

## Montessori, Maria

**Definition.** Maria Montessori (1870-1952) was an Italian physician and psychiatrist who became the founder of a new “scientific pedagogy” based on careful observation of children and informed by her distinctive approach to evolutionary psychological science.

### Introduction

Maria Montessori was born in Chiaravalle, Italy in 1870. As a child, she insisted – against the wishes of her father – that she be enrolled (as the only girl) in a school for future engineers. By 1890, she was one of first women enrolled in the medical school at the University of Rome. She quickly rose to the forefront of her medical school class and gained the esteem of Guiseppi Sergi, one of the leading psychologists in Italy at the time. Alongside Sante De Sanctis and Giuseppe Montesano, who both went on to play pivotal roles in Italian experimental psychology, Montessori was one of Sergi’s top students. In 1896, when she graduated from the University with a thesis in clinical psychology (supervised by De Sanctis, cf. Foschi, 2012). The same year, she served as a representative from Italy to an international women’s conference in Berlin, and she began working in clinical psychology in public hospitals in Rome. By 1900, she was teaching courses in pedagogical anthropology and working in a mental hospital that specialized in the treatment and education of “deficient” children. In this context, she engaged with the writings of Jean Marc Gaspard Itard and Édouard Séguin. She remained involved in public advocacy for women (e.g. at a major women’s conference in London in 1899) and began more actively advocating for children’s education. In 1902, she returned to the University of Rome, now as a student of philosophy, in order – as she put it – to “undertake the study of normal pedagogy and of the principles upon which it is based” (Montessori, 1912/1909:33). At the University, she was exposed to the ideas of Rousseau and Pestalozzi, but also – through professors like Antonio Labriola – to Hegel, Marx, and Nietzsche. Her interest in psychology, combined with an interest amongst Italian students in pragmatism, led her to engage seriously with William James. And she continued her engagement with the evolutionary positivism of Sergi and De Sanctis. By 1906, she was teaching courses in Pedagogical Anthropology at the pedagogical school of the University of Rome.

The pivotal moment in her transition to become a global leader in children’s education came in 1907, when she was invited to run a “Children’s House” that would be part of a progressive new approach to low cost housing in the San Lorenzo district of Rome. She had complete control over this classroom and used it as a laboratory for pedagogical techniques. In this context – described in detail in Montessori, 1912/1909 – she developed new teaching methods and materials and formulated the basic principles of her educational philosophy. Her *Metodo della Pedagogia Scientifica applicato all’educazione infantile nelle Case dei Bambini* (1909), translated into English with the regrettable title *The Montessori Method* (1912), made her an instant international sensation. Visitors travelled to Italy to study her educational methods, and she travelled throughout the world (including the World’s Fair in California in 1915) training teachers in her method and presenting her ideas about children’s development and scientifically-informed pedagogy. She left her private medical practice, her work at the children’s hospital, and her professorial teaching at the University of Rome to spend the rest of her life further developing her pedagogy by applying more theoretical rigor, incorporating further experimental results, and expanding the scope of her education to include all stages of life from infancy through adulthood. She promoted her philosophy through books, lectures, publications; and international training courses that would equip others to educate children in accordance with her method.

The core principle of her pedagogy is to “Follow the child,” that is, to accord the child complete liberty while providing the resources the child needs to use that liberty well. This liberty is not a reckless license; for Montessori, the indication that a child has an environment conducive to liberty is that a child finds opportunities for sustained attention on self-chosen work. Thus the educator must provide a carefully prepared environment with sufficient resources for the child to freely choose work that sustains attention and fosters development, and the educator must then allow the child to develop herself. In the context of her observations of children, Montessori noted distinct “sensitive periods” of the development

of fine-grained psychological traits and skills. She paid careful attention to the emergence of cognitive and social skills and to the essentially embodied nature of these skills, and she developed activities and material conditions to support progress through sensitive periods. She articulated a unique approach to “character” and to the socialization of human beings from infancy through adulthood. She applied her ideas to understanding human progress in general and even advocated for political change through education.

Montessori’s overall philosophy and her approach to developmental psychology are spread throughout her many publications and lectures. The most important sources for specifically understanding Montessori’s approach to evolutionary theory are her *Pedagogical Anthropology* (Montessori 1913/1910), where she directly tackles the evolutionary theories of her contemporaries; her elementary materials (particularly *From Childhood to Adolescence* (Montessori, 2007/1948) and *To Educate the Human Potential* (Montessori, 1993/1948)), where she describes how the basic nature of the universe should be taught to elementary school children; and occasional essays such as “The Unconscious in History” (Montessori, 2012/1948) that directly tackle metaphysical themes. Her approach to experimental psychology comes out best in *Montessori Method* (Montessori, 1912/1909), *The Formation of Man* (Montessori, 2007/1955), and – specifically in terms of her engagement with Freud – *The Secret of Childhood* (Montessori, 1966).

In the rest of this entry, I discuss Montessori’s general approach to evolution, her distinctive account of the proper nature of experimental psychology, and then briefly touch on how her evolutionary psychology relates to her pedagogy.

### **Evolution and the Spiritual Embryo**

One of Montessori’s key theoretical insights was her concept of the “spiritual embryo,” the notion that human beings are born in a psychologically embryonic stage. Substantively, this implies that children are forming their basic psychological structures during the first six (especially the first three) years of life. Methodologically, it implies that many of the principles of embryology can be used to understand early childhood development. And systematically, the emphasis on embryology informs Montessori’s whole conception of biological systems and even her theory of evolution.

In one of Montessori’s earliest publications, she explicitly discusses different theories of evolution, and while she acknowledges “the glorious leadership of Darwin” (Montessori, 1913:5), she describes his theory (alongside those of Lamarck and St. Hilaire) as a “mechanical or materialistic theory of evolution” according to which “the environment is regarded as the chief cause of the evolution of organic forms” (Montessori, 1913: 46). In preference to such theories, she endorses “other less familiar theories of evolution” proposed by Carl Naegeli, Gregor Mendel, and especially Hugo deVries (Montessori, 1913, 46-51). These theories are informed more by close investigation of biological *development*, and they “attribute the variability of species to *internal*, rather than external causes – namely, to a spontaneous activity, implanted in life itself, and analogous to that which is witnessed in the development of an individual organism, from the primitive cell up to the final complete development” (Montessori, 1913:46). Methodologically, the key move here is the suggestion that there is an analogy between the development of individual organisms and evolution of species. Substantively, this leads to a focus on internal drivers of evolutionary development. To some extent, this aspect of Montessori’s position is already implicit in Darwin and has now become standard biological orthodoxy. Natural selection operates only in the context of given variations, so environment can only drive evolution if there is an antecedent cause of sufficient variations of the right kind. Nailing down exactly what causes those variations remains an important problem within contemporary biology, though the discovery of DNA and its operations (and “errors”) has provided a framework for answering that problem. During the early twentieth century, however, Darwin’s unexplained source of variation invited metaphysically loaded accounts of variation, and Montessori offers just such a conception. The universe is teleologically ordered towards the “progress and perfectionment” of living creatures, both as individuals and as species (Montessori, 1913:46-7): “a great universal power ... is the force of life itself in the process of evolution. It drives every form of life irresistibly towards evolution, and from it come the impulses to action. But

evolution does not occur by luck, or by chance, but is governed by fixed laws” (Montessori, 1988/1949: 230).

Not only does embryology provide an analogy for understanding macro-evolution, both embryology and the evolution based on it provide a basis for understanding *psychological* development. The “spiritual embryo” is “the newborn child [who] has to do a piece of formative work which corresponds in the psychological sphere to the one just done by the embryo in the physical sphere” (Montessori, 1988/1949: 55). Montessori’s emphasis on this “spiritual embryo,” and particularly on the development of children in early infancy, gave her a distinctive perspective on the role of the unconscious in human development. Like Sigmund Freud, Montessori saw the unconscious as an important force in the formation of human personality and even as a driving factor in history (see especially “The Unconscious in History”, Montessori, 2012/1948). Unlike Freud, however, Montessori approached the unconscious from the standpoint of a pedagogue constantly engaging with very young children. Rather than “probing the ills of a diseased mind” and making inferences about unconscious influences in a way that is “limited . . . to the study of pathological cases” and “abnormal states,” Montessori develops a method of “observation” of children “from a psychic point of view,” directly grasping unconscious “realities of human life mirrored in the soul of a child” (Montessori, 1966: 9, 11). As with Freud, she emphasizes the dangers of various repressions and complexes (e.g., Montessori, 1966: 10, 154-76), though for Montessori the most important repressions are not sexual but rather repressions of the child’s desire for freely chosen work. Her conception of the unconscious includes and expands on Freudian accounts of the unconscious, and also includes what has recently been called the “adaptive unconscious” (Wilson, 2002). She drew from the educationalist Percy Nunn the concepts of “*horme*” and “*Mneme*,” referring to the unconscious correlates of volition and memory (or cognition). *Horme* consists of a “vital force” or “guiding instinct” that “takes the form of a drive towards an ever greater independence,” such that “if we tried to find something resembling this *horme* in conscious life, it might be likened to will-power[, b]ut this would be an extremely poor analogy [because] the idea of will is too restricted, too much a part of a person’s awareness” (Montessori, 1988/1949: 76; Montessori, 1966: 199-206; cf. Nunn, 1920: 23). *Mneme* is that “vital kind of memory, which does not consciously remember, but absorbs images into the individual’s very life” (Montessori, 1988/1949: 56-7).

Beyond the general notion that early development is akin to a spiritual embryology, Montessori draws several specific theoretical guideposts for developmental psychology from early embryology and evolutionary theory. One of the most important features of Montessori’s pedagogy, one that Rita Kramer credits Montessori as inventing, is the “sensitive period” (what is now typically called a “critical period”) in development (Kramer, 1976: 373-4). Montessori herself credits this idea to deVries and the embryologist Charles Manning Child (Montessori, 1988/1949: 94; 1993/1948:76). Her discussion of the latter is particularly illuminating for seeing the connections between embryology, evolution, and developmental psychology. She explains,

It is clear that nature follows a plan, which is the same for atom as for planet. It was in 1924 that the embryologist Child revealed those points of febrile activity called Physiological Gradients, not all starting together, or with the same intensity, but each with its own tempo, pursuing an independent course. To begin with, the unit cells were exactly like all the others, but through their activity they grew to differ and became specialized, for the formation of an organ, and last came the circulatory and nervous systems to link the organ with others, similarly created in independence, but to a different functional end.

These are found to be the basic principles of nature’s plan:

1. The freedom and independence of organs in their several developments.
2. Development through specialization of cells.
3. The unification of organs by the circulatory system of the blood.
4. Directive communication established by the nervous system. (Montessori, 1993/1948: 76)

Montessori uses these fundamental principles to understand the overall development of natural systems, from atoms and planets through organisms and even “the different centers of civilization [that] have been nursed to strength in isolation [and] then brought into contact” (Montessori, 1993/1948: 77). She also

uses the specific patterns of embryological development, from sensitive periods to a tendency for fine-grained specialization rather than generic function, as models for *psychological* development. Just as we develop different organs for different purposes, and these develop in isolation before being united systematically, so too we develop different psychological structures for different specialized tasks, and these then become integrated into a coherent personality.

In her *Pedagogical Anthropology*, Montessori makes a similar point about the “transformation” that is not that of a succession of very gradual variations ... On the contrary, what produces stable characteristics is a *revolution* prepared in a latent state, but unannounced in its final disclosure. A parallel to this is to be found, for example, in the phenomenon of puberty in its relation to the evolution of the individual. (Montessori, 1913/1910: 47)

Evolution of biological structures, psychological traits, and even species proceeds through independent cultivation of parts that unite into integrated wholes, and each aspect of this evolution occurs in sudden bursts punctuated by long periods of preparation.

Strikingly, this quotation from the *Pedagogical Anthropology* also reflects a return from embryology and individual psychology back to macroevolution. Montessori brings up deVries’s account of sensitive periods and even the comparison to puberty in order to make a broader point about evolutionary processes, that “new species are formed ... through spontaneous activity” in a way that is “expected” and “not ... gradual” (Montessori, 1913/1910: 47). While the specific example she cites from deVries (the plant “*Enohtera Lamarckiana*”) has proven to be problematic, the conception of sensitive periods of development, particularly in the more detailed accounts given by Manning and deVries, suggested to Montessori and deVries something like what has come to be called “punctuated equilibrium” (see Gould, 2007); that is, with respect to the evolution of species, “it became possible to envision other possibilities than that of the slow adaptive transformations of the Darwinian hypothesis, which required immense periods of time” (Montessori, 1988/1949: 49). For Montessori, the evolution of species, like the development of biological structures in embryos and psychological structures in human children, involved long periods of latent development and then sudden eruptions as new potentialities become realized.

### **Evolution, Ecology, and the “Cosmic Plan”**

Before turning to her discussion of empirical psychology in particular, two further features of Montessori’s evolutionary theory are important to mention. First, Montessori strongly resisted the individualist versions of Darwinism – popularized most prominently by Herbert Spencer – that insisted on a competitive struggle and the “survival of the fittest.” Instead, under the influence of Louis Bourgeois and other solidarists in France, her approach to evolution emphasized the role of cooperation in evolutionary success (see Frierson 2018). This gave her evolutionary theory a distinctly ecological focus, a point she makes explicit in her *Absorbent Mind*:

Ecology is a study of the different behaviors of animals, and it reveals that they are not here to compete with each other, but to carry out an enormous work serving the harmonious upkeep of the earth ... Behavior does not merely fulfil the desire to continue to live. It serves a task which evidently remains unknown and unconscious to the being ... If animals were to become self-conscious, they would be conscious of their habits, of the beauty of the places in which they live, but certainly the corals would never realize or understand that they are the builders of the world, nor would the worms which fertilize the earth consider themselves agriculturists, nor would others consider themselves the purifiers of the environment and so forth. The purpose which places the animals in relation to the earth and its upkeep would never enter their consciousness. Yet life and its relation with the surface of the earth, the purity of the air, the purity of water are dependent upon these tasks. So there is another force which is not the force of the desire for survival, but a force which harmonizes all the tasks. Let us say that each one is important ... because it carries out tasks which are useful to the whole and the effort of each is to try and reach the place allotted to it and the task which it is to fulfil. (Montessori, 1949: 89-90)

As she puts it in her discussion of the elementary science curriculum:

One side of evolution deals with the satisfaction of vital needs, defense, survival of the species, and growth by modifications towards individual and species perfection. Another—and stronger—factor in evolutionary processes is concerned with the cosmic function of each living being, and even of inanimate natural objects, working in collaboration for the fulfillment of the Purpose of Life in the whole ... The bee who robs the flower of its nectar is aware only of his own need or the hive's, not that the flower's need of his visit is as great for its purpose of reproduction, for perpetuating the life of the species. (Montessori, 1993/1948: 26–7)

For Montessori, evolution involves not only the survival of the fittest and the development of species but also the increased harmony and mutual benefit of the ecosystems as a whole.

This ecological emphasis shows up throughout Montessori's evolutionary theory. For example, her approach to adaptation, she explains that "Adaptation to the environment is necessary for all living creatures" (Montessori, 2012/1946: 80) but then conceives of that adaptation not in the purely individual terms of the "old idea ... that we lived in the environment and absorbed as ... much as possible for ourselves from the environment" but as a process whereby "[e]ach species' adaptation to the environment shows us what the purpose and useful work of each is, the work which each contributes towards universal harmony" (Montessori 2012/1946: 87–88). Biology cannot be limited to the study of "those things that each species does for the maintenance of its life" but must also include "the important work which is done by each species individually for the harmony of all" (Montessori, 2012/1946: 84).

These passages emphasizing the ecological dimension of Montessori's evolutionary theory already hint at her deeper teleological conception of the "cosmic plan" that all life promotes. In the passage above from the *Absorbent Mind*, not only does she refer to the "force which harmonizes all the tasks," but the passage goes on:

That is why we said that there was a pre-established plan ... that ... puts the animals in relation with the task that they have to accomplish upon the earth. Nor is the [only] purpose of life to perfect oneself, nor only to evolve. The purpose of life is to obey the hidden command which ensures harmony among all and creates an ever better world. We are not created only to enjoy the world, we are created in order to evolve the cosmos. Today the influence of the existence of a cosmic plan is gradually changing the theory of the linear evolution of past times. (Montessori, 1949: 89-90)

In *To Educate the Human Potential*, she explains, "Plant life and animal alike now have to be considered from two points of view, and the more important is that of their function in the cosmic plan" (Montessori, 1993/1948: 26). References to this cosmic plan, a teleological ordering of the universe towards increases in harmonious complexity, pervade Montessori's writings (for discussion, see Frierson, 2018).

This teleological, ecological approach to evolutionary theory plays central roles in Montessori's approaches to both psychology and pedagogy. For one thing, Montessori sees psychology itself – the set of psychological forces at work in human beings – as a stage in the increased complexity of the universe, one that serves to harmonize increasingly complex biological forces into a new – "supranatural" – level of organization (Montessori, 2012/1948: 23-4). Moreover, insofar as children's psychological development is a part of this "cosmic plan," it too proceeds in accordance with laws of life that have a teleological orientation towards the good of the whole.

There are some immediate implications of her overall conception of evolution for pedagogy, most notably in the series of lessons that make up elementary curricula (particularly the "Great Lessons"). Montessori claims that "When details are presented as being parts of a whole, they become interesting" (Montessori, 2007/1948: 20). Thus her elementary curriculum involves a "study of the whole" (Montessori, 1993/1948: 23), a series of stories of the evolution of the universe, life on earth, and the development of human societies. Her conception of the cosmic plan affects the structure of these lessons in the development of life and of human societies. But these direct influences on her lessons are less important than two other crucial implications of her evolutionary theory for pedagogy. First, since children's development is teleologically-driven, the function of education is to provide room for psychological expansion, not to generate or stifle such expansion:

By education must be understood the active help given to the normal expansion of the life of the child. The child is a body which grows, and a soul which develops—these two forms, physiological

and psychic, have one eternal font, life itself. We must neither mar nor stifle the mysterious powers which lie within these two forms of growth, but we must await from them the manifestations which we know will succeed one another. (Montessori, 1912/1909: 59)

Second, because humans' cosmic task is an ecological task, and because humans are capable (in ways that other animals are not) of becoming self-consciously aware of that task, one of the central functions of education, particularly for elementary and adolescent children, is to help them orient their immense energies in terms of their place in social and ecological systems of interdependence. Thus the great lessons that "present ... the world" (Montessori, 1993/1948: 20) also show students how they can contribute to the development of societies and the world; students' imaginations are fostered through thinking about their place in the great "cosmic plan."

### Scientific Pedagogy

Thus far, I have focused on Montessori's theory of evolution, but Montessori was an experimental psychologist more than a theoretician of evolution. Her theoretical evolutionary framework supports and is supported by her experimental work; thus she looks for – and finds – evidence of sensitive periods and the sudden consolidation of organized psychological structures. But her approach to psychology was essentially empirical rather than theoretical. In her *Pedagogical Anthropology*, she strongly endorses her mentor Sergi's focus on "the human individual taken from actual life, in place of general principles or abstract philosophical ideas" (Montessori, 1913: 14), and in her *Montessori Method*, she insists that the basis of a "scientific educational program" must not be mere philosophical conjecture (as in Rousseau) but "the *observation* of free children" (Montessori, 1912/1909: 28). Roughly speaking, Montessori endorses Wilhelm Wundt's "definition" according to which "all methods of experimental psychology may be reduced to one, namely, carefully recorded observation of the subject" (Montessori, 1912/1909: 72-3), but she rejects widespread positivist psychological theories from Fechner and Wundt to her contemporaries, arguing that they are "arbitrary and superficial" (Montessori, 1991/1918: 86) and exhibit a tendency in "experimental psychology" to "adopt ... more or less the standard of laboratories of *physics*" (Montessori, 1991/1918: 98).

Montessori's criticisms of the experimental psychology of her day can be summarized under roughly four basic headings (see Frierson, 2015). First, she criticized experimental psychology for being too disengaged and strongly rejected the ideal of merely "objective" and even "blind" inquiry into human mental life:

As long as 'science' limited itself to the attaining of further knowledge about children without attempting to rescue them from the many evils which this same science had discovered in the schools ... , no real claim could be made for any such thing as 'scientific education.' (Montessori, 1967: 41)

In place of an objectivist model of scientific inquiry, Montessori embraced a broadly Jamesian, pragmatic conception of the search for truth; as she put it, "the *soul of the scientist* is entirely possessed by a passionate interest in what he sees. He who has been 'trained' to see, begins to feel interest, and such interest is the motive-power which creates the spirit of the scientist" (Montessori, 1991/1918: 102). Second, against approaches to experimental psychology that focus on snapshots of human behavior or childhood development, Montessori argued that one must see the unfolding of the life of the child through extensive observation conducted over long time horizons:

The study of the child cannot be accomplished by an 'instantaneous' process; his characteristics can only be illustrated cinematographically ... [T]he psychologist of today behaves somewhat like the child who catches a butterfly in flight, observes it for a second and then lets it fly away again ... (Montessori, 1991/1918: 86, 99)

[P]sychical researches of a moral order must also, if they are to be of any real value, be based upon prolonged observation ... [I]t is necessary ... to observe ... for a considerable time. (Montessori, 1967: 8-9)

Third, Montessori objected to a tendency in experimental psychology to "adopt ... more or less the standard of laboratories of *physics*" (Montessori 1991/1918: 98), a tendency evident not only in crudely materialist conceptions of mind but also in the sorts of quantitative techniques wrongly – and often

absurdly – applied to the investigation of human behavior and mentality. Fourth and finally, Montessori argued that contemporary psychologists studied human beings in a defective and unnatural condition, so that rather than seeing normal human psychology, theories were developed that treated common pathologies of modern life as though they were the normal condition of humanity. She compares the study of children in ordinary schools, where they are “repressed in the spontaneous expression of their personality till they are almost like dead beings” to the attempt to discern the nature of butterflies by their behavior when “mounted by means of pins, their outspread wings motionless” (Montessori, 1912/1909: 14). Instead, Montessori insists upon providing a condition within which children can behave in accordance with their natural impulses and latent potentialities. In such contexts, she discovered what came to be called “New Children” (see Radice, 1920), and what Montessori herself describes as “normalized” children:

Observing the features that disappear with normalization, we find to our surprise that these embrace nearly the whole of what are considered characteristics of childhood ... Even the features that have been scientifically studied as proper to childhood, such as imitation, curiosity, inconstancy, instability of attention, disappear. And this means that the nature of the child, as hitherto known, is a mere semblance masking an original and normal nature. (Montessori 1996: 159)

Insofar as psychologists take disinterested snapshots of children (or even adults) in unnatural conditions of development, applying quantitative standards of physics to those snapshots, they will never truly understand human nature and its potentialities.

Montessori’s critiques of experimental psychology paved the way for her own conception of the “teacher-scientist,” who would genuinely love her students (avoiding disinterest), stay with them for long periods of time over prolonged periods of their development, investigate their development using qualitative measures appropriate to human lives, and work with children in an environment prepared to provide occasions for free activity (rather than inactivity and the repression of their innate tendencies). Mere scientists fail to have the interest and engagement to properly observe children’s development, but most teachers are not well trained in scientific praxis. The details of this alternative Montessori vision are laid out in much more detail in Montessori’s works (see especially 1912/1909, and see too Frierson, 2015), but her basic call is for “a genuine *fusion* of ... modern tendencies, in practice and thought; such a fusion as shall bring scientists directly into the important field of the school and at the same time raise teachers from the inferior intellectual level to which they are limited today” (Montessori, 1912/1909: 4). Or as she puts it later, “the attitude of the teacher should be at once positive, scientific, and spiritual” (Montessori, 1991/1918: 106-7).

## Conclusion

Montessori’s evolutionary theory was heavily informed by the biological-embryological work of deVries, Naegeli, and Child, the philosophy of William James, Hegel, and Nietzsche, and her own observations of the development of children. The result was an evolutionary theory according to which nature as a whole, individual species, and individual members of species all pursue increased “perfection,” understood as an increase in agency and organized complexity. This development happens in a teleologically ordered but discontinuous way, organized around particular sensitive periods within which certain new capacities emerge. Human psychology fits within the broader processes of cosmic evolution as the most recent and most complex source of developmental laws, and it has its own structures of development oriented around “vital impulses” that are actualized during particular sensitive periods in the development of each person. These developments – psychological as well as evolutionary – are never *merely* for the sake of individual organisms or species, however. As we develop, we do so for the sake of our “cosmic task,” to fulfill our role in the unfolding development of the world as a whole. This evolutionary theory was refined in the context of Montessori’s careful observation of the development of children, particularly the “spiritual embryos” that during the first six years of life are forming their personalities and characters. In turn, her conception of development as motivated by guiding instincts, sensitive periods of development, and an overall tendency towards adaptation that

would contribute to a cosmic (ecological) plan fostered Montessori's attention to the innate potentialities of children and the method of freely chosen work as central to proper pedagogy.

**Tie back to first section...there *should be* mutual influences, and there are.**

- (sensitive periods)
  - **Punctuated equilibrium, partly taken from deVries, but expanded (sensitive periods as embryology→pedagogy→evolutionary theory)**
  - **Life→psychology→society as stages of higher development**
- Influences from pedagogy on evolutionary theory**  
**Many others but these are just a few samples xxx.**

**Cross-References** (related chapters selected from the table of contents)

## **References**

Foschi, R. (2012). *Maria Montessori*. Rome: Ediesse.

Frierson, P. (2015). "Maria Montessori's Philosophy of Empirical Psychology," *HOPOS: The Journal of the International Society for the History of the Philosophy of Science* 5(2):240-268.

Frierson, P. (2018) "Maria Montessori's Metaphysics of Life," *European Journal of Philosophy*, forthcoming.

Gould, S. J. (2007). *Punctuated Equilibrium*. Cambridge, MA: Harvard University Press.

Kramer, R. (1976) *Maria Montessori: A Biography*. Chicago: University of Chicago Press.

Lillard, A. (2005) *Montessori: The Science Behind the Genius*. Oxford University Press.

Montessori, M. (1912/1909) *The Montessori Method*, translated by A. George, New York: Frederick Stokes and Co. References to Montessori, 1967 are to the revised version of this work, published as *The Discovery of the Child*, translated by J. Costelloe. New York: Random House, 1967.

Montessori, M. (1913/1910) *Pedagogical Anthropology*. Translated by F. T. Cooper. New York: Frederick Stokes and Co.

Montessori, M. (1991/1918) *Spontaneous Activity in Education* (reprinted as *The Advanced Montessori Method I*). Oxford: Clio Press.

Montessori, M. (2012/1946) *The 1946 London Lectures*, Amsterdam: Montessori-Pierson Publishing Co.

Montessori, M. (2012/1948) "The Unconscious in History," *The NAMTA Journal* 37:7-25 (originally published in *The Montessori Magazine*)



Montessori, M. (2007/1948) *From Childhood to Adolescence*, Amsterdam: Montessori-Pierson Publishing Co.

Montessori, M. (1993/1948) *To Educate the Human Potential*, Amsterdam: Montessori-Pierson Publishing Co.

Montessori, M. (1988/1949) *The Absorbent Mind*. Oxford: Clio Press. (Citations to Montessori, 1949 are to the original 1949 edition, published by The Theosophical Publishing House, Madras, India.)

Montessori, M. (2007/1955) *The Formation of Man*, Amsterdam: Montessori-Pierson Publishing Co.

Montessori, M. (1966) *The Secret of Childhood*. New York: Fides Publishers (reprinted in 1972 by Ballantine Books).

Nunn, P. (1920) *Education: Its data and first principles*. New York: Longmans, Green, and Co.

Radice, S. (1920) *The New Children: Talks with Maria Montessori*. New York: Frederick Stokes and Co.

Wilson, T. (2002) *Strangers to Ourselves: Discovering the adaptive unconscious*. Cambridge, MA: Harvard University Press.