

## **HISTORIA DE LA METODOLOGIA EN LA PSICOLOGIA MODERNA- ETAPAS DE DESARROLLO Y SITUACION ACTUAL EN ALEMANIA**

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### **RESUMEN**

El presente trabajo presenta un breve repaso de la historia de la metodología de la psicología moderna en Alemania a lo largo del siglo XIX y XX. Su desarrollo se puede entender como un proceso que dura unos 200 años aproximadamente y que puede ser descrito a través de seis estadios (fundación como ciencia empírica, institucionalización, surgimiento de grandes escuelas, descubrimiento de la psicología aplicada, profesionalización y servicio psicológico); siete líneas de desarrollo (física de la experiencia interior, psicología objetiva, fisiología del alma, psicofísica, concepto dual de la psicología, psicofísica de los procesos mentales superiores, y psicología general del desarrollo) y desde el punto de vista global de la teoría de los métodos como una evolución en tres fases, la transferencia, el disentimiento y el consentimiento. Actualmente, la metodología psicológica incluye cuatro grandes áreas que tratan de completar sus raíces. Éstas son: los fundamentos de la teoría metodológica, los fundamentos de la tecnología empírica, los fundamentos de la tecnología de la construcción y los fundamentos de la metodología de taxonomización (la explicación de esta parte no está incluida en el presente artículo por razones de tiempo y espacio). Ellas contienen las condiciones teóricas previas y los medios metodológicos que pueden ser usados para la investigación, el diagnóstico, la intervención y la evaluación.

### **ABSTRACT**

The paper contains a brief history of the methodology of modern psychology in Germany in the 19th and 20th century. The development can be seen as a process of about 200 years and described for a long time by six distinct stages (foundation as an empirical science, institutionalization, emergence of great schools, discovery of applied psychology, professionalization, and psychological service),

seven distinct lines of development (physics of inner experience, objective psychology, physiology of the soul, psychophysics, dual concept of psychology, psychophysics of higher mental processes, and general developmental psychology) and from the point of view of the theory of methods as the whole in terms of three phases, the transfer, the dissent and the consent stages. At present psychological methodology includes four large areas which go to make up its foundations. These are the foundations of methodological theory, the foundations of empirical technology, the foundations of construction technology, and the foundations of methodological taxonomizing (the explanation of this part is - by reasons of time and space - not included in the present paper). They contain the theoretical preconditions and the methodical means which can be used for research, diagnostic, intervention and evaluation purposes.

## 1. INTRODUCTION

The emergence of the discipline of modern psychology in Germany took place some 200 years ago. In the past 200 years psychological methodology has developed into a large, complex and widely branching discipline. During the intervening time psychology, already thousands of years old, became institutionalized and professionalized as empirical psychology. Its basis was the modern methodology developing during this time.

## 2. SIX DISTINCT ELEMENTS OF DEVELOPMENT OF MODERN PSYCHOLOGY

This time span, covering the past 200 years or so, may be characterized in brief for the time being by six distinct developments:

1) The foundation and development of the methods and the object of modern psychology. The "*foundation as an empirical science*", especially as an experimental science, took place at the beginning of the 19th century.

2) The institutional incorporation of modern psychology in higher education. The "*institutionalization*" of psychology starting in Leipzig in 1879 by Wilhelm Wundt (1832-1920).

3) The emergence of the "*great schools*" and their gradual integration into recent psychology from 1890 until 1940.

4) The discovery and development of fields of practice outside higher education. The "*applied psychology*" starting around 1890.

5) The development and qualification of the profession of a psychology graduate professionalization (i.e. university-trained psychologists working outside universities). The "*professionalization*" of psychology starting around the World War I.

6) The development of a psychology as service. The "*psychological service*" has intensified since World War II.

In Germany this emergence of the discipline was initially determined by experimental psychology. Its scientific view of methodological theory came via experimental physics and experimental physiology. To that extent it is understandable why the majority of so-called "*founding fathers*" of modern psychology started out as physicists or physicians, in particular experimental physiologists. For instance: Ernst Heinrich Weber (1795-1878), Gustav Theodor Fechner (1801-1887), Hermann von Helmholtz (1821-1894) or Wilhelm Wundt (1832-1920). Their experimental methods were initially defined by the three classical criteria of methods:

- 1) the independence of the method and the investigation of time and place,
- 2) the variability of conditions and
- 3) the voluntariness of production of the phenomena.

### 3. SEVEN DISTINCT LINES OF DEVELOPMENT OF MODERN PSYCHOLOGY

Within the first phase of the emergence of the discipline of modern psychology as experimental psychology seven distinct lines of development may be identified:

First of all we may point to attempt in the first half of the 19th Century to substantiate psychology on the example of physics as the "*physics of inner experience*". The advocates would include for example Johann Friedrich Herbart (1776-1841) and Friedrich Eduard Beneke (1798-1854). The "*physics of inner experience*" was successful as "*mathematical psychology*".

Then, secondly, there were efforts to substantiate psychology as "*objective psychology*" on the basis of behavior analysis. In this connection we may mention, as examples from the mid-19th Century, Friedrich Albert Lange (1828-1875) and Ivan Michailovitch Setchenov (1829-1905). It was later imported into the USA as "*behaviorism*" and as "*theory of higher nervous activity*" into the Soviet Union.

Thirdly there were efforts to establish psychology as the "*physiology of the soul*" or "*psychophysiology*". Attempts of this kind were made several times in the 19th Century. Outline concepts by Johannes Müller (1801-1858), Rudolf Hermann Lotze (1817-1881) or Hermann von Helmholtz (1821-1894) may be mentioned as examples. The "*Physiology of soul*" influenced the "*physiological psychology*".

In the fourth place we may mention the attempts to substantiate psychology on the pattern of physics as "*psychophysics*". Scattered examples of these attempts too can be seen throughout almost the whole of the 19th Century: we may cite Ernst Heinrich Weber (1795-1878), Gustav Theodor Fechner (1801-1887), Hermann von Helmholtz (1821-1894), and Georg Elias Müller (1850-1934). The "*Psychophysics*" influenced the psychology of perception, measurement, the scaling methods, and the methodology in generally.

The fifth line of development we can identify is the attempt to establish a "*dual concept of psychology*". It consisted in developing both an experimental and a non-experimental psychology. Wilhelm Wundt (1832-1920) with his "*physiological psychology*" on the one hand and his "*social psychology*" (Völkerpsychologie)

on the other may be cited as the prototype since the middle of the 19th Century, while Rudolph Hermann Lotze (1817-1881) may be mentioned as another advocate. Lotze added to his "*physiology of the soul*" a non-experimental "*philosophy-psychology*". The dual conception as "*experimental*" as well as "*non-experimental psychology*" was especially successful to the institutionalization.

Year	Founder	City	Country
1879	W.M. Wundt	Leipzig	Germany
1886	H. Ebbinghaus	Berlin	Germany
1888	G.E. Müller	Göttingen	Germany
1888	H. Münsterberg	Freiburg/Br	Germany
1891	G. Martius	Bonn	Germany
1893	C. Stumpf	Berlin	Germany
1994	H. Ebbinghaus	Breslau	Germany
1894	A. Meinong	Graz	Austria
1896	O. Külpe	Würzburg	Germany
1896	H. Cohen	Marburg	Germany
1897	B. Erdmann	Halle	Germany
1900	C. Stumpf	Berlin	Germany

The first foundations of departments of psychology in Germany and Austria after Wilhelm Wundt's foundation in 1879 in Leipzig (In W.S. Sahakian (1975), S. 138-140; complemented by Sprung, L & Sprung, Helga).

Sixthly, we may refer to attempt to develop a "*psychophysics of higher mental processes*". Both its methods and its object were not related to so-called elementary psychic processes such as perception but rather investigated higher psychic areas such as judgment formation, memory or cognition. Gustav Theodor Fechner (1801-1887) made these attempts initially in the framework of his "*experimental aesthetics*" in the 1870s. A short time later, in the 80s, Hermann Ebbinghaus (1850-1909) undertook this attempt in the field of "*memory psychology*". He was followed some years later, around the end of the 19th Century, by Georg Elias Müller (1850-1934) and his pupils Adolph Jost (1874-?) and Alfons Pilzecker (1865-1949) in the field of memory psychology. One may go on to refer to Carl Stumpf (1848-1936) and his investigations in the "*psychology of tone*", which he understood as a "*measuring theory of judgment*". The "*psychophysics of higher mental processes*" influenced the cognitive psychology, the psychology of volition, and the psychology of emotions.

Finally, in seventh place, let us mention the efforts to substantiate a "*general developmental psychology*" as an empirical child psychology on the one hand and as comparative psychology on the other. The forerunners may be said to include Karl Philipp Moritz (1756-1793), Herbert Spencer (1820-1903) and Charles Darwin (1809-1882). And we may refer directly to Dietrich Tiedemann (1748-1803), Adolf Kussmaul (1822-1902) and above all William Preyer (1841-1897) and William Stern (1871-1938).

At this time, the first psychological journals were founded, for example, the *Zeitschrift für Völkerpsychologie und Sprachwissenschaft*, founded by Moritz Lazarus (1824-1903) and Hajim Steinthal (1823-1899) in 1860; the *Philosophische Studien*, founded by Wilhelm Wundt (1832-1920) in 1881; the *Zeitschrift für Psychologie und Physiologie der Sinnesorgane*, founded by Hermann Ebbinghaus (1850-1909) and Arthur König (1856-1901) in 1890. In 1904, the *Gesellschaft für experimentelle Psychologie* (Society for Experimental Psychology), later called *Deutsche Gesellschaft für Psychologie* (German Society for Psychology) was founded by Georg Elias Müller (1850-1934).

#### 4. MODERN PSYCHOLOGY IN THE TRANSFER, THE DISSENT AND THE CONSENT STAGES

From the point of view of the theory of method the history of methodology of modern psychology can be described in terms of three phases: the transfer, the dissent and the consent stages.

The transfer stage is marked by the predominant transferal of theoretical and methodological notions from the leading sciences of any given age to psychology.

It began in ancient Greece about 600 BC but entered a new phase at the beginning of the 19th Century. It was characterized by the transfer already mentioned of experimental and mathematical methods from physics and from physiology to psychology.

The dissent stage began with the achievement of institutional independence in the last third of the 19th Century and lasted until into the 1940s. It was marked by disagreement between the various schools and movements on methodological theory. It was typical that initially a theory-method and a problem-method relationship specific to the problem area was developed that was then monopolized step by step. Recall the example of Gestalt psychology, which began as cognitive psychology and perceptual psychology. Later it extended the principles and techniques developed in these fields to all fields of psychology. Let us refer, further, to psychoanalysis, which began as hysteria research, or to behaviorism, which began as learning psychology. These schools too later developed out of their original working area an analogous claim to universality as was typical of Gestalt psychology.

The (relative) consent stage began in the 1930s and 40s and is still going on. What was, and still is, typical is the increased penetration of systematic experimental, quasi-experimental and mathematical methods into modern psychology. And what was, and still is, typical is also the developments of its own principles and techniques for the construction, calibration and normalization of methods. For examples of the penetration of various methods into psychology let us draw attention to the methods of statistics, sample methods, design methods, and - in recent times - the methodology of the computer. One example of a methodological area in the autonomous development of psychology is test theory, which has meanwhile taken a firm place as an interdisciplinary construction and calibration theory of methods. What was characteristic of the consent stage of

methodological theory was that step by step a (relative) canon of a general methodology of the empirical human sciences emerged. At the same time the controversy between the schools gave way to a greater awareness of common ground and psychology became established as an independent profession practiced outside the universities and colleges. Due to this process the phase of «*institutionalization*» was supplemented by «*professionalization*» within the emergence of modern psychology and its empirical methodology.

##### 5. HISTORY OF METHODOLOGY FROM THE END OF THE 19TH CENTURY TILL NOW - A SHORT OUTLOOK AND THE CONTEMPORARY SITUATION

What did the development of methodology actually look like in detail after the 19th Century phase dominated by experimental psychology? Towards the end of the 19th Century a second stage of methodological development began. During this time the experimental methods were added to step by step by more or less standardized non-experimental methods. These were above all procedures based on documentation analysis and methods on the basis of the four paradigms: (1) the "*paradigm of performance*" (Leistungsparadigma), (2) the "*paradigm of judgment*" (Urteilsparadigma), (3) the "*paradigm of construction*" (Gestaltungsparadigma) and (4) the "*paradigm of interpretation*" (Deutungsparadigma). The documentation-analytical procedures were typical, for example, of folk psychology (Völkerpsychologie). While the performance, judgment, construction and interpretation methods for example were developed or received more in the developing "*medical psychology*", "*differential psychology*", and "*psychodiagnostics*".

A more rapid development and acceptance took place at the close of the 19th Century and intensified in the 20th Century. This phase began with the development of differential and diagnostic techniques. It was combined with the inclusion of statistical methods in data processing. As examples from the history of data processing methods let us cite: Gustav Theodor Fechner's (1801-1897) methods of data analysis («*Kollektivmaßlehre*»), Charles Spearman's (1863-1945) and Felix Krüger's (1874-1948) factor analysis or Ronald Fisher's (1890-1962) inferential statistics and analysis of variance. As examples from the history of differential and diagnostic methods we may point to: Francis Galton's (1822-1911) "*diagnostic tests*", James McKeen Cattell's (1860-1944) "*mental tests*", Emil Kraepelin's (1856-1922) "*experimental psychopathological diagnostics*", Hermann Ebbinghaus' (1850-1909) "*combination method*", Alfred Binet's (1857-1911) "*retardation-test*" and "*intelligence test*" or William Stern's (1871-1938) first "*IQ definition*" in 1912. These lines of development continued their course in various ways during the decades that followed. In this time various test theories were developed for example which ultimately led to the comprehensive field of contemporary construction and calibration theory of the methods of human sciences.

Compared to the relatively long history of research and diagnostic methods within psychological methodology the independent history of evaluation methods is quite short. It began at the beginning of the 20th Century but was for a long

time linked to the history of psychodiagnostics. The development of “*quality criteria*” (Gütekriterien) or of “*test norms*” we have already mentioned as examples of the development of evaluation methods. But their independent development did not begin, strictly speaking, until the last third of the 20th Century, especially in the 1970s and 80s. During this time the all-embracing concept of «*evaluation methods*» emerged.

The history of “*intervention methods*” would be an independent and highly differentiated field of its own, which we shall not go into, for reasons both of space and of special competence.

Psychological methodology today embraces a field which should be characterized as more precise than the “*Methodology of the Human Sciences*”. Its principles and techniques are neither confined to application within psychology nor do many of them emerge from the history of psychology.

At present psychological methodology includes at least four large areas which go to make up its foundations. These are: (1) the foundations of methodological theory, (2) the foundations of empirical technology, (3) the foundations of construction technology and (4) the foundations of methodological taxonomizing. They contain the theoretical preconditions and the methodical means which can be used for (1) research, (2) diagnostic, (3) intervention and evaluation purposes.

1. “*Research methods*” represent methods for generating new knowledge and skills. As such they explore new fields of study and evaluate new knowledge and skills on the basis of old.

2. “*Diagnostic methods*” on the other hand represent methods of searching taken from known areas of knowledge in unknown areas. In order, for example, to diagnose mental illnesses, one has to know them first. Diagnostic methods apply already acquired diagnostic knowledge to new diagnostic cases. As such they compare new cases with old.

3. “*Intervention methods*” are methods for goal-directed change of existing states and if possible also their causes. As examples we could cite therapeutic, teaching or learning methods. As such they apply acquired knowledge and skills in intervention to new cases. Thus they compare new cases of intervention with old.

4. “*Evaluation methods*” are methods of comparison and valuation. The evaluation methods applied for a long time within research, diagnosis and intervention methods include. For example: the test norms, the quality criteria (Gütekriterien), the level of significance of inferential statistics, the scale level on variables in estimation and measuring scales - or the methods of meta-analysis.

## 6. WHAT ARE EMPIRICAL PSYCHOLOGICAL METHODS TODAY AND WHAT FUNCTION DO THEY HAVE?

Empirical methods have the goal of gaining and evaluating relevant and intersubjectively controlled experiences in reality and/or changing existing conditions. The principles and techniques of methodology allow access to data whose capabilities can be determined with its help. In detail, they allow us to

estimate seven qualities of data according to an empirical study: (1) the validity, (2) the reliability, (3) the concordance, in other words the independence of the data from the researcher and the circumstances, (4) the normativeness, (5) the fairness, (6) the utility and (7) the representativity.

1. Methods are means of data collection and data processing in investigations. As such they provide evidence for or against hypotheses which are intended to explain phenomena and their constitutive conditions. In this way they evaluate areas of investigation and objects of investigation.

2. Methods are means of operationalizing variables in empirical designs. As such they make an empirical design controllable. Thus they evaluate empirical designs.

3. Methods are means of intervening into an area of reality with intent to change it. As such they represent means of evaluation and thus evaluate the independent variables of an empirical design. Thus, following empirical investigations, they allow the explanatory level of the results to be assessed within an interpretation.

4. Methods are an indicator of the stage of historical development of a science. As such they refer within the history of a discipline to the stage of development of various areas of possibility which the methods have opened up. That applies to: (1) the area of possibility of technical feasibility, (2) the area of possibility of the theoretically verifiability, and (3) finally the area of possibility of practical applicability. To this we may add the value of methods as socio-historical indicators. It is in the area of application and development of new methods that the goals and the requirements that a society sets upon a science. To that extent methods indicate the stage of historical development of a science.

So we can say today, in the past 200 years psychological methodology has developed into a large, complex and widely branching discipline.

#### REFERENCIAS BIBLIOGRAFICAS

- Albert, D. & Gundlach, H. (1997). (Hrsg.). *Apparative Psychologie: Geschichtliche Entwicklung und gegenwärtige Bedeutung*. Lengerich: Pabst.
- Ash, M. G. (1995). *Gestalt psychology in German culture, 1890-1967. Holism and the quest of objectivity*. (Cambridge Studies in the History of Psychology). Cambridge: University Press.
- Bringmann, W.G., Lück, H.E, Miller, R. & Early, C.E. (Eds.).(1997) *A Pictorial History of Psychology*. Chicago: Quintessence.
- Carpintero, H., Lafuente, E., Plas, R. & Sprung, L. (Eds.).(1992). *New Studies in the History of Psychology and the Social Sciences. Proceedings of the Tenth Meeting of Cheiron. European Society for the Behavioral and Social Sciences*. Valencia: Revista de Historia de la Psicología, Monographs 2.
- Eckardt, G.; Bringmann, W.G. & Sprung, L. (Eds.).(1985). *Contributions to a History of Developmental Psychology*. Berlin: Mouton.



- Gundlach, H. (Hrsg.).(1996). *Untersuchungen zur Geschichte der Psychologie und der Psychotechnik. Passauer Schriften zur Psychologiegeschichte*. Band 11. München: Profil.
- Guthke, J.; Böttcher, H. R. & Sprung, L. (Hrsg.).(1990). *Psychodiagnostik. Band 1*. Berlin: Deutscher Verlag der Wissenschaften.
- Jaeger, S., Staeuble, Irmingard, Sprung, L. & Brauns, H.-P. (Hrsg.).(1995). *Psychologie im soziokulturellen Wandel - Kontinuitäten und Diskontinuitäten*. Frankfurt am Main: Lang.
- Jonas, H. (1984). *Das Prinzip Verantwortung. Versuch einer Ethik für die technologische Zivilisation*. Frankfurt am Main: Suhrkamp.
- Lück, H. E. & Miller, R. (Hrsg.).(1991). *Theorien und Methoden psychologiegeschichtlicher Forschung*. Göttingen: Hogrefe.
- Lüer, G. & Lass, Uta (Hrsg.). *Erinnern und Behalten. Wege zur Erforschung des menschlichen Gedächtnisses*. In *Abhandlungen der Akademie der Wissenschaften in Göttingen in Verbindung mit der Wilhelm-Wundt-Gesellschaft*. Heidelberg. Mathematisch-Physikalische Klasse. Dritte Folge. Nr. 47. Göttingen: Vandenhoeck & Ruprecht.
- Müller, M. (1992). Methodenentwicklung in der Psychologie - Ein kursorischer Rückblick auf 200 Jahre. *Wissenschaftliche Zeitschrift der Humboldt-Universität zu Berlin, Reihe Geistes- und Sozialwissenschaften*, 41 (1), 23-32.
- Pastor, J. C., Sprung, L. & Sprung, Helga (1997). La escuela berlina de psicología Gestalt - Aspectos relacionados con su origen y desarrollo. *Revista de historia de la psicología*, 18, 1-2, 245-256.
- Sahakian, W.S. (1975). *History and Systems of Psychology*. New York: Wiley and Sons.
- Schönpflug, W. (1993). Applied Psychology: Newcomer with a long tradition. *Applied Psychology: An international Review*, 42, 5-66.
- Schorr, A. (Hrsg.).(1994). *Die Psychologie und die Methodenfrage. Reflexionen zu einem zeitlosen Thema*. Göttingen: Hogrefe.
- Sprung, H. (Hrsg.).(1997). *Carl Stumpf -Schriften zur Psychologie*. Neu herausgegeben, eingeleitet und mit einer biographischen Einführung versehen. Frankfurt am Main: Lang.
- Sprung, H. y Sprung, L. (1983). William Preyer, Psicólogo y Metodólogo. *Revista de Historia de la Psicología*, 4, 2, 101-112.
- Sprung, L. & Sprung, H. (1984). *Grundlagen der Methodologie und Methodik der Psychologie - Eine Einführung in die Forschungs- und Diagnosemethodik für empirisch arbeitende Humanwissenschaftler*. Berlin: VEB Deutscher Verlag der Wissenschaften (2. Auflage 1987).
- Sprung, L. & Schönpflug, W. (Hrsg.).(1992). *Zur Geschichte der Psychologie in Berlin*. Frankfurt am Main: Lang.
- Sprung, L. & Sprung, H. (1998). La evolución de la psicología académica en Alemania II: la psicología "moderna" hasta 1945. En F. Tortosa Gil (Ed.), *Una Historia de la Psicología Moderna*, (p.141-152). Madrid: McGraw Hill
- Sprung, L. & Sprung, H. (1999). History and Trends in the Development of Psychology in Germany. In W. Szewczuk (Ed.), *Psychological Encyclopedia*. Warsaw: Fundacja Innowacja. (In print).

- Steyer, R. & Eid, M. (1993). *Messen und Testen*. Berlin: Springer.
- Traxel, W. (1975). *Grundlagen und Methoden der Psychologie*. Bern: Huber.
- Traxel, W. (1995). *Geschichte für die Gegenwart (II)*. Vorträge und Aufsätze zur Psychologiegeschichte. Passauer Schriften zur Psychologiegeschichte. Band 10. Passau: Passavia.
- Viney, W. & Brett King, D. (1998). *A History of Psychology. Ideas and Context*. Second Edition. Boston: Allyn and Bacon.
- Woodward, W. R. & Cohen, R. S. (Eds.).(1991). *World Views and Scientific Discipline Formation. Boston Studies in the Philosophy of Science*. Volume 134. Dordrecht: Kluwer.