

Satisfaction, Professional Mobility and Leadership in Academic-Scientific Organizations

Miriam T. Aparicio

National Council of Scientific and Technical Research (CONICET), Mendoza 5502, Argentina

Received: January 11, 2014 / Accepted: March 10, 2014 / Published: March 31, 2014.

Abstract: The research work has been done in the field of social and organizational psychology. It is aim to analyze the factors which influence the levels of satisfaction and achievement reached by those working for scientific organizations and their relationship with professional mobility (Andrews, Aichholzer, Cole, Mittermeir, Stole-Heiskanen, UNESCO—United Nations Educational, Scientific and Cultural Organization, 1971) [1]. A stratified sample was taken from universities and different disciplines, based on a population of teachers from the Cuyo region ($N = 355$ R + D—Research & Development Units) (5% error margin). At this first stage, the research teachers were from Universidad Nacional de Cuyo ($N = 53$ Research Units): one chief or director and members. Quantitative techniques were used (two questionnaires). The results show that researchers' satisfaction at different levels is connected with professional mobility and disciplinary fields. Regarding leadership, and considering professional mobility, a general feeling of satisfaction emerges among researchers, regardless of their disciplinary field.

Key words: Professional mobility, satisfaction at work, scientific organizations, leadership.

1. Introduction

For decades, researchers have been looking for factors which affect effectiveness within organizations, scientific ones among them.

Research became more and more common in the field of business organizations and has extended to the present. It then reached the domain of education and, more specifically, the field of assessment of the education system quality. The aspects dealt with include teaching-learning processes, activities concerning extension (transference and impact) and those related to scientific research. Most of the studies, however, aim to the analysis of said processes from perspectives such as efficiency and efficacy. The effectiveness and importance or impact of the University System in relation with contextual demands is an aspect which has been somehow forgotten. Along the same lines, the impact made by the latest programs

for the strengthening of research work in the academic field, as well as the analysis of mechanisms underlying the effectiveness of the scientific-technological system, had not been yet discussed [2]. For that reason, this work evaluates the quality of the academic-scientific sub-system, based on the research done, its effects and conditioning factors.

It would like to mention only some axis-antecedents involving scientific and/or academic-scientific organizations, a field where research is scarce, contrasting with the amount of literature available on effectiveness in other contexts. The important research done by the UNESCO (1979) will be the referent [3].

In a deeper analysis, it will deal with antecedents involving both psychosocial and organizational factors, which appearing as more significant in the work, showing its connection with effectiveness or factors associated with it. It has also included socio-psychological factors, such as professional mobility—for reasons which will be explained below, as well as psychological factors, such as professional

Corresponding author: Miriam T. Aparicio, Ph.D., research field: psychology and education. E-mail: miriamapar@yahoo.com, maparici@satlink.ar.

satisfaction according to disciplinary fields.

Therefore, the analysis takes some elements from the interactionist model, with a sociological-structuralist and classical sociopsychological orientation [4-8].

Take a look at the theoretical framework now.

1.1 International Framework

Literature on factors which affect organizational work and group productivity is abundant, but results are somehow controversial. Motivation and leadership are among them. As far as human relationships are concerned, sociological issues, together with strictly psychological factors play an important role in them. Regarding the latter, it is generally assumed that “good leadership results in higher workers’ morale, and this, in turn, in an increased effort which eventually leads to higher productivity in the organization” [6].

Further research on the topic, however, leads to an “increasing disappointment” [9], since the relationship between bosses’ behavior, work atmosphere and productivity is not a simple, easy topic to understand.

House and Wigdor [10] found considerable evidence that both satisfaction and the atmosphere at work depend on the alternatives perceived and made accessible to the individuals, such as sex, age, education, professional culture, status, etc.

Etzioni [11, 12], following Rossel [13], related the level of engagement required by an organization to the type of leadership which would be effective, claiming that the larger the engagement expected, the more important the formal role of leadership.

In his “Contingency Theory”, Fiedler [14] showed that the atmosphere in the group had considerable influence on the effectiveness of the different styles of leadership. Such theory led to a number of attempts to determine those variables which were contingent to leaders’ behavior.

The instances of research done on the topic are too many to be mentioned here. However, as research increases, so does, the paraphrasing [9], a “growing

disappointment”, since the relationship between bosses’ behavior, atmosphere at work and productivity is not simple or easy to understand. There are two objections to the situation: the literature on the topic is vast but findings are few, according to Meyer [15], making reference to the existing, inconsistent empirical evidence. In the second place, much of the research done seems to underestimate the conflict of interests existing between the goals of the organizations and those of the individuals, conceiving organizations as “moral” and cooperative by nature. In addition, the complexity of the phenomenon makes a linear reading difficult. Criticism suggests that the importance of the influence of leaders regarding both the atmosphere and productivity is still an issue to be analyzed theoretically, taking into consideration the characteristics of the structure of a specific organization, the meaning of that role for the individual and the mutual influence between the subject and the structure within a permanent interplay.

Concerning the role of the leader in academic units of research and management of scientific organizations, it must be said that not much literature has been written on such topics, most of which refers to academic organizations.

1.2 National Framework

The paper, called “Scientific Research: Organization and Quality of the Research Units” (R + D¹, Research & Development Units), is based on the International Comparative Study carried out by UNESCO between 1971 and 1989 in many countries, among which was Argentina². Work included a macro level (scientific policies) and a micro level (a study with the members of each Research Unit).

It will discuss here some of the findings at the micro level—including the chief and members of each

¹R + D stands for “Research Development Units”.

²Research was carried out in two stages: 6 countries took part in the first and 165, in the second. Some members of the research team were part of the study (first in the development of the design of the research work and later in the application).

R + D³, an instance without which access to the psychosocial aspect (variables involved) and its interaction with the structural aspect could not have been possible. Regarding the macro aspect, this work is the first ever done in the frame of the National System of Science, Technology and Innovation, and, more specifically, of the Incentive Program for Teachers-Researchers since its implementation on State Universities in 1995. Its main objective was to support research work in universities so as to put an end to the typical isolation which characterized research work in relation with the university, the productive and the science and technical systems, and to develop highly-qualified human resources for research.

Let us now discuss the research sub-project.

The strategy of analysis was macro-meso-micro-macro. The task was personalized in each Research & Development Unit, and its core members followed the international definitions on the issue. This is the main difference with the international work taken as a referent. Working with each member made the inclusion of qualitative methodology possible, to later go through data triangulation. The researchers analyze here results obtained through quantitative methodologies (Pearson co-relation, development of scales and indexes)⁴.

Among the wide range of variables included and linked by literature to the effectiveness of academic-scientific organizations are a large number of psychosocial factors.

The main objective of this work was to analyze the relationship existing between human (psychosocial) and material (resources) factors, and the efficiency of the research units.

To achieve this, some grids and indexes were developed, especially concerning the product. As far as human factors were concerned, many grids and indexes were included, especially connected to satisfaction at

work.

One of them evaluated the units' director or chief, in other words: the leaders.

At this point, it was decided that an analysis would be carried out to determine the relationship between such human factors (psychosocial or other existing variables) and the mobility observed among researchers belonging to different disciplinary⁵ fields.

In the first place, professional mobility in the scientific system, as well as in the academic one, is determined by the number of publications. Other factors play only a secondary role in this sense. In other words, it should transmit levels of production and quality. Furthermore, mobility becomes of interest because it combines both a psychological and a sociological perspective, namely the subject (his hopes, expectations and conflicts), the structure (regarded as a scientific-occupational pyramid) and both in permanent interaction.

This aspect is especially relevant in present-day Argentina, since the structural barriers imposed by the system could become a source of conflict and generate psychosocial patterns which may affect academic-scientific organizations internally.

In other words, it was estimated that results concerning scientists' satisfaction at work could vary if there were real promotion in the science and technical system, the discipline they belong to may also influence both factors and levels of satisfaction.

Finally, no literature on the topic specifically links professional mobility to satisfaction at work; although promotion has become a concern in a conflictive working world, together with the problem of insertion and "surviving" within the system. The topic becomes an issue once more among international experts in

³"R + D" is "I" in the Spanish version from Argentina.

⁴From a methodological point of view, the steps followed were the same as those in the research done by UNESCO.

⁵The International Standard Nomenclature for Fields of Science and Technology was used (UNESCO, 1971-1989). It was only logical that the "disciplinary homogenization" referred to by the author (systems of beliefs, values and assessment, which differ according to the disciplinary field they belong to—"hard" or "soft" sciences—associated to socialization and traditions), will show a different level of satisfaction concerning the different psychosocial factors at stake in the grids created.

2000 [16, 17]⁶. Similarly, it has found no works dealing with mobility and satisfaction in scientific organizations or according to disciplinary fields.

In such framework, the general hypothesis guiding this work has been that the action logics, and, particularly, the levels of satisfaction and associated response mechanisms, would vary according to professional mobility and researchers' specialized field of work.

2. Methodology and Methods

2.1 Sample

A stratified sample was taken from universities and different disciplines, based on a population of research teachers of the Incentive Program, both from the metropolitan and the Cuyo regions ($N = 1511$). The final sample is $N = 355 \text{ R} + \text{D}$ ⁷. At this first stage, the research teachers were from Universidad Nacional de Cuyo ($N = 53 \text{ R} + \text{D}$): one chief or director and members.

Before forming the groups, the National System of Science, Technology and Innovation made a categorization of the researchers. First, the categories ranged from A to D, and then, from 1 to 5. Only researchers with a category of 1 or 2 were able to be chief-directors, for they had a full-time research position (either because they belonged to Science and Technical organizations, such as CONICET—National Council of Scientific and Technical Research—or because they were full-time teachers with over 25 hours of research per week at their university).

2.2 Techniques

Both qualitative and quantitative techniques were used: anecdotage and non-obstructive observation for

the former; and two questionnaires for the latter⁸, which were the core instruments.

The questionnaires are:

(1) The questionnaire concerning the $\text{R} + \text{D}$ units was answered only by chief-directors, who informed about that unit (human and financial resources, scientific exchanges, age of the research units, national and foreign income resources and the product, among others).

(2) The CM questionnaire, answered by the Core Members, is a part of a number of instruments whose main purpose is to give relevant data about the members of the $\text{R} + \text{D}$ units and the specific ways of organization concerning quality. It includes objective data (personal and institutional-disciplinary profiles), opinions and social representations of the members of the $\text{R} + \text{D}$ units on levels of personal participation in the different research activities, atmosphere at work (devotion, cooperation, interference, etc.), employment (pressure, responsibilities, engagement, etc.). Also, opinions about the budget, means and services available in the Unit were included; about levels of satisfaction with their boss (frequency in relations, their effect on scientific performance, professional competence). It also includes information about power and influence in decision making, about the organization of research, about relationships both inside and outside the institution (frequency, effects on performance and satisfaction), personal opinion about the importance of the kind of product for the goals of the $\text{R} + \text{D}$ unit and satisfaction concerning the spreading of the results. Finally, it provided information on topics related to the effectiveness of the $\text{R} + \text{D}$ units, their production capacity, and their possibility to conceive innovative contributions and comply with quality regulations. The questionnaire

⁶It is well known that socio-professional mobility was a central issue in psychology of education in the 70's and 80's. It was later set aside by the growing problem of insertion and staying in the working world. Today, both sociologists and psychologists are interested in the topic once again.

⁷5% error margin.

⁸Questionnaires were adapted by the author, taking the one used by UNESCO for the International Study in Organizations and Performance of Research Units as a referent. Instruments were updated on the basis of the findings and the requirements of the topic. An addenda was included in order to observe other aspects. As mentioned above, a quantitative methodology was used in this case.

was answered by every core member in the research unit, including trainee researchers and scientists. The R + D Unit Director—as a member of the group—also completed it.

2.3 Scales and Indexes

The answers obtained in the Core Members Survey gave rise to a number of grids and indexes which were later matched to other variables, among which are production (as an indicator of efficiency), professional mobility (as an indicator of achievement, especially in the field of science) and the corresponding disciplinary fields.

As far as we are concerned, 7 satisfaction scales—which will be discussed below—were prepared, in addition to a product and a professional mobility scales.

2.3.1 Professional Mobility Grid

The following aspects were considered:

- Position within the research group: director/member;
- Position within the academic system, which was combined with time dedication (exclusive, semi-exclusive or simple). It comprised every existing category in the national system, going from full time professors holding a permanent chair, and from full and part-time assistant teachers;
- Seniority: (1) up to 5 years; (2) 6-10 years; (3) 11-15 years; (4) 16-20 years; (5) 21-25 years.

The index varied between 4.67 and 100.00, with the mean (or average satisfaction) of 53.99 and the standard deviation of 25.53, the lowest observed.

2.3.2 Satisfaction Scale

Items are based on the Liker scale from 1 to 5, being 5 the most positive situation and 1, the most negative. The subject had to give his/her opinion about each of the pairs of opposite statements (X-Y), grading them as follows: (5) X is applicable; (4) Tendency to X; (3) Middle way; (2) Tendency to Y; (1) Y is applicable.

Indexes were made by adding up the total score for each of the items, divided by the figure resulting from 5

times the number of items.

Take a look at a summary of the resulting satisfaction indexes and at a descriptive analysis of them, considering their level of satisfaction.

As shown in the grid, the highest level of satisfaction is present in the variables planning (88.75) and atmosphere at work (80.54), whilst the index for professional mobility is among the lowest (53.99).

2.3.3 Product Scale

Three clusters were considered⁹:

- (1) Books and publications: 4 (books); 3 (foreign articles); 2 (national articles) and 1 (reviews).
- (2) Patents and prototypes: 3 (patents), 2 (algorithms) and 1 (experimental material).
- (3) Reports and algorithms: 3 (internal reports), 2 (algorithms) and 1 (routine reports).

The box speaks by itself. In the last two categories, the figures for the mean are low with low deviations, which imply more homogeneity. In the “Publications” category, however, the mean is clearly higher than the previous ones, but the deviation is also a large figure. That indicates that the population is more heterogeneous in relation with the category: certain researches write for different publications (bosses) while others just do not. Likewise, a General Index of Satisfaction was developed, shown in table 4.

2.4 About the Satisfaction Scales

Below are briefly described the satisfaction scales, which show significant differences¹⁰.

2.4.1 Scale L: About the Job

This set of 12 questions referred to the individual's feelings towards work, including topics such as quality of overtime work, time pressure and the researcher's level of responsibility at the moment. Opinion was expressed by choosing a number for each pair of the following, opposite statements: permanence in the position, wish to leave the unit, opinion about

⁹The criterion used was that of the international study of reference.

¹⁰Names in the scale remain the same as that of the previously mentioned UNESCO research work.

performance, voluntary overtime, level of responsibility, time pressure, other job opportunities, salary, promotion prospects, etc.

The index varied between 35.00 and 91.67 with the mean (or average satisfaction) of 61.68 and the standard deviation of 12.28, which indicates a moderate level of satisfaction with respect to the variable.

2.4.2 Scale N: Satisfaction with Chief of Research Unit

There were 8 items in all. Individuals had to give their opinion about 8 topics, choosing for each pair of opposite statements the number which they felt was closest to their feelings and satisfaction. They included the level of satisfaction with their bosses' competence, his/her personality, his/her qualifications as a leader, his/her workload, his/her support to the other researchers in the team and a final item concerning contact with their supervisor which is beneficial for

scientific and technical performance.

The index varied between 2.50 and 100.00, with the mean of 74.30 and the standard deviation of 26.28, which indicates a high level of satisfaction.

2.4.3 Scale O: Planning and Organization of Research Activities in the Unit

It includes 13 items. The subject was asked to assess his/her unit's organization and work planning, choosing a number for each pair of opposite statements given: interest in the research activities, scientific meaning; prospective success of its application; information about current research work, scientific-technological goals; deciding on unit's budget; coherence in the research program, adequacy of research planning; relations with potential users, nature of the research work; taking part in research planning; social usefulness; information about research planning.

The index varied between 50.77 and 100.00, with the mean of 88.55 and the standard deviation of 10.01,

Table 1 Mobility index.

| | Minimum | Maximum | Mean | Deviation |
|----------------|---------|---------|-------|-----------|
| Mobility index | 4.67 | 100.00 | 53.99 | 25.54 |

Table 2 Satisfaction indexes.

| | Minimum | Maximum | Mean | Deviation |
|---------------------------------------|---------|---------|-------|-----------|
| Planning | 50.77 | 100.00 | 88.76 | 10.01 |
| Atmosphere at work | 44.71 | 96.47 | 80.54 | 10.59 |
| Supervision/boss | 2.50 | 100.00 | 74.30 | 26.28 |
| Level of satisfaction with co-workers | 6.67 | 100.00 | 63.42 | 25.29 |
| Material factors | 21.54 | 92.31 | 62.00 | 14.77 |
| About your job | 35.00 | 91.67 | 61.68 | 12.28 |
| Responsibility | 10.00 | 100.00 | 58.70 | 28.02 |

Table 3 Index of product¹¹.

| | Minimum | Maximum | Mean | Deviation |
|------------------------|---------|---------|-------|-----------|
| Publications | 2.00 | 45.00 | 15.94 | 8.65 |
| Patents and Prototypes | 2.00 | 9.00 | 4.56 | 2.10 |
| Reports and Algorithms | 2.00 | 20.00 | 9.26 | 4.42 |

Table 4 General index of satisfaction.

| | Minimum | Maximum | Mean | Deviation |
|-------------------------------|---------|---------|-------|-----------|
| General Index of Satisfaction | 25.93 | 88.89 | 68.72 | 13.20 |

¹¹ It is worth mentioning that the product referred to is the one associated to the project, which is three years old; it is not the result of the scientific career. It becomes necessary at this point to separate the product from the directors or chiefs in the U + D, who are, according to regulations, full time researchers and whose production is clearly higher than that of the other members of the teams, who are trainee researchers. In the case of chiefs and bosses, the problems tackled by the most important project of the last three years are related to older programs, which result in higher production.

which indicates the highest level of satisfaction in the variables considered.

2.4.4 Scale I: Responsibility

The following aspects were considered: acceptance of the level of responsibility; (voluntary) overtime at work; acceptance of personal responsibility for results; rejection to make random factors responsible for the results-regardless of personal commitment and effort.

The index varied between 10.00 and 100.00, with the mean of 58.70 and the standard deviation of 28.02. These figures show one of the lowest levels of satisfaction in the variables considered.

3. Results and Analysis

Levels of satisfaction, it was observed, are not independent from professional mobility or from the associated fields of specializations:

A significant association exists between professional mobility and satisfaction at work, with no distinction between “hard” and “soft” sciences (disciplinary fields);

Making a distinction between the two types of sciences, it can be detected that there exists a different association between the factors playing a role in the variables satisfaction at work and professional mobility in both “hard” and “soft” sciences;

No co-relation was found between mobility and product;

General in satisfaction on the part of the subjects towards their bosses or leaders became a relevant issue of these scientific-academic *sui generis* organizations.

Let us analyze these results.

3.1 Co-relation between Professional Mobility and the Index of General Satisfaction

The co-relation between the index of general satisfaction and mobility was a significant one: 5% ($r = 0.450^{**}$, $P < 0.05$).

3.2 Co-relation between Professional Mobility and Indexes of Satisfaction

After the scales were created and indexes calculated,

the mobility index was co-related to the different indexes of satisfaction.

It becomes clear that there is a positive significant association between professional mobility and the indexes for satisfaction at work, responsibility for specific tasks and planning, and a negative significant association with the boss/supervisor.

3.3 Co-relation between Production and Indexes for Professional Mobility and General Satisfaction

There are no statistically significant co-relations. In other words, there is no evidence of associations between production and general satisfaction. The same thing can be said about production and mobility.

3.4 Co-relation between Professional Mobility and Satisfaction in “Hard” and “Soft” Sciences

Considering now “hard” or “soft” sciences as variables, we observe that, in the context of “hard” sciences, professional mobility is positively and significantly associated to the indexes for job (0.48 at 1%) and responsibility (0.57 at 1%). There is, in addition, a negative significant co-relation with the index for Satisfaction with bosses or directors (-0.45 at 1%).

Here, a negative and significant association can only be found in the index for satisfaction with the supervision or the unit’s leader (-0.456 at 5%), while there is a positive association with planning (0.354 at 5%).

Analyzing the grid of co-relations (Pearson), we can see that significant associations at 1% and 5% between professional mobility and satisfaction are different in the “hard” and “soft” sciences grid, which implies that each disciplinary group values different aspects of satisfaction.

In other words, the most movable subjects in “hard” sciences find satisfaction in some aspects—typically present in their discipline—which are different from those in “soft” sciences [18, 19].

There is only one aspect in common: researchers from both fields feel they are not satisfied with leadership in their teams.

Table 5 Co-relation between professional mobility and indexes of satisfaction.

| | Atmosphere at work | About the job | Responsibility | Material factors | Supervision | Planning | Satisfaction with co-workers |
|----------------|--------------------|---------------|----------------|------------------|-------------|----------|------------------------------|
| Mobility index | 0.086 | 0.370*** | 0.407*** | -0.013 | -0.436*** | 0.276** | 0.028 |

*Significant co-relation 10%, $P < 0.10$;

**Significant co-relation 5%, $P < 0.05$;

***Significant co-relation 1%, $P < 0.01$.

Table 6 Co-relation between production and indexes for general satisfaction and mobility.

| | Matrix of Co-relation | Publications | Patents and prototypes | Reports and algorithms |
|----------------------------|-----------------------|--------------|------------------------|------------------------|
| General satisfaction index | Co-relation | -0.45 | 0.79 | 0.141 |
| Mobility index | Co-relation | 0.205 | 1.22 | 0.043 |

Table 7 Co-relation between professional mobility and indexes of satisfaction.

| “Hard” sciences | Atmosphere at work | About the job | Responsibility | Material factors | Supervision | Planning | Satisfaction at work |
|-----------------|--------------------|---------------|----------------|------------------|-------------|----------|----------------------|
| Mobility index | 0.040 | 0.488*** | 0.576*** | 0.011 | -0.455*** | 0.278 | 0.038 |

* $P < 0.10$;

** $P < 0.05$;

*** $P < 0.10$.

Table 8 Co-relation between professional mobility and satisfaction indexes.

| Social and human sciences | Atmosphere at work | About the job | Responsibility | Material factors | Supervision | Planning | Satisfaction at work |
|---------------------------|--------------------|---------------|----------------|------------------|-------------|----------|----------------------|
| Mobility Index | 0.122 | 0.233 | 0.180 | -0.013 | -0.456** | 0.354** | 0.030 |

*Significant Co-relation 10%, $P < 0.10$;

**Significant Co-relation 5%, $P < 0.05$;

***Significant Co-relation 1%, $P < 0.01$.

4. Discussion

This result could be interpreted from different points of view.

From the “expectation” theory, it can be assumed that the most movable subjects (those who have climbed the corporate ladder) tend to have higher expectations once they have reached a high position in the professional pyramid, thus demanding more and more from those leading the system [20].

From the “investment”-model point of view [21], those who have reached a higher position and made a greater effort towards higher achievements of the group may expect more benefits, many of which are associated to management¹².

¹²It is surprising, however, that it was that very group which showed some insatisfaction towards the results, an issue in which the leader have a relevant role (the mean: 61.30 with the standard deviation of 15.38).

Finally, it is not surprising that, in the present structural crisis, the index for mobility satisfaction is among the lowest of all. Thus, it becomes obvious that some psychosocial factors are mixed with other structural ones.

5. Conclusions

In the light of the hypotheses, let summarize the findings.

In the frame of the research done, and considering the little literature existing on the topic, it was only logical to expect mobility to be associated with general satisfaction at work. Similarly, and from a disciplinary-institutional homogenization perspective (due to factors concerning socialization), different satisfaction patterns were expected among researchers belonging to different disciplinary fields (“hard” vs. “soft” sciences).

It was also expected that the product would not with the mobility observed in teachers-researchers, even if, at first, it appears to be a contradiction: in a balanced structural system, it is the product which favors mobility. This paradox, however, can be explained considering the structural situation of the country. Nowadays, many researchers who, after having been evaluated favorably within the Science and Technical System, have to wait a long time before they are actually promoted, due to economic reasons, among others. Promotion is, in many cases, merely “symbolic”, not real. This problem is common among the lesser developed countries, where the symbolic channels-typically, education and politics go before the institutionalization of the economic and technological areas, leading to collective anomia [22].

The hypotheses were confirmed. The “unexpected” finding, however, was the realization of a general dissatisfaction with those who manage scientific teams, regardless of the disciplinary field they belong to. The fact can be analyzed from different theoretical viewpoints. It is worth mentioning, however, that processes concerning research and development (R + D) involve psychological, social and structural factors, as Andrews [3] points out. They claim that, regardless of the different realities in different countries, the relationships between the factors discussed and the performance of the Research and Development units, tend to show patterns which go in the same direction. Psychosocial and structural factors complement each other in the Science and Technical System, and only from such interplay, quality, performance and impact of these small organizations known as research and development units can be analyzed. The hypothesis, through which “logics of action and, especially, satisfaction levels and associated response mechanisms would vary according to professional mobility and according to researchers’ field of specialization”, was confirmed, as well as some generalized rejection towards leaders in the scientific field.

References

- [1] International Comparative Study in Organizations and Performance of Research Units, UNESCO, Paris, France, 1971.
- [2] Bases para la Discusión de una Política de Ciencia y Tecnología (Basis for Debate of a Science and Technology Policy), Ministry of Culture and Education, Buenos Aires, Argentina, 1996. (in Spanish)
- [3] F.M. Andrews, Scientific Productivity: the Effectiveness of Research Groups in Six Countries, Cambridge University Press, Cambridge, UK, 1979.
- [4] R. Merton, Theory and Social Structure, Free Press, New York, USA, 1968.
- [5] D. Peltz, F. Andrews, Scientists in Organizations: Productive Climates for Research and Development, Institute for Social Research, University of Michigan, Ann Arbor, USA, 1976.
- [6] K.R. Knorr, G. Mittermeir, R. Aichholzer, G. Waller, Leadership and Group Performance, in: F.M. Andrews (Ed.), Cambridge University Press, Scientific productivity, Cambridge, UK, 1979, pp. 55-120.
- [7] E. Hollander, Style, structure and setting in organizational leadership, Administrative Science Quarterly 16 (1) (1971) 1-19.
- [8] R. Payne, Relationships of perception of organizational climate to organizational structure, context and hierarchical positions, Administrative Science Quarterly 18 (1973) 515-526.
- [9] C. Perrow, The Effect of Technological Change on the Structure of Business Firms, in: B.C. Roberts (Ed.), Industrial Relations: Contemporary Issues, McMillan, London, UK, 1968.
- [10] R.J. House, L.A. Wigdor, Herzberg’s dual-factor theory of job satisfaction and motivation: a review of the evidence and the criticism, Personal Psychology 20 (1967) 369-389.
- [11] A. Etzioni, A comparative analysis of complex organizations, American Sociological Review 30 (1961) 692-698.
- [12] A. Etzioni, Dual Leadership in Complex Organizations, Free Press, New York, USA, 1965.
- [13] R. Rossel, Instrumental and expressive leadership in complex organizations, Administrative Science Quarterly 15 (3) (1970) 306-316.
- [14] F. Fiedler, A Theory of Leadership Effectiveness, McGraw-Hill, New York, USA, 1967.
- [15] L. Meyer, Leaderships and organizational structure, American Journal of Sociology 81 (3) (1976) 514-542.
- [16] C. Dubar, Pour une Approche Compréhensive à la Promotion Sociale (Towards Comprehensive Approach of Social Mobility), Pour 148 (1995) 41-49. (in French)

- [17] D. Merllié, Psychologie et mobilité sociale (Psychology and social mobility), Actes de la Recherche en Sciences Sociales 3 (1975) 94-105. (in French)
- [18] D. Crane, Invisible Colleges, University Chicago Press, Chicago, USA, 1972.
- [19] J. Gaston, Communication and the reward system of science: a study of a National Invisible College, Sociological Review Monograph 18 (1972) 25-41.
- [20] N. Feather, P. Davenport, Unemployment and depressive effect: a motivational and attributional analysis, Journal of Personality and Social Psychology 41 (3) (1981) 422-436.
- [21] G. Becker, Human Capital, Columbia University Press, New York/London, 1964.
- [22] P. Heintz, Hacia un paradigma sociológico del desarrollo en América Latina (Towards Sociological Paradigm of Developpment in Latin America), Instituto, Buenos Aires, Argentina, 1970.