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# Historical Note

## Born of Animal Magnetism: 150 Years of Psycho-Physiology

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ABSTRACT

**The historical beginnings of the scientific discipline of psychophysiology are traced back to the first published English definition by Dr. Samuel Adams, M.D.**

**DESCRIPTORS: Psychophysiology, History of psychology, Animal magnetism, Mesmerism.**

The emergence of psychophysiology as a scientific discipline is traditionally dated at some time during the latter half of the 19th century (Müller-Freienfels, 1935). Chester Darrow, in his presidential address at the first meeting of The Society for Psychophysiological Research in 1961, assigned both a year and a day to the birth of psychophysiology:

> We must remember that it was at the end of the 19th century, only the day before yesterday, that psychophysiology was born. In 1872 Darwin published *The Expression of Emotions in Man and Animals*, only 14 years following the *Origin of the Species*. (Darrow, 1964, p. 11)

We would like to suggest, however, that the birth of psychophysiology actually occurred 33 years prior to Darwin's seminal publication. We base this claim on what is possibly the first published definition of psychophysiology. According to the Oxford English Dictionary (Simpson & Weiner, 1989), the term psychophysiology was introduced into the English language in April of the year 1839 by Dr. Samuel Adams, M.D., Professor of Chemistry, Mineralogy and Geology at Illinois College, Jacksonville, Illinois, USA, in an article entitled, "Psycho-Physiology, Viewed in its Connection with the Mysteries of Animal Magnetism and other Kindred Phenomena."[1]

This claim will undoubtedly be met with some skepticism among psychophysiologists because this article appeared in the periodical literature decades prior to the publication of either Gustav Fechner's *Elements of Psychophysics* (1860/1966), Guillaume Duchenne's *The Mechanism of Human Physiognomy* (1862), Ivan Sechenov's *Reflexes of the Brain* (1863/1965), Alexander Bain's *Mental Science* (1868/1973), Charles Darwin's *The Expression of Emotions in Man and Animals* (1872/1965), or Wil-

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[1]This article might have been discovered earlier if the historical work begun by R.C. Davis had been completed. In an article published in the *Psychological Review* on the development of American psychology between the years 1800 and 1885 Davis wrote that he had: "... a bibliography compiled from the Library of Congress, listing, between 1820 and 1885, 72 works on phrenology and 51 on mesmerism, under various names. It would be an extraordinarily faithful historian who would attempt to survey this material in detail" (Davis, 1936, p. 482).

helm Wundt's *Principles of Physiological Psychology* (1873/1904). However, the reference is correct. It appears that Dr. Adams coined the term psychophysiology in order to crystallize the argument that scientists are justified in theorizing about the influence of the mind over the body as long as they begin with the postulate that the brain is the physiological embodiment of mind. He argued, as did others in his day (see Zangwill, 1987), that this presupposition was of critical importance if science was to accept the existence of psycho-physiological phenomena while at the same time rejecting metaphysical explanations as untenable. He specifically used this argument to demonstrate how it is possible to understand the mysteries of witchcraft, mesmerism, and other such phenomena without postulating unknown physical agencies such as animal magnetism. We quote here from his original article:

> By psycho-physiology we understand that department of the philosophy of mind, which belongs to the province of physiology, as distinguished from any metaphysical classification or description of mental powers. Under this head we shall examine briefly the reciprocal relations of the body and the mind. We shall particularly notice the influence of some of the mental states upon the functions of the body; and shall endeavor to derive from the examination a light, which will enable us to explain the mysteries of animal magnetism and kindred phenomena, which may properly be said to remain, after making the necessary deductions of imposture and the exaggerations of ignorance and credulity.
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> The execution of our plan will lead us into a brief examination of the physiology of the nervous system. The general truths of this department of science are too well established to require any detailed development in this place. Neither will it be necessary to present the grounds of many of the positions, which we shall assume as already established by the science of physiology. We may take it for granted, that the brain is, par excellence, the material instrument of the mind, and that it performs an important office in each of the functions of sensation and voluntary motion. (Adams, 1839, p. 364).

Following this definition, Adams provided a brief exposition concerned the "laws of psychophysiological sympathy" and then focused much of his attention on developing a functional account of how higher mental processes might influence perceptual experience. In a companion article, Adams (1841) examined the other side of the psycho-physiological equation and discussed the relationship between the mind and the somatic system. What is remarkable in the present context is that a significant portion of his discussion concerns the reciprocal influence of facial muscular action upon ongoing mental processes. Again, we quote from his original article:

> We are persuaded that a few experiments will convince any one of the correctness of the views we are presenting. Let one try to feel cheerful, with an expression of gloom on his countenance, or to feel gloomy, while a smile is playing on his features; and he will be convinced that the only way to change the current of the feelings is to lead the way by the expression of the countenance. He will also find, that a vacant indifference of expression is incompatible with any considerable movement of the emotions. In a voluntary effort to call up an emotion, by assuming its expression, something like the following phenomena seem to be observable. 1. The mind is thrown into a state corresponding to the external expression. 2. The imagination is simultaneously roused to action, and seems struggling to call up some object or image, suited to sustain the emotion, which has been forced, as it were, upon the mind. 3. If the imagination speedily seizes upon some object calculated to perpetuate the given emotion, the countenance continues settled and expressive, and the emotion acquires a certain degree of steadiness and permanency. 4. But if, on the contrary, the imagination fails to call up an object suited to give permanency to the mental state, the result will differ according to the nature and strength of the emotion. If the emotion expressed be a placid one, and no object or image spring up before the mind to sustain it, the expression of the countenance will soon subside into vacancy, and the mental emotion into momentary fatuity. But if the passion expressed be strong and turbulent in its character, and its expression require a strong muscular effort, without any object before the mind to preserve its equilibrium, the countenance becomes discomposed and expressive of an unnatural frenzy, and the mind run wild into momentary delirious excitement.
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> ... We do not wish to be understood, in the above discussion, as pretending to be able, in all instances, to trace out with certainty the exact relations between cause and effect. We only claim to be able, in a series of psychophysiological phenomena, to point out, with a high degree of probability, the first link in the chain of connection by which they are bound together. Whenever the mind acts upon the body, a corresponding state is produced in the latter, which in turn reacts upon the mind; and thus it is by a sort of reflex sympathy or reciprocal action of body and mind, that the effect rises to its maximum; so that it would hardly be philosophical to refer the ultimate result to the first link in the chain of causation, without taking into consideration the intermediate connection. (Adams, 1841, pp. 332–334).

By all accounts, Dr. Samuel Adams (1806–1877) was an exceptional interdisciplinary scholar renowned for his analytical skills and encyclopaedic knowledge (DeMotte, 1944; Rammelkamp, 1928; Sturtevant, n.d.). He was a medical doctor, a natural linguist fluent in German, French, Latin, and Greek, a self-taught mathematician, a lover of science, a devoted student of the bible, and a highly revered teacher for over 40 years in the departments of English language and literature, mathematics and astronomy, mental and moral philosophy, modern

languages, and natural philosophy and chemistry at Illinois College.

The year 1989 marks the sesquicentennial of the publication of Adams' landmark paper. Although he was not the founder of psychophysiology as a formal scientific discipline (cf. Boring, 1950, pp. 193–194), Dr. Samuel Adams certainly deserves to be recognized as one of the originators of the psychophysiological approach to the scientific study of human behavior and experience.

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