

The experimental synthesis of behaviour

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The experimental synthesis of behaviour is a programme for the unification of psychology. The central core of the theory is behaviour analysis, and its aim is to explain the findings of contemporary psychology in behavioural concepts. The experimental synthesis of behaviour is not “eclectic.” Following a post-Kuhnian description, the author states that psychological schools were analogous to paradigms, and that a state of normal science (in Kuhn’s terms) could be reached. The main characteristics of the experimental synthesis of behaviour, as a programme for the unification of psychology, are as follows. (1) A behavioural level of explanation; psychology has its own level, which includes the behaviour of organisms and their varied relations to the environment; behaviour is not reducible, in strict sense, to biology or to social science. (2) The method is experimentation, but in the initial stages importance is given to observational and correlational procedures. (3) Emphasis is on learning: Human behaviour is primarily learned, with a biological (genetic) basis. (4) The wide range of phenomena that are to be explained include all the traditional fields of scientific psychological research. (5) Emphasis is also on the environment, both social and physical. (6) Importance is given to the basic technology derived from behavioural research.

La synthèse expérimentale du comportement est un programme pour l’unification de la psychologie. Le cœur central de la théorie est l’analyse comportementale et son but est d’expliquer les résultats de la psychologie contemporaine dans des concepts comportementaux. La synthèse expérimentale du comportement n’est pas éclectique. A la suite d’une description post-kuhnienne, l’auteur affirme que les courants psychologiques étaient analogues aux paradigmes et qu’un état de science normale (en utilisant les termes de Kuhn) pourrait être atteint. Les principales caractéristiques de la synthèse expérimentale du comportement, tel que le programme d’unification de la psychologie sont: (1) Un niveau d’explication comportemental; la psychologie a son propre niveau qui inclut le comportement des organismes et leurs diverses relations à l’environnement; le comportement ne peut être réduit, au sens stricte du terme, à la biologie ou à la science sociale. (2) la méthode est l’expérimentation mais, dans les stades initiaux, une importance est donnée aux procédures observationnelle et corrélationnelle. (3) L’emphase est sur l’apprentissage: le comportement humain est essentiellement appris, avec une base biologique (génétique). (4) Le large éventail de phénomènes à expliquer inclut tous les domaines de la recherche psychologique scientifique. (5) L’emphase est aussi sur l’environnement, à la fois social et physique. (6) Une importance est donnée à la technologie de base dérivée de la recherche comportementale.

La síntesis experimental del comportamiento es una propuesta programática para la unificación de la psicología. El núcleo central de la teoría es el análisis del comportamiento, y su objetivo es explicar los hallazgos de la psicología contemporánea en conceptos comportamentales. La síntesis experimental del comportamiento no es “eclectica”. Siguiendo una descripción post-kuhniana el autor afirma que las escuelas psicológicas pueden considerarse análogas a los paradigmas y que la psicología puede alcanzar un estado de ciencia normal (en los términos de Kuhn). Las principales características de la síntesis experimental del comportamiento como programa para la unificación de la psicología son las siguientes: (1) El nivel comportamental de explicación; la psicología tiene su propio nivel de acción que incluye la conducta de los organismos y sus relaciones con el ambiente; la conducta no es reducible en sentido estricto a la biología ni a la ciencia social. (2) El método es la experimentación, pero en los estados iniciales se le da importancia a los procedimientos observacionales y correlacionales. (3) El énfasis en el aprendizaje; la conducta humana básicamente es aprendida con un fundamento biológico (genético). (4) El amplio rango de fenómenos que se explican, que incluye todos los campos tradicionales de la investigación científica en psicología. (5) El énfasis en el ambiente, tanto social como físico. (6) La importancia que se le otorga a la tecnología derivada de la investigación conductual.

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INTRODUCTION

The disunity of psychology is considered to be one of the problems of greatest concern faced by the discipline. A number of authors have referred to this topic as one of the main problems facing psychology at the beginning of the 21st century (see Sternberg, 2005). This is also a very relevant issue in behaviour analysis, when referring to the “different behaviorisms” (see Baum, 2005; O’Donohue & Kitchener, 1999).

The present author has proposed a unifying paradigm for psychology called the experimental synthesis of behaviour. It has its roots in the experimental analysis of behaviour (Skinner) but goes beyond it, and its main objective is to obtain consensus in relation to the basic issues of psychology as a discipline. This paradigm follows Kuhn’s (1970) analysis of the development of science in terms of paradigms. The experimental synthesis of behaviour considers that the “schools” of psychology are analogous to the paradigms proposed by Kuhn in his analysis of the historical development of the scientific disciplines.

The disunity of psychology has not been good for the discipline, and has produced much confusion and controversy. The nature of psychology has been discussed for many decades, and psychology has been defined as the study of the “soul,” of the mind, and of behaviour. Probably at the present time the great majority of psychologists define the discipline as the study of the behaviour of organisms.

In spite of the controversies that gave origin to “schools,” to systems, and to the present concern for the problems of unification of psychology, the facts found in a given investigation are recognized by all specialists. However, the scientific findings that do not fit in our particular theory are not taken into consideration when a comprehensive explanation of the phenomena is proposed. In this sense, theory orients scientific research and also influences the analysis of the results.

The experimental synthesis of behaviour (Ardila, 1993) is an effort in the direction of unification of psychology. Its name derives from the experimental analysis of behaviour, and it can be considered a post-Skinnerian development. Since its original presentation, a large number of groups have been formed in different countries (Spain, Chile, Puerto Rico) that are working in this paradigm and have produced important results.

ORIGINS

As with all sciences, psychology had many births. The “official” one was that at Leipzig, in the fall of 1879, when Wundt founded the first laboratory of experimental psychology. Investigations were conducted using the methods of natural sciences—especially those of physiology—and psychology formally became a branch of science and not of philosophy. There were other parallel “births” more or less at the same time. Boring’s (1950) version, which is the “official” one, has been confronted with other versions that place the origins at different times. But all versions began in Europe at around the same time—the last part of the 19th century. A total of eight schools of psychology emerged from this time. They are as follows.

Wundt’s psychology was called *voluntarism*, but as time passed, and because of Titchener’s influence, it became known as *structuralism*. Science chroniclers consider it the first psychological school. The second was *functionalism*, which was “born” in Chicago in 1896. Its main practitioners were Angell, Carr, Dewey, and Woodworth, all of whom were restless with Wundt’s psychology, it being too static for the United States spirit.

Reflexology has its origins in Pavlov’s and Bechterev’s Russia. It is a laboratory science that was intended to give a physiological basis to the propositions of the British associationists. However, it was somewhat reductionist and too physiological. Dogs, but also humans, were studied and, under Darwin’s influence, were considered members of life’s kingdom.

Behaviourism cannot be understood without studying the work of Watson, a man who was very interested in impacting the world. His life and work were directly related to the time and place in which he lived: the United States during the first decades of the 20th century. Wundt had insisted that psychology was the study of consciousness. Watson, however, insisted that it was the study of behaviour and that it did not need to make any reference to consciousness, just as physics and chemistry did not need to. Watson changed the way we look at psychology today. Now, everybody defines it as the science of behaviour or conduct.

Gestalt was the product of three Germans: Wertheimer, Kohler, and Koffka, intellectual descendents of the most traditional way of thinking of their country, who felt uncomfortable with the analytic emphasis placed on psychology at the time. For gestaltists, the “structured whole” was to be studied, instead of the analysis of the elements of consciousness, or behaviour.

Lewin's *topology* has much to do with gestalt theory, although its structure is very different. It is the application to social and child behaviour of the ideas of a man who was too creative and original to be restricted to other schools of thought. Lewin's topology has had many applications, i.e., to industry, conflict theory, and human development.

Meanwhile, Freud was working in Vienna, treating patients with functional nervous problems that other physicians were not able to treat. His experiences helped him to develop a psychological school, *psychoanalysis*, which was very different from the rest, and which the public found more acceptable than structuralism, functionalism, reflexology, behaviourism, gestalt, and topology. Psychoanalysis was interested in sexuality, aggression, the early infancy, dreams, myths, literature and anthropology. Initially, Freud was ignored, then deified, and finally, given the recognition he deserved.

Finally, there is Binswanger's school of *existential psychology*. Much is owed to Kierkegaard, Husserl, and other philosophers of existentialism for the formation of this school of thought.

These eight psychological schools—structuralism, functionalism, reflexology, behaviourism, gestalt, topology, psychoanalysis, and existential psychology—belong to the past. Today, there are no psychological schools in existence. A school implies a global conceptualization of a particular work field. This is somewhat similar to Kuhn's (1970) paradigms, although he could not completely agree with our analysis of the concept of paradigm and its application to the development of psychology. The creators of these schools considered that they had the explanation for all psychological phenomena, that they had adequate methodology, and also that they could ignore all that was done by other schools. On the other hand, a school of thought neatly centres on one person (Wundt, Carr, Watson, Freud, etc.), both

geographically and conceptually, and is one way of confronting phenomena.

There were schools in all sciences, and not only in psychology. They represent an adolescent stage of development, a dogmatic and simplistic way of studying phenomena. Initially, there were schools in physics, chemistry, astronomy, and biology; now they exist in economics, anthropology, linguistics, sociology, and other behavioural sciences. However, with the development of knowledge, all schools die a natural death. Thus, I believe that, just as chemists no longer believe in flogism, nor biologists in vitalism, so, there are no structuralists, classical behaviourists, or reflexologists to be found in psychology today.

Today, nevertheless, psychologists still differ in methodology, working fields, and worldviews. But today we do not have psychological schools; we have psychological systems. The difference is that systems are not as dogmatic as schools; they depend less on a working style, a single exponent, and a geographical area.

Nowadays, we have five psychological systems: neo-behaviourism, neo-psychoanalysis, cultural psychology, humanistic psychology, and cognitive psychology (see Table 1).

Neo-behaviourism can be linked to Hull and Skinner's highly refined systems. It places great importance on the philosophy of science. However, Hull considered hypothetic-deductive methodology to be of most importance, whereas Skinner suggested that inductive methodology should take priority. Skinner's greatest advantage over Hull is that his work involves laboratory studies and practical applications. Any science cannot be considered so without technology, and Skinner's radical behaviourism originated a technology that is not found in Hull's work. Skinner calls his system the "experimental analysis of behaviour," and it is a psychology that is still in force today.

TABLE 1
"Schools" of psychology, systems of psychology and the unifying paradigm

<i>"Schools" of psychology</i>	<i>Systems of psychology</i>	<i>Unifying paradigm</i>
Structuralism		
Functionalism	Neo-behaviourism	
Reflexology	Neo-psychoanalysis	
Behaviourism	Humanistic psychology	Experimental
Psychoanalysis	Cultural psychology	synthesis of behaviour
Gestalt	Cognitive psychology	
Topology		
Existential psychology		

Neo-psychoanalysis incorporates the ideas of Freud, the “ego” analysis, and the importance of social factors. Erick Fromm, Karen Horney, and other neo-psychoanalysts have a conceptualization of man that basically depends on psychoanalysis, but which has moved away from Freud in many important areas.

Cultural or dialectic-materialistic psychology began with Vygotsky and structured itself through Leontiev, Luria, and other thinkers interested in creating a dialectic, historic, and Marxist psychology. For them the mind is the result of history; man reflects natural reality, transforms the world, and is transformed dialectically by such a world. Social structure is a macrosystem within which human actions make sense. Consciousness is a product of history. Today the term “cultural psychology” is preferred to name this system.

The fourth system in force today, *humanistic psychology*, owes much to Maslow and May. Its origins are in what they termed here and now, and its roots are in existentialism—as are the techniques required to understand and help humans.

Cognitive psychology is a general approach to psychology that emphasizes the internal mental processes. For cognitive psychology, behaviour is not specifiable simply in terms of its overt properties but requires explanations at the level of mental events, mental representations, intentions, beliefs, and so forth. Cognitivists are not necessarily anti-behaviourists but consider that behaviourism fails to provide a coherent characterization of cognitive processes (thinking, language, decision-making).

These five systems—neo-behaviourism, neo-psychoanalysis, cultural psychology, humanistic psychology, and cognitive psychology—are less dogmatic than the schools already described. They do not attempt to answer all the questions. They centre less on one person’s ideas in a single geographical area, and more on a philosophical conceptualization.

Where are we heading? From schools we have passed to systems. We are heading towards a unified concept of psychology—in its philosophy and praxis—as a science and a profession. This is a unifying paradigm in the way that Kuhn conceived it. However, it is not an eclectic system, but a paradigmatic conceptualization that could unify psychology.

I have called this conceptualization the *experimental synthesis of behaviour*. It comes from neo-behaviourism, as its name indicates, but goes beyond this.

In the new paradigm, consciousness is integrated with behaviour and is considered a social-historical

product. Some elements of psychoanalysis are thought of as having relevance for a new psychology. Humanistic values and psychology within an existential framework are emphasized, and the term *behavioural humanism* is used. And all this is integrated to a neo-behaviourism that is less dogmatic, more integrative, and far-reaching.

For some writers, unification of psychology is not possible. Some even think that there are no laws in psychology. Others consider that neither computers nor rats have anything to do with psychological work. There is no scientific knowledge in psychology and, subsequently, a technology has never been developed, since a technology presupposes the existence of a science. It is also said that no converging points can be found between the ideas of Kornilov, Leontiev, Staats, Piaget, and Freud, and that speaking of unification of psychology is just a proposition of a new psychological school.

The experimental synthesis of behaviour intends to study the behavioural level of explanation. It places great importance on learning, and considers that complex problems are to be studied precisely, and more adequate mathematic models employed. It wishes to go beyond dogmatism and “schools,” which only fragmented psychology.

In the search for this paradigm, onto- and filogenetic factors have a central position. Work is done within a behavioural humanism that gives sense to what psychologists are trying to do in understanding and modifying the world. The model of the experimental synthesis of behaviour should be sufficiently integrated and flexible at the same time, so as to embrace all fields of *scientific psychology* without becoming eclectic.

THE DISAPPEARANCE OF PSYCHOLOGICAL SCHOOLS

As we said earlier, since Wundt’s time a series of psychological schools have been proposed to explain human behaviour. They were usually centred around authors, such as Wundt, Dewey, Pavlov, Freud, Watson, Werthelmer, Lewin, and Maslow, a set of beliefs, and methods. Each school attempted to define psychology and start from the beginning. The founders of each school knew what the other schools were doing, but did not acknowledge them: Freud knew of Wundt’s work, Pavlov was aware of what the gestalt psychologists were doing, and so on. But every one of them began with different assumptions, had different models of man, and different definitions concerning what psychology was about. Each school was

a closed world, impermeable to outside influence and findings that opposed its conceptual frame.

Although there are no psychological schools today, there are several approaches to psychology. The five major approaches already described are neo-behaviourism, neo-psychoanalysis, humanistic psychology, cultural psychology, and cognitive psychology. The approaches began with different conceptual frameworks and conceptions of human beings. Psychology was defined in relatively different terms (even though there are many common elements), and different methodologies were used by each. In fact, we still do not have a unifying paradigm. The concepts of “school” and of “system,” which have caused so much harm to the development of our discipline, have not entirely disappeared, although there is a clear trend in that direction.

The application of Kuhn’s analysis of the history of sciences to the case of psychology has been critically discussed by several authors (see Driver-Linn, 2003). In our case, we are using Kuhn’s ideas in a way that is different from his original formulation; the classical schools of psychology are considered analogous to Kuhn’s paradigms (see also Staats, 1983).

CHARACTERISTICS OF THE EXPERIMENTAL SYNTHESIS OF BEHAVIOUR

The main characteristics of the experimental synthesis of behaviour are as follows.

1. *The level of explanation is behaviour.* Psychological phenomena do not need to be reduced to physiology or to sociology. Psychology is the science that studies the behaviour of organisms; it is not the science of mind.

2. *The method.* Experimentation has many advantages that the alternative methods do not have. However, in the initial stages of an area or in the investigation of a problem, many methods could be used: correlational, observational, field studies, case studies, qualitative methodologies. The experimental analysis of behaviour uses multiple methods depending on the problem under investigation. For different problems, different methods should be used.

3. *The emphasis on learning.* The large majority of behaviour is based on learning, particularly in the case of complex human behaviour. Our learning capabilities are based on our genetic predispositions, of course. But the patterns that the organisms present—and this is very clear in the case of human behaviour—are based on learning.

Because of that, learning is considered a basic process for psychological explanations.

4. *The range of behaviour to be explained.* The experimental synthesis of behaviour has its research program to explain the whole range of facts of scientific psychology. Some of the findings are clearly described in the context of specific “schools” or specific “methodologies,” but others are more general, for instance the issues of social psychology. The experimental synthesis of behaviour as a comprehensive explanation of behaviour should account for all the psychological facts, regardless of the frame of reference in which they were originally investigated.

5. *Emphasis on the environment.* The events that are observed and analysed in psychology are the interactions of the organism with the events and objects that constitute the stimulus factors in the environment. The relations are observable and measurable, and occur in time and space. Environment is both physical and social, external and internal.

6. *Technology.* A science from which no technology is derived will never have the social impact of one that gives origin to technology. Science and its applications sometimes go hand in hand. In many other cases technology precedes science and it is instigated by social demands.

At the international level, we can make a contribution to the understanding and possible solution of one of the greatest concerns of contemporary psychology, that is, current disunity. In this age of globalization, the search for communalities, and interest in points of convergence, this paradigm for the unification of psychology can be a step in the direction that psychology is taking in the new century.

REQUIREMENTS

The experimental synthesis of behaviour might become a unifying paradigm for psychology, and put an end to many of the problems currently faced by psychology at the conceptual level. In order to do so, the experimental synthesis of behaviour would need to do the following.

1. *The study of more complex problems.* This includes those related to cognitive processes, language, social behaviour, emotions, etc. This is already happening and there is an increasing tendency in this direction.

2. *The use, in an initial stage, of observational and correlational data.* It is clear that such data provide only general guidelines, and only

experimental data can provide the essence of science. But observational and correlational data provide useful information for future experimental work. It is not a question of making the method more flexible, but of not sacrificing important events due to the lack of methodological resources with which to study them experimentally.

3. *The use of mathematics and formulation of theoretical structures to integrate facts.* Experimental analysis of behaviour as a nontheoretical system is very close to facts, and this is highly important in the initial stages of a science. But with current developments we believe it is time to formulate theories—or at least micro-theories—and develop more comprehensive explanatory systems. Formulations are more adequate when mathematics is used.

4. *The eradication of dogmatism.* This was characteristics of “schools.”

5. *Emphasis on behavioural humanism.* Science has goals and objectives; it is a human activity. As such, science is ethically and politically neutral. However, the activity of a scientist—as human behaviour—has ethical and political implications. Science emerges in a specific social context. Its applications have several ideological and social implications. Experimental synthesis and its applications should serve humans. This principle has been named behavioural humanism, and is part of classical humanism, which states that “humans are the measure of all things.” However, it does not stop at words but searches for facts. It seeks to modify humans in an adaptive way—not to serve a political system but to serve human beings themselves. It assumes that, ultimately, there is an effective technology in psychology. Therefore, it can be applied for the betterment of human beings, and attempts to remedy the traditional problems of our species such as poverty, exploitation, mental illness, social dysfunction, tensions between groups, prejudice, negative attitudes, and many others.

IN CONCLUSION

The present time is heading toward convergence, globalization, points of unity, synthetic theories, cross-disciplinary bridges, etc. In the specific case of psychology a consensus has been obtained in certain basic aspects such as the subject matter of the discipline, some methodological issues,

philosophical frame of reference, etc. Maybe the unity is still far in the future, but some recent developments point in that direction.

A unifying paradigm implies the existence of a group of specialists who are united by an education and a common practice, and are aware of the work of other members of the group. It implies broad intra-professional communication, deep involvement in problems derived from the paradigm, and consensus concerning technical aspects of the discipline. This experimental synthesis aims to explain all the findings of scientific psychology in behavioural terms (defining “behaviour” in broad terms and including in that concept cognition, emotion, individual differences, and so forth); to utilize data from diverse origins (observational, correlational, to be used in controlled experimental research); to grant special importance to theory construction and mathematical modelling; to try to emphasize a humanistic frame of reference based on human behaviour—behavioural humanism. This integrative paradigm could help to make psychology a “normal” science: an established science that would be beyond the polemics and dogmatism that are characteristics of the initial stages in the development of all disciplines.

As Sternberg (2005, p. 5) pointed out, “Unity rather than fragmentation is the sensible path for psychology to take.”

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