



Conceptions Of The Importance Of Biological Contents In The University Education Of Psychologists

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Literature and Education Sciences, which belonged to the National University of the Litoral in those days. In 1956, after the overthrow of Juan Domingo Perón's government, a new organization of the course took place, without recognizing the previous foundation (Ascolani, 1988; Gentile, 2003). In the following years, psychology university courses were created in other national universities and then in provincial and private institutions (Klappenbach, 2000a; Klappenbach, 2000b). Dagfal (2009) analyses the emergence of the first psychology degree courses and his most important considerations are:

- a) the group of founders was highly heterogeneous in its composition: among them were humanist pedagogues, psychiatrists with diverse theoretical orientations, physicians with neurobiological training and existentialist philosophers;
- b) there was no consensus as regards the orientation that should be given to the new psychology degree courses;
- c) the discipline known as scientific or experimental psychology didn't have a significant development in the country;
- d) psychoanalysis became the dominant theory in the majority of the courses at the beginning of the sixties. The psychoanalytic orientation of the degree courses prevailed until the end of the military dictatorship in 1983 and then began a certain educational diversification, although in some faculties like Rosario's "a distinct Lacanian psychoanalysis hegemony" still prevails (Klappenbach, 2003: 5).

The study program currently in force in the psychology degree course of Rosario's National University was sanctioned in 1984 and some alterations were made to it, particularly in 1996 (Facultad de Psicología, 1996). The curriculum encompasses a first introductory year, a basic cycle –which lasts three years– and a higher cycle –two years–, by the end of which the Psychologist degree is granted. During the basic cycle, the theoretical fundamentals are organized into four fields (the biological area among them), as follows: psychology's historic-epistemological development, individual psychological structure of the subject, social psychological structure of the subject and biological structure of the subject. All those theoretical contents contribute, during this stage, to the execution of fieldwork in the areas of health, education and work.

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There are four subjects related to biology: Biological Structure of the Individual I, which students take in the second year of their studies and seeks to give a basic introduction to the complex vital phenomena, examining the different levels of biological organization; Biological Structure of the Individual II, which is a third-year subject and aims to provide, based on anatomy and physiology, stepping stones to understand the different psychological schools of thought; Psychobiology, fourth-year subject which deals with the study of pathologies that have an affect upon the psychological but underlying biological disorders; and Psychology and Psychopathology of the Language, also a fourth-year subject, that tackles the study of verbal language from a multidisciplinary approach, taking into account the neurophysiologic aspects. With the development of these biological subjects, the university course accounts for the basic curricular contents in that disciplinary field, established by the Argentine State, for the degree courses that grant the titles of Psychologist and Bachelor of Psychology (Ministerio de Educación, 2009).

Despite the clear inclusion of biological contents in the study program, it is usual for students who begin taking biological subjects in the Psychology degree course of Rosario's National University to ask the following questions: "Why do I have to take biology subjects if my interest is to study Psychology? What's their importance? Am I wasting time? Are they of any use to me as a future professional psychologist?". These and other interrogations referred to the biological field usually arise in different areas of the Psychology Faculty. Many professors who lecture in other areas of the degree course also make similar comments. In general, the question revolves around the need for psychologists to be trained and educated in this field.

Rubén Ardila, a referent of Latin American psychology, examines in one of his papers the diverse dilemmas that psychology has had to face in its development as a science regarding its object of study, the research methodology, the universality (or not) of its laws, and the relation between basic science and professional application. These matters are still under debate and, in a certain way, they relate to the subject of study of this research on biological sciences and the education of psychologists. The aforementioned author suggests that psychology, science which studies the behavior of organisms, is at the same time a natural science and a social science (Ardila, 2007). In the same direction, Guilarte Téllez (2011) emphasizes the need to systematize the relation of biological and social contents in human development, so they become basic elements for the education of the psychology professional. In his study of the educational process of psychologists in Cuba, he highlights the importance of delving deeply into the anatomical and physiological aspects of the nervous system, and the ontogeny and phylogeny of human development. We can also mention the assertions of Fernández González, Paúl Lapedriza and Maestú Unturbe (2003) as regards the need for psychologists to be trained in neuropsychology in Spain, since this discipline represents a specialization area within psychology, which prepares professionals to take part in the identification, description, diagnosis and rehabilitation of disorders related to nervous system's dysfunctions. In this sense, they consider it important to develop the psychology students' training in psychobiological subject matters at the graduate level, which allows greater deepening in the postgraduate course.

According to Carr ⁽²⁰⁰⁸⁾, emeritus professor of the University of Washington, psychologists should be trained in different areas of biological sciences, such as pharmacology, neurology, psychiatry, physiology and biochemistry. For this author, the need arises from the increase of doctors' training in behavioral sciences. As a consequence, psychologists' training in biological sciences will allow the development of joint researches in the health field. However, he recognizes that many psychologists consider that the increase of knowledge referred to biology and other basic sciences would lead to a dilution of the specialization degree of psychology professionals, contributing to medicalization and the loss of independence in the professional practice.

In the same way, Rand ⁽²⁰⁰⁵⁾, another American scientist, proposes that clinical psychologists should be better prepared to deal with the contributions of natural sciences, since psychology remains isolated from other sciences, and this situation would be caused by two factors. Firstly, by the perpetuation of the mind-body dualism, conceiving the mind as causally disconnected from the body. And, secondly, by the disagreement noted within clinical psychology between basic research and applied practice. The author puts forward the need to modify the education of psychologists, pointing out that students should be trained in basic sciences from the beginning of their studies and that they should resist the temptation of following a specialized orientation from the start.

Zittoun, Gillespie and Cornish ⁽²⁰⁰⁹⁾ consider that the problem of the lack of integration of biological knowledge with psychology is related to the existence of different psychology schools, with their own ways of defining the object of study, the questions to be asked and the theoretical premises, encompassing methodologies which range from measuring the excitation of isolated neurons to studying the audience's excitement to a given phenomenon. These European authors suggest that this coexistence should be analyzed as a result of a development process of psychology and not as a fragmentation. From their point of view, the fragmentation perspective suggests the idea that behind the fragments may lay a coherent unifying story. On the contrary, the notion of differentiation through a complex and ramified development process allows us to understand that the problems psychology faces require a plurality of knowledge and training.

With the purpose of contributing to the understanding of the conceptions held by students, teachers and graduates as regards the integration of biological contents in the university education of psychologists, this research work was conducted with their own statements as a starting point. There are studies about psychologists' training where interviews are conducted or questionnaires are applied in order to examine the representations of Psychology students and/or graduates regarding the professional practice, the academic training, the possible competences of graduates and other related aspects. In the majority of them no reference is made to the training in the biological sciences field (Aisenson *et al.*, 2005; Compagnucci and Cardós, 2009; Noailles, 2005; Pacenza, 2001; Scaglia *et al.*, 2001). Some studies make an exception to the previous assertion, since in some of their lines the subject is briefly mentioned. Erausquin *et al.* ⁽²⁰⁰³⁾, in a study of the different psychology profiles in students from the University of Buenos Aires, state that students who lean towards scientific research choose to take elective subjects related to biology and that they show a tension at the methodological level between the inquiry model of natural sciences and that of social sciences. Castro Solano ⁽²⁰⁰⁴⁾, in his study about the self-perceived professional profiles of recently graduated psychologists and students close to graduating from different Argentine institutions, mentions clinical neuropsychology among the new non-conventional areas. Herrera Cabezas *et al.* ⁽²⁰⁰⁹⁾, in a similar study carried out in Colombia, make the same assertion. In the analysis of representations regarding professional practice of Psychology students and graduates in the University of Guadalajara, Torres López, Maheda Guzmán and Aranda Beltrán ⁽²⁰⁰⁴⁾ point out neurosciences among different application areas.

However, we can mention two studies which tackle the subject of the biological field training of psychologists, analyzing the statements of the actors involved. In the USA's University of Wisconsin, Stalder and Stec⁽²⁰⁰⁷⁾ studied the preferences of psychology students regarding the different topic areas in the introductory courses of the university degree course. The data obtained showed that students manifested lesser interest for biological psychology. In Argentina, Sarubbi⁽²⁰⁰⁴⁾ describes the results of a survey that investigated aspects regarding the pertinence and sufficiency of the biological contents taught in the diverse Psychology university courses of national universities. This survey was aimed at professors working in the biological area. Some of the conclusions show that those teachers consider necessary the development of an interdisciplinary work. Besides, they perceive that many other professors who lecture in other areas consider neuroscience-related training unnecessary and even adopt an attitude of rejection.

Methodology

The research was conducted within the framework of qualitative approach^(Hernández Sampieri, Fernández Collado and Baptista Lucio, 2006). From this conception, we worked in a discovery context, starting from the information gathered and, through an inductive process, we attempted to understand the data. Emphasis was placed not only on the general aspects of the phenomena, but also on their singularities. The selection of the subjects involved was intentional and carried out with theoretical criterion, and we do not seek to generalize the conclusions obtained to other populations.

The information was gathered between 2009 and 2011, through interviews with students, teachers and graduates. The students who participated belonged to different stages of the degree course and, as regards teachers, we worked with professors from different areas of the study program who held diverse hierarchical positions. In many cases, the registered information originated in casual conversations and relevant data were obtained through them.

Results and discussion

1. Previous representations

Firstly, it is interesting to consider which is the representation generally held by society members regarding the psychological profession and, particularly, as regards the training such professionals have on biological disciplines. This matter becomes relevant in order to analyze the students' starting point when they choose this course of studies. Some of the statements gathered during this research can illustrate this subject. It is the case of a professor who lectures in the biology area of the Faculty and holds a biochemistry university degree, and said the following:

When I run into someone with whom I studied Biochemistry and I haven't seen in a long time and I tell them I work as a professor in the Psychology Faculty, I usually notice their surprise and they ask me what do I teach. When I tell them that Psychology has many biological subjects, that psychologists have an important training in that field, they begin to think about my explanation. The same has happened to me with family members or acquaintances with no university education the first time I told them what my job as a teacher was. The general idea is that psychologists work with words and that they have no knowledge about organic health problems.

Another teacher from the biology area, doctor by profession, mentioned a similar experience with a fellow professor who teaches at the Medicine Faculty:

I was carrying some material I had worked with the Psychology students, then this fellow doctor who works as a professor in Medicine began to look at it and asked me: Psychology students are given all of this to study?

These previous statements coincide with those of a psychologist who values and updates her biological sciences training and knowledge, and who works in a clinic in the city of Rosario:

At the clinic I have, in general, a good relationship with most of the doctors. We have a room where we can have some coffee while we wait to see the patients. I started to notice that when they began discussing a case they talked among themselves and I was left out of the conversation. Until one day, with some of the doctors with whom I'm closer, I decided to ask them why they disregarded me whenever they talked about medical issues. The answer was: and what do you know about any of this? I had to explain to them that psychologists do have certain training in the biological field. After that first moment the situation began to change. Besides, I'm getting more consultations.

These testimonies reveal that for people in general, even professionals, psychologists are professionals who do not have any knowledge in the biological sciences area. This is the notion held by students who begin this course of studies, and we have gathered the following statements regarding their expectations:

Many times I've heard people say that biological subjects are unnecessary, that many choose this course of studies precisely because they think they'll avoid biology, as well as math, physics and chemistry.

Regarding the issue of my classmates' lack of motivation, I think it can be related in part to the career choice they've made. Maybe many of them chose this course of studies, among other reasons, because it doesn't have those subjects they didn't like in high school, and probably biology is among them.

Many of us don't like the subject, which is worsened by the fact that most of us studied social sciences in high school and didn't look at topics related to biology and chemistry, contents which are fundamental to begin taking biological subjects with some basic concepts.

The issue of the students' high school education is a relevant subject matter, since it acts as an indicator of their preferences and of the basic knowledge they have to embark on their university studies. In general, they have taken subjects related to humanities and social sciences, or received an education with a business or accounting orientation. Only a few of them have studied subjects related to natural sciences, computer science or physical and mathematical sciences. Besides, it could also be noticed that some students, at the time they chose to follow this degree course in Psychology, were unaware of the inclusion of subjects dealing with biological topics in the study program.

2. The first year of the degree course and the subsequent encounter with "the Biological subjects"

During the first year of the degree course there are no subjects related to biological sciences and students come across the first subject of such topic area in their second year. As regards the attitude adopted towards this situation, the following statements were gathered:

For the student, it is very hard after a year of philosophy, linguistics, psychology and abstract thinking to run into this wall. The study methods are different, the terminology changes. As for the professors who teach other subjects, I notice that some of them underestimate the biological subjects.

On the one hand, I think it has to do with the gap that exists between hard sciences (biological) and social sciences.

In the biological subjects, things are like this, there's only one way, answers are right or wrong, there's no chance to express your opinion, it has to do with positivism.

For most of us who have chosen this course of studies, it's a challenge to face these subjects. It implies facing different concepts, another way of studying and another way of taking exams, which we are not used to in our Faculty.

I've heard many comments such as: in second year, there's Biological, which would be the portion of medicine we need to learn; in Biological we are given topics like hormones, etc., to quote a few examples.

In all of these statements, the main motives for rejection become visible: biological sciences perceived as hard sciences, different from social sciences, with different concepts, influenced by positivism, related to medicine. In short, they are seen as a "wall" that stands in the way of the degree course.

3. The students' stances throughout their studies

To illustrate the different stances, we share below some of the students' statements. We begin with those that reveal an acceptance of the biological sciences' training and, progressively, we move on to those that raise objections:

I agree with the inclusion of biological topics in the university education of psychologists because it gives us the chance to not think of organism and psyche as separate.

I agree, because I consider it necessary to understand psychological processes in a more integral way. I think it is reductionist to take only a part of the whole, whether it is from the biological or the psychological perspective. It is necessary to take into account certain theoretical aspects of certain diseases, for example, so we are able to know in which areas they affect the patient.

I perceive a significant lack of interest on behalf of students, due to the lack of motivation provided by the professors who teach the biological subjects. I consider that if there were more motivation and encouragement on their part, many students would change their opinion towards those subjects. Professors should find the way to encourage students in each topic, be it with case reports or any other way.

The change I'd suggest would be to add bibliography with case studies and treatments where you can see the articulation between psychology and biology, without falling into any reductionism.

I don't like biological subjects, it's a personal issue; I relate them to hard sciences. They are a matter which concerns doctors.

The professors who teach biological subjects have a derogatory discourse towards psychoanalysis. Knowledge is encyclopedic, things are either right or wrong, there's no possibility of having different opinions.

As they advance in their studies, a numerous group of students begins to side with the stance which holds that biological subjects are not relevant for the psychologists' education, that they represent "filter subjects"¹ and that their relevance in the study program should be diminished. Meanwhile, other students accept the fact that biological subjects are important for their education, but find them different from other areas, hard to study and not very integrated to the course of studies. In general, they demand that case reports should be examined as examples in order to develop the different topics. A third group, probably smaller, is interested in the study of biological disciplines, considering them highly relevant for their education.

¹ In Argentina and many Spanish-speaking countries, certain university subjects which are perceived as particularly difficult and which many students fail to pass are known as "filter" subjects.

4. The teachers' opinions

Within the professors' group we find attitudes equivalent to those held by students. In first place, we will analyze the statements of teachers who recognize the importance of biological education:

It is necessary for several reasons. To begin with, because, just like in every university degree course, instruction should not be reduced to merely technical matters, but should include disciplines that aim to a more general education, among which we can include philosophy, biological sciences, etc. Besides, this course of studies has the objective of training future psychologists, and biology is part of or is present in certain specializations such as developmental psychology, cognitive psychology, etc.

I consider it fundamental, since it's impossible to separate the biological from the psychic so as not fall in this many times intended body-mind duality. Human beings need to be understood in all of their complexity by future professional psychologists, as subjects bound to biological, social and unconscious elements. The truth is I'm not too aware of these subjects' study programs other than my own experience as a student which, as I recall, was very pertinent and necessary for a comprehensive professionalization.

This last reply is typical of a great number of teachers who recognize the importance of the biological training, but do not know much about the subjects' curriculums. This lack of information is usually explained by the general lack of joint work and communication between the different subjects and areas:

I think that each professor is too involved in the issues and contents of their own subject, losing many times that interdisciplinary coordination and complexity which would be essential for students not to be trained in each area as if it were an isolated compartment which, subsequently and in a merely individual task, they end up integrating in their own way.

A well-supported answer was given by a biological area professor and psychologist with psychoanalytic orientation:

Many teachers consider that biological subjects have nothing to do with our profession, arguing that this discipline is opposed to the psychoanalytic discourse, which leads to an extreme stance, where it is considered that both discourses cannot coexist. Thus, the most diverse reasons are offered. On the one hand, there's the dichotomy regarding the place that each discipline grants the individual: in this way, an apparent incompatibility arises in the sense that science 'forecludes' the individual, while psychoanalysis takes them into consideration. There's also the claim that science's aim is the search of truth, truth in the sense of completeness,

which leaves no room for gaps, for absence. While psychoanalysis aims for the search of knowledge, which allows room for the unfinished, the absence, the anguish. The issue of ethics is also considered. While the healing direction in psychoanalysis favors or is governed by the analysand's desire, science is sometimes lead by economic interests, which has grave consequences for human kind in its application.

We also find teachers who openly manifest the opinion that biological training is not important:

I haven't analyzed the matter; I never had any interest or need. I just know the area exists. The first biological subject is a general, school-like subject, not much interrelated with psychology. In the second one, they study psychology more than biology, it's a way of solving the articulation or not. Psychobiology is concerned with neuroscience, psychopharmacology. However, Psychopathology of the Language is not related to biology, but to the individual and the language. There's no coordination between the subjects.

In the opposite sense, we find teachers who blame the psychoanalytic orientation and the lack of knowledge of other schools of thought:

A factor that greatly influences the way students see psychobiological subjects is bias, meaning a pre-formed negative attitude which affects the treatment of reality. In this sense, a strong psychological reductionism circulates through the Faculty which surges from the very own professors and is strengthened among students, thus diminishing the importance of the biological basis of psychic processes. In this way, students begin taking psychobiological subjects with strong negative beliefs and attitudes towards these subjects' contents, tingeing to a large extent the motivation and excitement with which they tackle them.

As regards the professors belonging to the biological subjects' department, we can say that those who are psychologists, in general, adhere to psychoanalysis and adopt an attitude which considers interaction. This stance is more clearly observed in other teachers with cognitive psychology training. Finally, professors who are not psychologists express the need for integration, even though some of them reveal certain biological reductionism.

5. The activity outside the Faculty

In order to investigate the opinions of psychologists who practice the psychology profession, we consulted those that are not directly related to the Faculty. The following gathered statements represent the main ideas expressed:

For those professionals who work in clinical environments biological knowledge is necessary to make differential diagnoses (at least, to be warned that not all is necessarily of a psychic nature and to be able to make a referral), to know the consequences and signs of patients under psychotropic treatment or drugs that may affect the mood. Besides, even though in the clinical practice the attention is more focused on the patient's discursive level, we need to know the biological processes involved in patients with psychosomatic illnesses or in patients whose illnesses are linked to physical as well as psychic processes or when the causes are not clear.

I think it is necessary to be trained in biological as well as social sciences, since when we work with a patient or someone who seeks our counsel we not only listen to psychological problems, but we face the individual in all of their complexity. Therefore, the biological sciences' training prepares the future psychologist to listen to problems (not only clinical, but also educational, epidemiological, work-related, etc.) that go beyond the psychological. Every phenomenon, even the human phenomenon, is undisciplined, and the diverse disciplines only deal with a part of it. In order not to be left with a partial point of view, it becomes necessary to be trained in disciplines other than the psychological ones.

I've been a practicing psychoanalyst for many years and I got my psychology degree in the sixties. During the course of our studies we had an important biological training; I remember that we used to go to the Medicine Faculty. I didn't study these topics much further, but I always consult a specialist when I have a patient with an organic disorder. I'm interested in fully understanding their problem. I've always worked closely with psychiatrists; when I have a patient which I consider requires medication I refer them to a specialist. After so many years of work I'm familiar with the different kinds of drugs, when they have to be prescribed and their effects. In many cases, medication is necessary to begin with psychotherapy.

As regards the topics that would be of most relevance within the university education of psychologists, the professionals mentioned topics related to physiology and general pathology. In particular, the nervous, endocrine, immune and reproductive systems. They also emphasized the importance of psychopharmacology knowledge.

Conclusions

In general, first-year students of the Psychology degree course do not have a clear idea regarding the importance of biological sciences for their education as psychologists, and some of them are unaware of the inclusion of subjects dealing with biological topics in the study program. This conception seems to be influenced by the representation generally held by society at large regarding the psychological profession, as a professional who works with words and not at the organic level, field reserved for doctors. The high school education of students who begin this course of studies is more related to humanities and social sciences, and during the first year of the degree course they receive no information regarding the biological area. Biological subjects are associated to positivism and medicine, and considered to be opposed to psychoanalysis.

In their second year, students come across the first biological subject and many begin to reinforce their rejection. In general, they find it hard to study since it differs from the rest of the subjects and they also state that they don't see the relation between the subject and the professional practice. Let's remember that this is a degree course with a marked orientation towards psychoanalytic clinical treatment.

As students advance in the study of the biological area subjects, some of them develop more interest in them, mainly because they begin to examine the treatment of human health disorders where psychic and organic signs can be seen. But, at the same time, they also consolidate their psychoanalytic training and find it difficult to relate biology to psychoanalysis. Fundamentally, the different notions of the individual create a gap that is hard to bridge. Besides, they also perceive in some professors of the biological area attitudes opposed to psychoanalysis and state that those teachers don't encourage or motivate students to study biological contents.

Two main conceptions can be observed in students and professors who lecture in other areas. In many cases, they express acceptance of training in biological sciences but without accounting for possible interrelations. Another important group leans towards rejecting these subjects, indicating an irreconcilable opposition between biology and psychoanalysis. Finally, a probably minority group favors interrelation and the need to have training in this field.

Thus, new psychologists graduate from university with an important preparation in biological sciences, but not very integrated and in some cases even rejected. As a consequence, it is possible to say that students do not take full advantage of this aspect of their education, and that this knowledge is required in several opportunities during the exercise of the profession. When psychologists embark on their professional practice they recognize the importance of the range and breadth of their education. They value biological knowledge for understanding the complexity of the cases they need to study, but we could say that they consider this type of knowledge complementary in their professional practice. At any rate, the opinions of graduates who specialize in clinical practice in its different theoretical orientations, or in other professional activity fields, such as research, may establish a foundation to support the usefulness and importance of biological knowledge and contents in the university education of psychologists.

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