

MONTESSORI EDUCATION AND OPTIMAL EXPERIENCE: A FRAMEWORK FOR NEW RESEARCH

by Kevin Rathunde

Dr. Rathunde's recognition of the value of Montessori education, especially in relation to new applications and extensions of Csikszentmihalyi's optimal experience theory, brings to Montessori a richer context for normalization and deep engagement. Working from a perspective outside the Montessori community, Dr. Rathunde puts Montessori's rich understanding of the prepared environment and children's concentration in tandem with contemporary thought in both education and developmental psychology.

If one has read some of Maria Montessori's work, and one is reasonably familiar with current perspectives in developmental psychology and education, it is obvious that Montessori was a visionary in both fields. She anticipated many contemporary "child-centered" or "developmentally appropriate" educational practices (see Bredekamp) and was an advocate for the active child when it was not yet fashionable. She understood the stage-like leaps made by young children and, like Piaget, understood the importance of sensory and motor activities as a foundational base for knowledge. Her grasp of the dynamics of teaching—not over- or under-challenging, helping only when necessary, and so on—are entirely consistent with contemporary Vygotskian perspectives on scaffolding and guided participation (see Rogoff). Ideas such as multi-age classrooms and peer tutoring (Carnegie Council on Adolescent Development), a reduced emphasis on academic testing (Sternberg), stimulating a wider range of student

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interests (Gardner), focusing on motivation and preparation for life-long learning (Eccles et al.), and many other ideas that are integral to current educational debates, were discussed with remarkable clarity by Montessori.¹

The above insights are well documented by others (Koch & Leary; Standing; Wentworth), and the purpose here is not to enhance Montessori's legacy or to promote her method of education, which is still thriving in schools around the world. Rather, the purpose of this article is twofold. First, I will argue that not all of the gold has been mined out of Montessori's ideas. Some of her best insights about children and education have only recently found a corresponding theoretical perspective in the field of human development that can highlight them and provide empirical support. The perspective referred to is recent work on optimal experience (i.e., states of "flow" or deep interest) and its role in human development (see Csikszentmihalyi, *Flow*; Csikszentmihalyi & Rathunde, "The Development of the Person").

Once a conceptual bridge has been established between Montessori ideas and optimal experience theory, a second goal will be to begin charting a course for new research on adolescent development within Montessori environments. This focus on adolescence might be surprising given that Montessori focused most of her writing on early childhood. However, her insights about adolescence were perceptive (see *From Childhood to Adolescence*), and the basic philosophy underlying her methods cuts across later periods of development (Wentworth). While many early childhood education programs have benefited from Montessori's insights and techniques, her ideas have not had the same positive impact on the education of adolescents. This is unfortunate in that a great deal of evidence suggests that adolescents are often laboring through their classes while being sporadically engaged (see Eccles et al.), and Montessori's emphasis on active student engagement could offer valuable insight on this problem. In addition, adol-

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escence provides a good context for new research because much of the work that has been done on optimal experience and education has been conducted with teenagers (see Csikszentmihalyi, Rathunde, & Whalen; Csikszent-

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mihalyi & Schneider), and there is a growing number of Montessori middle schools in the public school system that could provide an excellent opportunity for comparative research.

OPTIMAL EXPERIENCE AND THE DEVELOPMENT OF THE PERSON

The framework used here to link Montessori education to optimal experience theory is drawn from Csikszentmihalyi & Rathunde's "The Development of the Person," a comprehensive, theoretical chapter in the most recent edition of *The Handbook of Child Psychology* (Vol. 1—*Theoretical Models of Human Development*). The Handbook, published approximately every fifteen years, represents current ideas in the field that hold promise for stimulating future research (Damon). It is worth noting that in this edition of the Handbook there are several theoretical chapters that place a strong emphasis on the importance of *person-environment interaction* for healthy human development. This reflects the fact that over the last two decades the field of child development has paid increasing attention to the circumstances that affect a person's life at the moment and, thereby, the person's development over time. Such a historical shift in thinking, because it places a greater emphasis on experience, moves closer to the universe of Montessori ideas. Optimal experience theory, in particular, is focused on *immediate experience as it relates to person-environment interaction*. It is therefore a particularly useful theory for unearthing important facets of Montessori's thought and discovering new ones.

The first step in linking Montessori education to optimal experience theory is to briefly summarize the ideas presented in Csikszentmihalyi & Rathunde ("Development"). Those who are fa-

miliar with the Montessori method will begin to see the connections immediately. After the summary, key points of intersection between the two perspectives will be explored in more detail.

The Developmental Importance of Flow

Optimal experience theory places subjective experience at the center of developmental processes. More specifically, the *flow experience*, an “optimal” experience that Professor Mihaly Csikszentmihalyi has researched for over twenty-five years (see Csikszentmihalyi, *Flow*), is seen as crucial for healthy development. The term *flow* describes moments when a person is fully concentrated on a task at hand, relatively oblivious to the passage of time, and feeling clear about what needs to be done from one moment to the next. In flow, people’s awareness is intertwined with their action and they do not feel self-conscious. They are motivated to do the activity just for the sake of doing it, not because they have to or because they will be compensated in some way when they are done. Flow theory is a person-environment interaction theory in that flow is triggered by a good fit between a person’s *skills* in an activity and the *challenges* afforded by that activity. In other words, flow always refers to a relationship to the environment wherein a person is fully concentrated on some task. Such intense experiences are recognized in cultures around the world (see Csikszentmihalyi & Selega-Csikszentmihalyi).

This experiential perspective on development is remarkably similar to Montessori’s perspective on concentration and learning (Montessori, *Spontaneous Activity*). In other words, sustaining experiences of deep concentration, and returning again and again to them, is thought to set up an upward spiral of growth that instigates further concentration and learning. A simple example can illustrate this dynamic. A person inevitably loses interest in a particular “fit” with

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the environment. For instance, a young student who likes science can’t read the same text over and over or the student’s motivation and enjoyment will wane; what first engaged the student must lead to fresh in-

sights and discoveries that include and expand upon the original material. Such a developmental process has held a prominent place in psychology throughout the twentieth century and is often referred to as a *dialectic of integration and differentiation* (see Baldwin; Dewey, *Interest and Effort*; Piaget; and Werner). What distinguishes the present approach, however, is its phenomenological orientation, or its focus on *momentary subjective experience*. While past approaches have tried to describe the process of integration and differentiation from the outside, so to speak, the flow perspective—and Montessori education—reorients the discussion to how the person is connecting with the environment at the moment as evidenced by a person’s attention, concentration, and quality of experience.

“Complex” Psychological and Social Systems

Optimal experience theory reinterprets some traditional questions in developmental psychology. Instead of asking what qualities of the person are most important for development or what dimensions of a family and/or school context are optimal for children’s development, an experiential perspective frames these questions in a unique way: What qualities of a person help him or her to sustain concentration and find flow? And what aspects of a family and/or a school context are ideal for helping children find optimal experience and interest?

A psychological system or a social system is more likely to promote optimal experience when it can hold its shape and structure (i.e., maintain integration) while opening itself to change (i.e., allow differentiation). When an individual or social context contains such an inherent flexibility, it is referred to as a *complex system* (Waldrop). In Montessori terminology, a complex psychological system would be seen as the *normal* human outcome if obstacles to development were removed (Kahn); a complex social system (e.g., a classroom), one that would remove developmental obstacles and help children sustain concentration, is called a *prepared environment* (Cuevas).

With respect to an individual person, “psychological complexity” has been illustrated using information from interviews with eminent lifelong learners who were well known for their creative accomplish-

ments (see Csikszentmihalyi, *Creativity*; Csikszentmihalyi & Rathunde, “Development”; and Rathunde, “Wisdom and Abiding Interest”).² At times these individuals were iconoclastic, energetic and extroverted, passionately focused on individual goals, and concrete and spontaneous. At other times, however, the same individuals showed a reverence for tradition, were quiet and withdrawn, had an appreciation for community, and were more abstract and reflective. These seemingly contradictory qualities provided the flexibility or adaptability needed to keep on a progressive developmental path. In other words, these individuals could draw upon a wide spectrum of skills to expand or consolidate information (i.e., differentiate or integrate it), thereby regulating their attention in ways that sustained their concentration and interest.

A similar argument was made with respect to optimal social contexts for concentration (Csikszentmihalyi & Rathunde, “Development”). In other words, a “complex” family or school also contained a polarity; it allowed individual choice and freedom in order to facilitate change and differentiation, but it also maintained a clear structure that provided limitation and discipline in order to promote continuity and integration. In this way, a social context helps an individual to regulate attention and makes it more likely that he or she will experience flow (for more about the context of optimal experience in families, see Rathunde, “Family Context and the Development of Undivided Interest”; Rathunde, “Family Context and Talented Adolescents’ Optimal Experience”; Rathunde, “Parent-Adolescent Interaction and Interest”; and Rathunde, Carroll, & Huang).

Optimal Experience, Extended Childhood, and Lifelong Learning

Optimal experience theory suggests that placing a strong developmental emphasis on optimal experiences such as flow is justified from an evolutionary perspective (Csikszentmihalyi & Rathunde, “Development”). For instance, humans are unique in the world with respect to a period of *extended childhood*. The biological concept of “neoteny” describes this human condition characterized by the slowing down of the rate of development and the extension of the phases of develop-

²The sample included over a dozen Nobel laureates and such renowned individuals as Linus Pauling, Jonas Salk, and Benjamin Spock.

ment from birth to old age. The practical consequence of an extended childhood is that traits associated with childhood are retained in adult life and are presumably related to lifelong learning. A small group of social and natural scientists has

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intuited the profound and far-reaching implications of this unique biological or evolutionary strategy. Lorenz, for instance, suggests that it resulted in the defining quality of human nature: the capacity for an *unending state of development* that builds upon the childlike propensity to explore, rather than rigid genetic and instinctual programs, in order to adapt to new environments.

The anthropologist Ashley Montagu has provided one of the most articulate statements on the significance of an extended childhood. He suggests that as humans mature, they are biologically prepared to build upon the exploratory traits of childhood. In the title of his book—*Growing Young*—he is turning human development on its head and promoting a radically new conception of human nature, one that places a much greater value on the essence of childhood as the foundation of healthy adult thought. Although not based in the same evolutionary framework, Montessori promoted almost the identical concept of human nature that emphasized the child as a “guide” for healthy adulthood (“The Spiritual Regeneration of Man”). Both thinkers, therefore, call for no less than a *revolutionary reformulation of society such that it would recognize, nurture, and build upon the unique strengths fostered in childhood*.

From an evolutionary perspective, this long period of human immaturity exists so that children can learn and experiment in a relatively pressure-free environment, protected by the attachment bond of a parent. Most social scientists refer to this pressure-free experimentation as *play* (e.g., see Groos), although Montessori preferred to call this activity the “work” of childhood.³ As any parent

³Montessori did not see her method as one that emphasized play; rather, she said that children preferred “work.” However, there are a number of definitional

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knows, children's engagement in exploring the environment is perhaps the prototypical instance of flow in that the child is fully concentrated and oblivious to most distractions. Montessori also recognized this fact and placed it at the center of

her thinking about how children learn. Flow in adulthood can be seen on a continuum with this ability of children to get engrossed in their experience. Flow experiences, therefore, reflect the unending growth process of integration and differentiation, and they are based in the most important and fundamental qualities of human nature. These qualities, in turn, are based in childhood and are the gift of our evolutionary heritage.

THE MONTESSORI METHOD RECONSIDERED FROM AN EXPERIENTIAL PERSPECTIVE

There are three main areas of overlap between Montessori thought and the theory of optimal experience and development just presented: 1) the revolutionary call to place The Child at the focal point of society and to see in children the evolution-based qualities that distinguish and elevate human nature, 2) the recognition that deep concentration (i.e., flow) is intimately connected to this biological heritage and that concentration unites body and mind and lies at the heart of normal development and lifelong learning, and 3) the understanding that

complications at work here. Most contemporary developmentalists would label much of the activity in Montessori classrooms as play. Montessori preferred the term *work* over *play* because of the latter's association with make-believe activities that have no relation to real life. The use of the term *play* in Csikszentmihalyi & Rathunde ("Development") explicitly includes a reality-based connection to outer life as well as a connection to the "inner life" of the child and the feeling of self-determination and freedom (see also Baldwin). I have tried in other places to avoid this false dichotomy between work and play with concepts such as "serious play" that de-emphasize one or the other extreme (see Rathunde, "The Organization of Energy in Work and Play"). Concepts such as flow or interest avoid this confusion entirely.

social contexts (e.g., schools) can and should be designed in ways that promote children's concentration, interest, and psychological complexity.

Human Evolution and Unending Development

Montessori recognized that humans are differentiated from animals as the result of an extended childhood or a second "embryonic period." She commented, "Man seems to have two embryonic periods. One is prenatal, like that of the animals; the other is postnatal and only man has this. The prolonged infancy of man separates him entirely from the animals.... It forms a complete barrier, whereby man is seen as being different from all others" (Montessori, *The Absorbent Mind* 60). It is clear from this passage that Montessori, like other scientists who have reflected upon the elongated developmental rate of human children, felt that this unique aspect of human existence has profound implications for understanding how to nurture and educate children. Moreover, she felt that the quality of spontaneous activity during this period had a formative influence on the child's personality:

This is what Montessori means when she refers to the double embryonic life of the human species. She sees this further development as a continuation of the embryonic process, during which the individual actively participates in the process and is related to the outer environment. It is therefore of a psychological order. The postnatal stage is a formative period of intense activity during which the child must create in himself the basic structure of his personality. (Montessori, Mario 11)

Throughout most of history childhood has been seen merely as a phase to be grown through in order to reach adulthood, and society was built up with adult needs and values projected on children. Montessori recognized that cultivating the qualities of early childhood (e.g., spontaneous concentration, active exploration, and so on) could revolutionize society and create a link to lifelong learning. In fact, E.M. Standing, the authoritative biographer and colleague of Dr. Montessori, thought that Montessori's most important gift to humanity was her articulation of this spirit in an age that came to be known as the "Century of the Child." Montessori regretted that civilization was organized not with the child in mind but with a focus on adult traits and values. In keeping with the revolutionary spirit of turning

this idea on its head, she once commented at a gathering to honor her, “The highest honor and the deepest gratitude you can pay me is to turn your attention from me in the direction in which I am pointing—to The Child” (cited in Standing 78).

Montessori understood that such a shift in focus could literally change the world: “By changing the centre from the adult—and adult values—to the child and *his* values, we should change the whole path of civilization” (cited in Standing 82). This was calling not simply for the reform of education but for a collective effort of humanity that would be equivalent to the way a “nation wages total war” (Standing 156). If childhood were properly valued by society, education reform would follow. That is why Montessori said that her educational method did not *lead* to a greater valuing of the child, it *resulted* from it. Likewise, the most important aspect of training a Montessori teacher is the “spiritual” change in the adult to recognize the dignity of children and appreciate the developmental importance of their spontaneous activity in an extended childhood.

It is easy to overlook the revolutionary character of what Montessori was suggesting, especially because the contemporary scene is filled with books, research studies, and political pundits who extol the virtues of children. Montessori’s meaning, however, was different from most of these, and, I believe, *can be better appreciated when seen in the evolutionary framework of an extended childhood*. In proclaiming that such a condition is the “foundation source of our humanity,” Montagu sounds a call to arms that is strikingly similar in tone, content, and character to Montessori’s:

The perspective of evolution shows us that our neotenous, extended childhood, our lifelong youthfulness, becomes the single most commanding fact upon which to design all social and productive relations.... Childhood, the child in everyone, becomes the transformational value at the center of every social usage and institution. (199)⁴

⁴This is one of the few statements I have ever come across that strikes me as similar in character and scope to Montessori’s call for the reform of society based on a fuller recognition of the essence of childhood.

Note the similarity to the following quote from Montessori: “But the child who achieves this change [becomes normalized] ... becomes therefore man’s guide to normality. He becomes man’s social master, a practical guide, both for the individual and also for society” (“Spiritual Regeneration” 165).

Montessori clearly understood human development in the context of evolution. One reason her method has proven so effective and enduring, I believe, is that through her training as a medical doctor her system had a biological foundation (e.g., she understood that abstract learning was based in the senses and in motoric movement, etc.). However, she did not fully develop the evolutionary significance of an extended childhood and apply this insight to her goal of education reform. At first glance, it is not clear how this perspective can be useful for such a goal. Why should an extended childhood, achieved through extreme dependence and slow development, argue for a change in the way we think about human nature and the organization of society?

The answer to this provocative question may be that this retardation of the developmental rate had an evolutionary purpose that transformed mankind: It de-emphasized instinctual, pre-wired adaptations to the environment, and in their place—under the umbrella of increased parental attachment and protection—allowed increased reliance on active exploration and spontaneous concentration. This way of life, in turn, ultimately made possible unending human development and lifelong learning. This evolutionary perspective does more than underscore the obvious fact that childhood helps to create the future adult; it adds a scientifically based framework that supports Montessori’s call for a radical reformulation of society based on attention to and reverence for the child. It emphasizes the unique powers of concentration that children possess and that adults often lose. More to the point, these “lost” powers are simply buried over the course of less than ideal conditions of development. Deep concentration is sim-

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ply the “normal condition” of childhood, the result of the second embryonic period that takes place outside of the womb (see Montessori, *The Secret of Childhood*).

Concentration and Flow

The idea that evolution has raised the essence of childhood to a privileged status does more than support the call for reconceptualizing human nature and societal organization; it provides a rationale for the enormous weight that flow theory and Montessori philosophy place upon the phenomenon of spontaneous interest and concentration. What other organism can afford to invest so much attention based simply on the intrinsic motivation to explore the surrounding environment? It would seem that behaviors like concentration for the enjoyment of discovery and exercising our motoric and cognitive capacities could only come to prominence in an organism that was biologically designed for flexibility or “plasticity” (see Lerner) and only in an organism that was assured the requisite time to cultivate such behaviors because its young could rely upon adult protection for many years. In other words, the evolution of an extended childhood or second “embryonic period” provides a solid rationale for why flow, interest, and intrinsic motivation are fundamental phenomena in human growth and development.

Such an evolutionary perspective on childhood also provides a basis for Montessori’s claim that children’s deep concentration reveals what is *normal* for human nature, or what is the essence of being human. The single-mindedness of young children’s powers of concentration while manually manipulating objects, in fact, is seldom matched by older children or adults: “It has been revealed that children not only work seriously but they have great powers of concentration.... Action can absorb the whole attention and energy of a person. It valorizes all the psychic energies so that the child completely ignores all that is happening around him” (Montessori, “Lectures” 83-84). For this reason, she referred to the process of healthy development through concentration and interest as “normalization,” and she referred to the psychologically healthy child who is awakened by deep concentration as “normalized” (see Kahn).⁵ This somewhat awkward and easily

⁵“Normal” in this context has nothing to do with what is “average” for humans. In fact, most adults, thought Montessori, have lost the path of normality.

misunderstood terminology can be partially explained by the fact that Montessori started creating her method during her appointment as director of an orthophrenic school in Italy that served so-called defective or feebleminded children. More importantly, however, the terminology reflects her belief that problems of attention often disappear along with the first episode of deep concentration, and if conditions are ideal for allowing children to exercise their inborn capacities, intrinsically motivated, deep concentration is a “normal” or natural disposition of the human organism.

Montessori realized the significance of concentration through personal experience and observation. A key anecdote is related in Standing’s biography (40). Montessori was watching a three-year-old child occupying herself with graded wooden cylinders which had to be fitted into a wooden block. The child showed such amazing interest and concentration that it seemed to isolate her from the surrounding environment. Even when Montessori asked the teacher to have the other children sing aloud and make distractions around the involved child, her concentration did not falter. Then, as if “coming out of a dream,” the child stopped what she was doing, looked around, and appeared happy and at peace. Witnessing this episode of remarkable mental concentration evolved into the main theme of the Montessori method: the reliance on concentration or *spontaneous interest* as the motivation for work in the classroom. Interest, thought Montessori, was “the compeller of spontaneous activity” (cited in Standing 84), and it was the key to “auto-education” or education that was directed not by external forces or reactions to the environment but by what Montessori referred to as “delicate inner sensibilities intrinsic to life” (Montessori, *Secret* 252).

The above anecdote reveals to what extent Montessori had an experiential orientation toward education, and it also reveals how much flow theory and Montessori education have in common. Many of the elements that have been revealed by extensive cross-cultural research on flow (see Csikszentmihalyi & Selega-Csikszentmihalyi)—intrinsic motivation, the merging of action and awareness, total concentration that blocks out distraction and awareness of the passage of time, a good fit between one’s skills and a given task, the emergence

from flow feeling refreshed and at peace—were clearly manifested by the young girl with the wooden cylinders.

Witnessing this event apparently was a turning point for the development of Montessori's method, and it helped launch her attempt to create an intrinsically motivating learning environment for spontaneous activity. To achieve such a goal, Montessori paid increasing attention to what has become a central tenet in flow theory: the importance of the balance between skills and challenges. Montessori meticulously categorized activities that were appropriately challenging for children at different ages (e.g., the sensory and motor activities involving the wooden cylinder block), and this resulted in her many pedagogical innovations centered around stage-appropriate activities, sensitive periods, and "prepared" environments. To the extent that such activities capture the right balance of skills and challenges, they improve the chances of triggering intense concentration.

Although children seem to be living completely in the present, this does not mean that their concentration and development lack directionality. On the contrary it is the building up of "successive presents" that Montessori, like flow theory, believed would lead to optimal development. Whereas an episode of deep concentration puts us in touch with authentic, or normal, human nature (i.e., a process of normalization), Montessorians refer to *recurrent episodes of deep concentration* as a state of "normality" (see Kahn). Normality involves living in such a way that episodes of flow recur again and again, resulting in an upward spiral of growth. Montessori believed that a child could be changed or "awakened" to such an active developmental path by one intense episode of concentration.

How is a path of deep concentration or normality sustained?⁶ Here, again, Montessori's approach shows remarkable similarities to optimal experience theory. As mentioned already, the ability to self-regulate flow (i.e., to make self-corrections that steer away from boredom or anxiety and back toward recurrent episodes of optimal experience) manifests psychological complexity: "A complex person

⁶Elsewhere, I have referred to this process of sustaining interest on a path of lifelong learning as *abiding interest* (Rathunde, "Wisdom").

is one who has the self-regulative capacity to move toward optimal experiences by negotiating a better fit or synchrony of self with the environment” (Csikszent-mihalyi & Rathunde, “Development” 651). This flexibility of attention is

Montessori understood that to engage spontaneous concentration, freedom of choice is a necessary precondition. However, unlike other “activity-based” methods that recognize the importance of intrinsic motivation but sometimes provide unlimited freedom, Montessori never lost sight of the opposite and equal need for order, structure, and discipline in the environment.

thought possible because of the ability to move effortlessly between more *concrete differentiating* and *abstract integrating* modes of thought (see also Dewey, *Interest*; Rathunde, “Wisdom”; and Werner on the dialectical interplay between concrete and abstract processes). In other words, the interrelation of these two modes is presumably necessary for the ongoing differentiation and integration of information (i.e., learning); without one or the other aspect of the process, information would become static (too integrated) or disorganized (too differentiated).

The uniting of concrete perceptions and abstract ideas is also a central theme of normality, and it is repeated throughout Montessori’s writings. Although not stated using dialectical terminology, Montessori’s meaning is the same when she discusses two important “streams of energy” that are in perpetual interchange and in need of balance. It is in harnessing and balancing the physical energy of the body and the mental/spiritual energy of the mind that the developmental benefits of normality accrue. Montessori strongly believed that body and mind should never be thought of as separate; however, she observed that many adults “divorce” their hands from their brains (Standing 147). Thus, her educational efforts were in large part motivated by the desire to keep these energies united and in balance by starting on the right path in early childhood. Standing comments, “More than in any other system of education, her whole method is based on a deep understanding of the relationship between these two elements—mind and body” (159).

Montessori also referred to the mind-body balance in terms of thinking and acting: “It is essential for the child, in all periods of his life, to have the possibility of activities carried out by himself in order to preserve the equilibrium between acting and thinking.... [otherwise] His thoughts could ... have the tendency to lose themselves in abstraction by reasoning without end” (*From Childhood* 24-25). *And the key to developing this equilibrium (or psychological complexity), not surprisingly, is intense concentration.* How concrete physical sensations and abstract mental representations meld together is illustrated by the following quote from Montessori: “A child who is absorbed in some task inhibits all movements which do not conduce to the accomplishment of this work; he makes a selection amongst the muscular coordinations of which he is capable, persists in them, and thus begins to make such coordination permanent” (cited in Standing 294). In this way, the immaterial, spiritual forces (i.e., will) are being united with the physical energy of the body. Furthermore, in such seemingly innocent decisions the foundations for self-discipline and morality are being built. Montessori likened the process to an airplane that must return from the abstract flights and come down to refuel with fresh experiences in the concrete (Standing 168).

Although Montessori was realistic and knew that few adults achieve the flexibility of attention and integration of personality that result from normality, those who are fortunate, she believed, have an advantage in directing their energy for development (*What You Should Know*). Montessori, consistent with optimal experience theory, recognized that a pattern of recurrent, deep concentration puts one in contact with the essential motivational forces of human nature that are based in childhood (i.e., “normal” motivation), and this pattern often results in lifelong learning and remarkable achievement. Montessori commented:

Most persons have lost this “instinct of the species.” It is only in persons of exceptional power—the geniuses—that this love of work persists as an irresistible impulse, surviving in spite of the unhappy conditions which have smothered it in the majority. Such are for example the artists, discoverers, explorers, reformers, and so forth who—like children—cannot help working, and have by their heroic

effort rediscovered the instinct of the species. (cited in Standing 147)

Elsewhere she elaborated on the link between genius and childhood:

The paths the child follows in the active “construction” of his individuality are indeed identical with those followed by the genius. His characteristics are absorbed attention, a profound concentration which isolates him from all the stimuli of his environment, and corresponds in intensity and duration to the development of spiritual activities. As in the genius, this concentration is not without results, but is the source of intellectual crises, of rapid internal developments, and above all, of an “external activity” which expresses itself in work.... Nearly all the manifestations of those men who liberated themselves from the external bondage of their times are to be noted in our children. (Montessori, *Spontaneous Activity* 218-219)⁷

Preparing the Way: The Context of Optimal Experience

To most individuals, the first thing that comes to mind when the name “Montessori” is spoken is a school context and a method of education. However, what is unique about this context and method, I believe, is not completely clear unless one understands what has been discussed to this point. In other words, the context for learning created by Montessori’s methods is based on 1) a new vision of human nature that emphasizes the normal child and 2) the idea that normal development is synonymous with a continual return to intrinsically motivated, optimal experiences. With this much as background, it is possible to explore more fully the link between a social context (e.g., school) and optimal experience.

Optimal experience theory takes an in-depth look at the family context of optimal experience and how the family helps develop personal qualities that help children regulate optimal experience (i.e.,

⁷Maria Montessori herself, by the example of her own life and the anecdotes told by others, clearly manifested psychological complexity. For instance, she contained in her personality various polarities that may have allowed a concrete/abstract flexibility of thought and an ability to focus her attention in extraordinary ways. For instance, she had the rigorous training and perspicacity of a scientist, yet she also had a sensitivity and intuition that grasped the immediate experience of children.

the socialization of psychological complexity) (see Csikszentmihalyi & Rathunde, “Development”; Rathunde, “Family Context and the Development”; Rathunde, “Family Context and Talented”; Rathunde, “Parent-Adolescent”; and Rathunde, Carroll, & Huang). Despite the focus on the family, the comparison of the theory with Montessori’s thoughts on preparing a school environment for optimal experience is instructive. The fundamental question asked is the same in both approaches: If one assumes that we are prepared by evolution to follow a path of unending development, and if the key to such development is intrinsically motivated concentration, *then how can adults prepare an environment for children that facilitates deep concentration and flow, and is thereby consistent with our normal, inborn capacities?*

The Prepared School Environment

Montessori’s answer to the above question is clear—the context of optimal experience is the *prepared environment*.⁸ The most widely recognized element of a prepared environment is *freedom in the choice of an activity* (Montessori, *To Educate the Human Potential*). Montessori understood that to engage spontaneous concentration, freedom of choice is a necessary precondition. However, unlike other “activity-based” methods that recognize the importance of intrinsic motivation but sometimes provide unlimited freedom, Montessori never lost sight of the opposite and equal need for order, structure, and discipline in the environment. She commented, “On this question of liberty ... we must not be frightened if we find ourselves coming up against contradictions at every step. You must not imagine that liberty is something without rule or law” (cited in Standing 286). Freedom and discipline are seen as two sides of the same coin, and in a Montessori classroom children should be free to make the *right* choices, not *any* choice of activity. The child’s freedom is necessarily limited by the collective interest of other children in the classroom (e.g., taking turns, not disturbing other children), the need for order and putting things back in their proper place, and, of course, by the child’s physical and cognitive readiness to grasp certain relations and concepts.

⁸Montessori also referred to the prepared environment as the “revealing” environment (*ambiente rivelatore*) because such a context revealed a child’s true nature (i.e., normality and the capacity for deep concentration).

How is a context for optimal experience prepared? The teacher must construct the environment so well, so in tune with a child's natural tendencies and capabilities at a particular stage, that interest is spontaneously engaged. The method is indirect in that it "feeds the periphery" with teaching materials that a child can actively explore, and then the child *constructs* his or her mental system (see also Loeffler, chapter 5). In other words, the teacher, whenever possible, does not teach a child directly with abstract concepts. Therefore, a great deal of time is spent preparing and organizing materials that will be presented to the child in an orderly and progressive fashion. A child's freedom is "limited" in that he or she can choose only from appropriate choices that correspond to his or her skill level. A child is not bombarded with more colors, more sounds, and so on, just for the sake of stimulation. The materials—to as great an extent as possible—"control error" or provide feedback to children while they are engaged with an activity. In this way, Montessori believed that a *point of contact* or "a psychological bridge" is created, which "puts the soul of the individual child in contact with some definite, limited piece of external reality" (cited in Standing 239). Although this point of contact is *different* for each individual child because of each child's unique backgrounds and skill levels, for all children the process involves finding a dynamic balance between thinking and acting.

Montessori invented a new vision of the teacher because of her strong experiential focus. She described this "new" teacher as a "directress" because her (or his) primary function is to direct the child's natural (normal) energy of concentration. One of the teacher's most important qualities is the capacity to keep the environment in order, not only in terms of organizing and selecting the right materials, but also keeping everything in its place so items can be found easily without children wasting time and energy. The good teacher becomes *a protector of a child's focus*; distractions in the environment are eliminated to avoid disorder and the dissipation of energy, thus allowing the child to receive clearer feedback that can help sustain concentration and flow.

The teacher must pay more attention to the learning environment than in traditional approaches, and the environment is tailored to the child (e.g., the entire physical environment is "child-sized"). The

environment is perceived as the medium through which the teacher helps the child to engage attention and concentrate. Just as a positive biological niche contains the necessary elements that seize upon an organism's true nature and innate capacities, a prepared school environment must seize upon the essence of the child—the intrinsic motivation for spontaneous activity.

By preparing the environment with care and intelligence beforehand, the Montessori teacher has additional time to accomplish another crucial task: *becoming an astute observer of a child's subjective experience* (Montessori, *To Educate*). If one cannot detect when a child's concentration wanes and boredom or anxiety sets in, it is impossible to create an environment suited to optimal experience. This art of observation is often more subtle and "passive" than traditional approaches and more in line with traditional conceptions of wisdom (see Csikszentmihalyi & Rathunde, "The Psychology of Wisdom"). The wise person knows that indirect approaches are often the best way to help others help themselves. Similarly, the directress must know what to say, and what not to say, insofar as it might affect the child's intrinsic motivation. A premium must be placed on knowing when not to interrupt the child and when to step in with a new challenge. Just as we would not think to interrupt an adult who is immersed in work, we should have the same respect for a child's focus of attention.

Montessori developed her method and educational philosophy along these lines by thinking experientially and putting the child's concentration at the forefront. Perhaps there is no better testament to her perception and insight than in the way she anticipated several contemporary lines of research that are relevant for children's motivation. For instance, her observations about praise and encouragement

A complex family system provides an ideal context for flow and concentration because—like a prepared school environment—it allows *simultaneously* for individuality and community, freedom and discipline, and differentiation and integration.

anticipated a well-known area of research that explores how praise and rewards can encourage *extrinsic* rather than intrinsic motivation (see Deci & Ryan). Montessori remarked that a teacher must encourage a child but be careful "not to spoil the perfect

dose” such that the child is motivated to work in order to “obtain merit from [the teacher]” (cited in Standing 310). She understood that a simple comment such as “How nicely you are doing that,” or even observing too closely what a child is doing, can be enough to disturb concentration. “If a child begins to work with the motive of obtaining praise from us,” she observed, “he will begin to develop all sorts of tricks.... In this way we might waste that precious energy which is in him” (cited in Standing 310).

Montessori also warned against helping children complete tasks that they can finish themselves. She believed in a “Golden Mean” whereby a teacher provides *just enough instruction* and no more than the indispensable minimum. Standing summarized her stance on this issue: “The general rule is that the teacher should not intervene when she finds the child engaged in some spontaneous activity which is orderly and creative” (311). With these insights, Montessori anticipated another current influential paradigm in education—Vygotskian perspectives on “guided participation.” A teacher using a Vygotskian approach protects a child’s motivation and encourages feelings of mastery and efficacy by knowing when to help the child and when to back off and let the child work alone. This is all part of a delicate give and take that pays particular attention to challenging a child at the edge of his or her skills, or in the child’s “zone of proximal development” (see Rogoff).

Finally, all of these qualities of a teacher depend first upon a “spiritual conversion” that sees nurturing the essence of childhood as serving the highest goals of civilization. The teacher must, above all else, trust that spontaneous energy and concentration lie at the heart of true education and healthy development, and trust that if such energy is consistently released and directed in the classroom, the child will acquire self-discipline that carries over to other aspects of life.

The Family Context of Optimal Experience: A Comparison to the Prepared Environment

There are many points of contact between the Montessori approach to preparing a classroom environment and the idea of creating a home context for optimal experience. The main overlap occurs in four

areas (see also Rathunde, “The Context of Optimal Experience”; Rathunde, “Family Context and the Development”; Rathunde, “Family Context and Talented”; and Rathunde, “Parent-Adolescent”): 1) believing in the importance of spontaneous interest to the point that a main “goal” of parenting becomes creating a context for optimal experience, 2) maintaining a balance of freedom and discipline in the family that cultivates a corresponding balance in a child’s use of attention, 3) conceptualizing a “parent” as a protector of a child’s focus of attention so that care goes into creating an environment that avoids disorder and distraction, and 4) cultivating the skill as a parent to be a sensitive observer of a child’s subjective experience in order to help the child maintain an appropriate skill/challenge balance. In these ways, a good teacher/directress and a good parent are similar with respect to creating a context for optimal experience.

This approach to parenting shares many similarities with other parenting approaches; however, it is unique in its starting place. In other words, it constructs parenting from the vantage point of children’s optimal experience. Likewise, the Montessori approach to education shares similarities with other education approaches, but the experiential starting point sets it apart. Such a unique perspective has proven useful for generating provocative hypotheses about parenting. For instance, why does so much research demonstrate that a balance between freedom and discipline in the home—or “responsive” and “demanding” parenting (see Baumrind)—is associated with healthy child development? An experiential framework suggests how this combination of qualities is ideal for children’s concentration and therefore the *development of personal dispositions* that will afford greater control over attention in the future.

A clue as to why such a family context is ideal for developing concentration and focus can be found in the classic writings of William James and John Dewey (*Experience and Education; Interest*). In a well-known passage on the “varieties of attention,” James (416-424) distinguishes a *passive* or immediate mode, where interest is effortless, from an *active* or voluntary mode, where an effort is made to focus attention and filter out irrelevant stimuli in order to maintain interest. He recognizes that the passive-immediate mode is typical of children and characterized by an “extreme mobility of attention,” but if this

mobility does not come under increased control with maturity, it results in an unproductive pattern of mind-wandering in adulthood. Like Montessori, James believed that passive-active shifts of attention (i.e., what Montessori would call the interplay of concrete/physical perceptions and abstract/mental forces of “will”) are needed to develop impressions that are, at first, vague or confusing. Under favorable conditions, this dialectic proceeds for hours at a time as the object of attention goes through continual development and change. James, like Montessori, also identifies the ability to sustain interest as a mark of genius and associates it with intellectual achievement (see also Rathunde, “Wisdom”).

John Dewey, in concert with James’ insights, also thought that if concrete, immediate interest were separated from a longer-term focus, effective thinking would be blocked. He remarked, “Experiences may be so disconnected from one another that, while each is agreeable or even exciting in itself, they are not linked cumulatively to one another” (*Experience* 26). James and Dewey believed that the rhythm between these complementary opposites provides the intrinsic motion for learning and development. However, neither thinker spent much time considering the experiential correlates of this dialectic. In other words, how does it feel when one is in balance or out of balance? Optimal experience theory and Montessori’s education philosophy directly focus on this experiential dimension. By emphasizing the recurrence of deep concentration, both provide a starting point for reflection on how to construct a context for optimal experience.

A *complex family system* provides an ideal context for flow and concentration because—like a prepared school environment—it allows *simultaneously* for individuality and community, freedom and discipline, and differentiation and integration. To create such a context requires parents to deftly balance both “sides” of these dimensions: parents must be warm and affectionate, listening in an open way, eliminating problems and distractions, offering children opportunities to select and choose their activities, and so on. The assumption here—one that has been supported by research with adolescents—is that such conditions are associated with immediate interest (Rathunde, “Family Context and the Development”; Rathunde, “Family Context and Talented”). On the other hand, when parents provide consistency

and structure at home, set rules and maintain discipline, and challenge children with progressive expectations of maturity, research has shown an experiential association with thinking about long-term interests and goals (Rathunde, "Family Context and the Development"; Rathunde, "Family Context and Talented"). When *both conditions are present in a family*, therefore, children are more likely to find the synchrony of concrete and abstract modes of attention that Montessori, James, and Dewey associated with deep concentration and the growing control of attention. Results from a number of studies have confirmed that complex family contexts are associated with optimal experience and flow, and imbalances in the family (e.g., contexts that provide too much freedom or too much structure) are associated with specific negative experiential states.

Although the comparison being made here is between a complex family environment and a Montessori prepared classroom environment, it should be clear that they have much in common. Whether or not the research findings from these family studies would also apply in school environments is an important question for future research. For now, it can be said that each approach to creating a positive environment for children can benefit from the strengths of the other. The research conducted on the family context of optimal experience helps to provide a solid conceptual base in optimal experience theory and in the work of other experientially oriented social scientists. Montessori approaches, through extensive practical experience in countless settings, provide a wealth of detail on how to construct a context for optimal experience. Both approaches, in the final analysis, urge adults to pay more attention to children's subjective experience and episodes of concentration in order to create a healthier environment for learning and development.

MONTESSORI EDUCATION IN ADOLESCENCE: BUILDING A RESEARCH PLAN

The underlying approach in Montessori education does not change with the age of the child. In other words, the importance of deep concentration, finding an equilibrium between acting and thinking, and attention to preparing an environment that facilitates optimal experience are key elements of the method during any developmental period. However, the specifics of the method change over time. In other

words, they evolve in order to provide an appropriate scaffold for children's deep concentration. One would not expect an adolescent to become absorbed in trying to fit cylinders into a wooden block; however, an adolescent is likely to become absorbed in a lively discussion with friends.

Optimal Experience in Social Life: The Prepared Context of Adolescence

As a first step in building a research plan, it is important to ask: What qualities or outcomes are essential for adolescent development? Also, what contextual dimensions promote these qualities through deep concentration and optimal experience? Before addressing these questions, however, it is helpful to briefly review how Montessori conceptualized earlier phases of child development.

There are, according to Montessori, two distinct phases of development leading up to adolescence: 1) birth to about age six, and 2) age seven to puberty. In the early part of the first phase, a child's attention is mainly fixed on sensory input. He or she is in the process of absorbing the world (Montessori, *Absorbent*). Montessori described this absorption as "unconscious" to the extent that a child does not have a conscious plan and the child's sense of "I" or ego is not fully developed. What is unconscious and absorbed through sense impressions comes "to the surface," or to consciousness, through increasing movement and the free and active manipulation of objects. This physical activity ("from hand to brain") should take place in a carefully prepared environment, leading to the increasing development of the ego and a host of other healthy outcomes. In the second phase, a child begins to be interested in outer things, and growing cognitive skills allow the child to probe *the reasons behind things*. Therefore, a wider and more challenging school environment is needed. Children become interested in the laws governing the universe. They can be introduced to the grand ideas of culture and inspired by the achievements of humankind. Their consciousness moves toward a wider social radius and extends to life outside the home and its limited circle of relatives and friends. Classroom instruction, however, should not be abstract. For instance, children might be taken to visit places of work and production in order to see the interconnectedness of knowledge and social processes. They should also learn something about the lives of

individuals who have overcome adversity and contributed something remarkable to culture.

If phase 1 of development involves exploring the world through sense impressions and physical movement, and phase 2 involves the increasing emergence of reason and imagination to probe the nature of things, then what distinguishes adolescence is exploring *the self in the context of others* (Montessori, *The Four Planes of Development*). Montessori was clear that a new social dimension of development emerges in adolescence:

There is being born in him a new “sensitive period” which reveals itself in a *greatly increased sensitiveness to all facts and experiences which relate to his life as a social being...* For the first time he becomes clearly conscious of himself, not simply as an individual ... but as a separate member of human society with all that it implies. (Standing 116)

Whereas in phase 2 the child was more extroverted and interested in the outer world, the adolescent becomes more appropriately introspective and interested in the creation of the “socially conscious individual” (Montessori, cited in Standing 116).

Montessori’s comments about adolescents’ social experience are consistent with contemporary developmental thought. For instance, Erikson—who received Montessori training in Rome from Maria Montessori—put forward a similar notion of identity that emphasized the importance of finding a social fit (see also Marcia). What distinguishes the Montessori approach, however, is the emphasis on *creating the conditions for engaging this identity process in independent activity and deep concentration*.

Many current high schools, thought Montessori, fail in this task. Adolescents are often treated “like babies” in being tied all day to the classroom and directed by external forces, such as good or bad marks, to pay attention in class (Montessori, *From Childhood*). Their efforts, instead of bearing fruit through deep engagement in social processes that build self-confidence, are often wasted by a relentless process of measuring and judging their academic work. Her vision to correct this

narrow focus of attention was radical, but it was consistent with her educational philosophy. She suggested the creation of a specially prepared environment that would be suited to concentration in social processes, or an *experimental school of social life* that she called *Erdkinder*.⁹

The literal translation of the German word *Erdkinder* is “land children,” and this concept reflects Montessori’s belief that adolescents should engage social processes in the context of nature where they can become familiar with the building blocks of civilization (e.g., production and exchange). Such a “school” context would contain all the elements that have already been discussed with respect to a context for optimal experience. For instance, there would be freedom of choice within a clear rule structure; thus, self-adjustment would always be made in relation to an ordered environment that eliminates unnecessary or unclear choices that waste energy. In addition, the context of nature (i.e., a rural setting for the school) would reinforce the lifelong Montessori lesson of engaging sensory and physical activities in coordination with abstract thought.

The consequence of failing to prepare a context for optimal experience in social life could be devastating because adolescence is a key period for social adjustment. For instance, a school that ignores the quality of social life and cares only about testing and measuring academic outcomes could result in various social “deficits,” such as a sense of inferiority, withdrawal from others, and social anxiety. A natural consequence of such deficits, in turn, would be a lessened ability in adulthood to work in harmony with others. On this point Montessori was very clear, and it distinguishes her method in this phase of development: “Here—in the problem of social adjustment—lies the really vital problem of education for the adolescents, far more so than in the passing of examinations” (cited in Standing 117).

CONCLUSIONS

I have argued that Montessori’s most profound insights about children and education can receive a new hearing and a deeper appreciation as the result of recent theoretical developments in the

⁹The first such school to fully implement this vision has just opened in the fall of 2000 (see www.montessorifarm.org and David Kahn’s article in this *Journal* issue).

field of human development. More specifically, new applications and extensions of optimal experience theory (Csikszentmihalyi, *Flow*; Csikszentmihalyi, Rathunde, & Whalen; and Csikszentmihalyi & Rathunde, "Development") suggest how optimal experiences can serve as a motor for lifelong learning and development. Montessori's intuitive understanding of the importance of optimal experience, especially the deep concentration of young children, and her willingness to build her entire method around this often taken for granted phenomenon, allows for a strong connection to be forged between these two very different, yet surprisingly related, perspectives. Furthermore, each perspective has strengths that can inform the other. Montessori schools provide a real-life "laboratory" for practicing, developing, and observing these experiential principles in action. Optimal experience theory, on the other hand, provides a solid theoretical and empirical grounding for research on Montessori education.

I have tried to link these two perspectives on a conceptual level and on a more concrete level involving research with adolescents. Although adolescence was not a central focus in Montessori's writings, her insights about preparing environments for optimal experience cut across all stages (Wentworth). Moreover, the relatively poor quality of adolescent experience in many middle schools and high schools (see Eccles et al.) suggests that a Montessorian approach may be especially relevant at this time. Research during adolescence would also be useful given the strong emphasis Montessori placed on deep engagement in social relations. This emphasis challenges more traditional educational methods that focus almost exclusively on cognitive development.¹⁰

Finally, optimal experience theory and Montessori education share the attribute that neither one represents mainstream thinking in the fields of human development and education. Therefore, the hypotheses outlined in this article may or may not capture the imagination of large numbers of researchers. Nevertheless, for those who recognize the importance of an extended childhood, and for those who believe that deep engagement is the royal road to healthy development, the coalescence of these two approaches provides a comprehensive

¹⁰One might argue that the pervasive lecture approach used so often in traditional classrooms is not ideal for cognitive development, despite the fact that such development is the stated goal.

way to envision the related processes of education and human development. The synthesis of these perspectives also provides a new framework for conducting research that might help shed light on ways to improve the lives of children and adolescents.

REFERENCES

- Baldwin, J.M. *Thought and Things: A Study of the Development and Meaning of Thought*. Vol. 1. New York: Macmillan, 1906.
- Baumrind, D. "Rearing Competent Children." *Child Development Today and Tomorrow*. Ed. W. Damon. San Francisco: Jossey-Bass, 1989.
- Bredekamp, S. *Developmentally Appropriate Practice in Early Childhood Programs Serving Children from Birth through Age Eight*. Washington, DC: National Association for the Education of Young Children, 1987.
- Carnegie Council on Adolescent Development. *Great Transitions*. New York: Carnegie Corporation, 1995.
- Csikszentmihalyi, M. *Creativity: Flow and the Psychology of Discovery and Invention*. New York: HarperCollins, 1997.
- Csikszentmihalyi, M. *Flow: The Psychology of Optimal Experience*. New York: Harper & Row, 1990.
- Csikszentmihalyi, M., & K. Rathunde. "The Development of the Person: An Experiential Perspective on the Ontogenesis of Psychological Complexity." *Theoretical Models of Human Development*. Ed. R.M. Lerner. New York: Wiley, 1998. Vol. 1 of *The Handbook of Child Psychology*. William Damon, ed. in chief. 5th ed. 4 vols. 1998.
- Csikszentmihalyi, M., & K. Rathunde. "The Psychology of Wisdom: An Evolutionary Interpretation." *Wisdom: Its Nature, Origins, and Development*. Ed. R.J. Sternberg. New York: Cambridge, 1990.
- Csikszentmihalyi, M., K. Rathunde, & S. Whalen. *Talented Teenagers: The Roots of Success and Failure*. New York: Cambridge, 1997.

- Csikszentmihalyi, M., & B. Schneider. *Becoming Adult: How Teenagers Prepare for the World of Work*. New York: Basic Books, 2000.
- Csikszentmihalyi, M., & I. Selega-Csikszentmihalyi, eds. *Optimal Experience: Psychological Studies of Flow in Consciousness*. New York: Cambridge, 1988.
- Cuevas, E. "The Prepared Environment." *The NAMTA Journal* 22.2 (1997, Spring): 107-110.
- Damon, W. (1998). "Preface to *The Handbook of Child Psychology*, Fifth Edition." *Theoretical Models of Human Development*. Ed. R.M. Lerner. New York: Wiley, 1998. Vol. 1 of *The Handbook of Child Psychology*. William Damon, ed. in chief. 5th ed. 4 vols. 1998.
- Deci, E.L., & R.M. Ryan. *Intrinsic Motivation and Self-Determination in Human Behavior*. New York: Plenum, 1985.
- Dewey, J. *Experience and Education*. New York: Macmillan, 1938.
- Dewey, J. *Interest and Effort in Education*. Cambridge: Riverside, 1913.
- Eccles, J.S., A. Wigfield, C. Midgley, D. Reuman, D. Mac Iver, & H. Feldlaufer. "Negative Effects of Traditional Middle Schools on Students' Motivation." *Elementary School Journal* 93 (1993): 553-574.
- Erikson, E. *Childhood and Society*. New York: Norton, 1950.
- Gardner, H. *Multiple Intelligences*. New York: Basic Books, 1993.
- Groos, K. *The Play of Man*. New York: Appleton, 1901.
- James, W. *Principles of Psychology*. New York: Henry, 1890.
- Kahn, D. "Normalization and Normality across the Planes of Development." *The NAMTA Journal* 22.2 (1997, Spring): 122-136.

- Koch, S., & D. Leary, eds. *A Century of Psychology as Science*. New York: McGraw-Hill, 1985.
- Lerner, R. *On the Nature of Human Plasticity*. New York: Cambridge, 1984.
- Loeffler, M.H. *Montessori in Contemporary American Culture*. Portsmouth, NH: Heinemann, 1992.
- Lorenz, K. *Studies in Animal and Human Behavior*. Vol. 2. Cambridge, MA: Harvard University Press, 1971.
- Marcia, J.E. "Development and Validation of Ego Identity Status." *Journal of Personality and Social Psychology* 3 (1966): 551-558.
- Montagu, A. *Growing Young*. Massachusetts: Bergin & Garvey, 1989.
- Montessori, Maria. *The Absorbent Mind*. 1949. New York: Dell, 1967.
- Montessori, Maria. *From Childhood to Adolescence*. 1948. Trans. A.M. Joosten. Rev. ed. New York: Schocken, 1976.
- Montessori, Maria. *To Educate the Human Potential*. 1948. Oxford, England: Clio, 1989.
- Montessori, Maria. *The Four Planes of Development*. Amsterdam: Association Montessori Internationale, 1971.
- Montessori, Maria. "Lectures Held by Dr. Maria Montessori During a Montessori Training Course." Unpublished. London. 1946.
- Montessori, Maria. *The Secret of Childhood*. 1936. New York: Ballantine, 1981.
- Montessori, Maria. "The Spiritual Regeneration of Man." *The NAMTA Journal* 22.2 (1997, Spring): 159-166. Address at 22nd Annual Conference of Educational Associations, London, 1934.
- Montessori, Maria. *Spontaneous Activity in Education*. 1917. New York: Schocken, 1965. Vol. 1 of *The Advanced Montessori Method*. 2 vols.

- Montessori, Maria. *What You Should Know about Your Child*. 1948. Adyar, Madras, India: Kalakshetra, 1966.
- Montessori, Mario. *Education for Human Development: Understanding Montessori*. New York: Schocken, 1976.
- Piaget, J. *Play, Dreams, and Imitation in Childhood*. New York: Norton, 1962.
- Rathunde, K. "The Context of Optimal Experience: An Exploratory Model of the Family." *New Ideas in Psychology* 7 (1989): 91-97.
- Rathunde, K. "Family Context and the Development of Undivided Interest: A Longitudinal Study of Family Support and Challenge and Adolescents' Quality of Experience." *Applied Developmental Science* (in press).
- Rathunde, K. "Family Context and Talented Adolescents' Optimal Experience in School-Related Activities." *Journal of Research on Adolescence* 6.4 (1996): 603-626.
- Rathunde, K. "The Organization of Energy in Work and Play: Dewey's Philosophy of Experience and the Everyday Lives of Teenagers." *Society and Leisure* 16 (1993): 59-76.
- Rathunde, K. "Parent-Adolescent Interaction and Interest." *Journal of Youth and Adolescence* 26 (1997): 669-689.
- Rathunde, K. "Wisdom and Abiding Interest: Interviews with Three Noted Historians in Later Life." *Journal of Adult Development* 2.3 (1995): 159-172.
- Rathunde, K., M. Carroll, & M. Huang. "Family Dynamics and the Occupational Formation of Children." *Becoming Adult: How Teenagers Prepare for the World of Work*. Ed. M. Csikszentmihalyi & B. Schneider. New York: Basic Books, 2000.
- Rogoff, B. *Apprenticeship in Thinking: Cognitive Development in Social Context*. New York: Oxford University Press, 1990.

Standing, E.M. *Maria Montessori: Her Life and Work*. 1957.
Rev. ed. New York: New American Library, 1984.

Sternberg, R. "Educating Intelligence: Infusing the Triarchic Theory into Instruction." *Intelligence, Heredity, and Environment*. Ed. R. Sternberg & E. Grigorenko. New York: Cambridge University Press, 1997.

Waldrop, M. *Complexity: The Emerging Science at the Edge of Order and Chaos*. New York: Simon & Schuster, 1992.

Wentworth, R. *Montessori for the New Millennium: Practical Guidance on the Teaching and Education of Children of All Ages, Based on a Rediscovery of the True Principles and Vision of Maria Montessori*. Mahwah, NJ: Lawrence Erlbaum, 1999.

Werner, H. *Comparative Psychology of Mental Development*. New York: International Universities Press, 1958.

