attributing to themselves the characteristics of this group, which are perceived in a stereotypical manner.

The means by which professional insertion is carried out induces specific representational frameworks in students (Doise, Meyer & Perret-Clermont, 1976). According to Beauvois (1994), internality is in fact a norm propagated by socially favored groups. Does our study then confirm previous findings that subjects' expression of attitudes of internality, or even the degree of perceived control over choices, are not reflections of invariant personality traits, but the consequence of the subjects' experiences in different situations as well as the social status they possess at a given time?

No doubt, we still need to arrive at a better articulation, on a theoretical plane, of the different explanations for the value placed on control, and of the determinants of choice and internality, in particular from a social standpoint. According to Doise (1982) it is useful to distinguish four levels of explanation of social phenomena: an intra-individual level that concerns the subject's personal psychological organization; an inter-individual level that refers to processes of interactions between individuals; an inter-group level in which interactions between individuals are explained in terms of membership to social categories; and finally an ideological level that bears upon people's belief systems and representations.

We cannot limit ourselves to an intra-individual level to account for the observed preference for internality in explanations of behavior since this preference does not seem to reflect invariant characteristic of personality, but derives from social processes that apparently make this type of a response "adequate". We need to go beyond this level of explanation by referring to variables that take into account the interactions between individual and groups, and thereby apprehend the nature of the supposed adequacy of internality. At this level of analysis, internality appears to be a socially desirable value, which is expressed most frequently by privileged individuals. These persons have succeeded from the point of view of the model advocated by the institution, and therefore reproduce its ideological views, in particular with respect to the causality of success in school.

Few theories discuss the issue in terms of ideology. Dubois (1994) defends the idea that the preference for internality is characteristic of liberal societies since it allows for evaluation on according to individual criteria. The privileged classes and individuals of society place greater emphasis on internality because it is a good way of justifying their advantaged position. Dubois' ideas go in the direction of Papastamou's work (1986) on "psychologization" which show that the establishment of causal connections between psychological characteristics and social behaviors has important social implications. For example, it accounts for ideological mechanisms of resistance to social change, in which social differences between groups or individuals are taken to be the result of stable, unalterable psychological traits or variables.

If Papastamou's theory is correct, then one might predict that the particular attention given by schools to the psychological characteristics of students actually works toward conservation of traditional functioning in schools. But technical schools, as the one in our study, wish to open their doors to new objectives such as student autonomy and team work. Consequently, the schools, with all its actors, including directors, teachers and students, should not be interested exclusively in the characteristics of the learners, such as level of competence, motivations, and internality. They should pay far more attention to the characteristics of inter-individual, ideological and institutional functioning, and look at aspects such as the implicit and explicit didactic "contracts", hierarchical organization and value systems. They should

examine not only their own representations and discourse, but also the concrete effects of the working conditions—such as available space, equipment, methods, and scheduling—on the educational practices of teachers and students. This is the focus of some of the other parts of our study (Golay Schilter, 1997; Golay Schilter & al., 1997, in press; Perret, 1997). Preliminary results reveal contradictions between what students said (or have learned to say) and what actually happened in class. For instance, technical students trying to carry out a practical task imposed by the teacher constantly sought help or support from classmates, and the presence of a third party elicited decentering responses favorable to success in the task. Situations of learning through simple repetition and imitation seemed to be rare...

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