



Kevin Rathunde

A COMPARISON OF MONTESSORI AND TRADITIONAL MIDDLE SCHOOLS: MOTIVATION, QUALITY OF EXPERIENCE, AND SOCIAL CONTEXT

by Kevin Rathunde

ACKNOWLEDGEMENTS

This research could not have been conducted without the help of many people. I would like to thank the students, teachers, and administrators who enthusiastically participated in this study. Professor Mihaly Csikszentmihalyi has been a continual source of insight and support. He provided the comparison data and was a co-investigator on the project. Annette Haines, as research associate, put in an enormous amount of time and passion and was essential for the success of the project. Julie Carmalt provided invaluable help at the University of Utah. The O'Shaughnessy Foundation, Dekko Foundation, and Hershey Foundation provided essential financial support. Finally, I would like to thank David Kahn for seeing the connections between Montessori philosophy and optimal experience theory and having the courage to initiate a study that compared Montessori schools to traditional middle schools.

INTRODUCTION

By the time readers of *The NAMTA Journal* see these words, two articles from this study will be under review by academic journals: *Middle School Students' Motivation and Quality of Experience: A Comparison of Montessori and Traditional Middle Schools* (Rathunde & Csikszentmihalyi) and *The Social Context of Middle School: Teachers, Friends, and Activities in Montessori and Traditional School Environments*

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(Rathunde & Csikszentmihalyi).¹ It will take some time before these articles are published. Therefore, the purpose of this article is to provide a summary of the key findings from the study, without the painstaking details that are necessary in a research article.

In keeping with this informal format, let me start with a few personal observations about the study. Before David Kahn asked me to take on this project, I did not know much about Montessori schools. I had picked up a few facts from the child development literature, but

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that was about it. My only personal experience with a Montessori approach was sixteen years ago when my eldest daughter attended a preschool in Illinois that offered a “Montessori component” one day a week. When I first heard the suggestion that the Montessori philosophy had many things in common with flow

theory, a perspective I knew very well, I was curious, but not yet excited about the project. Much of my past research had been focused on the family context of flow experience (Rathunde, “Family Context”); educational contexts were always an important part of the picture, but they were not at the center of my interest.

After being invited to a meeting in New York where the lack of research on Montessori schools was a central topic of discussion, David Kahn informed me of his plans to initiate a study of Montessori schools and flow experience, and asked me if I would be interested in being a principal investigator on the project. I started reading the Montessori literature and soon discovered for myself the connection between the flow experience and Maria Montessori’s emphasis on spontaneous activity. Now my interest was piqued. I wrote an article

¹Interested readers can request a copy of the submitted articles from Dr. Rathunde (email: rathunde@fcs.utah.edu).

for *The NAMTA Journal* outlining three connections between Montessori education and optimal experience theory: (1) an experiential orientation, (2) attention to the context of experience, and (3) a view of human nature that celebrated a child's intrinsic motivation (Rathunde, "Montessori Education and Optimal Experience"). When the funding for this study finally became available, first from the O'Shaughnessy Foundation and later from the Dekko Foundation, I gladly took on the project and gave it a home at the University of Utah in Salt Lake City. From there, it was easy to coordinate meetings with Professor Csikszentmihalyi at the Quality of Life Research Center in the Peter F. Drucker School of Management at Claremont Graduate University (Claremont, CA).

It is worth repeating that I am not a member of the Montessori community. Despite the fact that I feel a connection to the Montessori philosophy of intrinsic motivation, my only task and responsibility was to report what I found after exploring the data. Now that I have completed the comparative part of this study, however, I must admit that I am pleased to report back supportive news: *Students in the Montessori middle schools reported more positive motivation and experience than a matched sample of students from traditional middle schools.* A number of other findings confirmed that the Montessori schools created a more positive community for early adolescent education. These findings are presented here in two parts. Part 1 will compare the Montessori and traditional students' quality of experience. Part 2 will focus on the social contexts of the Montessori and traditional schools, and the factors involved in creating a supportive learning community.

These results provide positive reinforcement for the Montessori community. As a supportive outsider, however, I would encourage Montessorians also to think about these findings in the broader context of middle school education. As many of you know, there are trends in current education policy that emphasize student performance without much regard for the quality of student experience. Even though many Montessori schools are private, they are likely to be influenced by these developments in the culture. Therefore, in addition to summarizing the results of the comparison, this article will also focus on the quality of middle school education.

**PART 1: COMPARING MONTESSORI AND TRADITIONAL STUDENTS’
MOTIVATION AND QUALITY OF EXPERIENCE**

The difficulties that many young adolescents encounter in middle school have been well documented (Carnegie Council on Adolescent Development; Eccles, Midgley, Wigfield, et al.; U.S. Department of Education). During the transition from the elementary school years, young adolescents may begin to doubt the value of their academic work and their abilities to succeed (Simmons & Blyth; Wigfield et al.). A central concern of many studies is a student’s motivation; a disturbingly consistent finding associated with middle school is a drop in students’ intrinsic motivation to learn (Anderman, Maehr, & Midgley).

Why the downward trends in middle school? Are these trends inevitable? These are questions that have motivated a great deal of thought in the literature on motivation and education. Earlier in the century, most thinkers thought that puberty brought on a period of “storm and stress” that inevitably disrupted life in the family and in school. However, most researchers now believe that the negative changes that often occur in middle school result from a *mismatch* between the typical learning environment at school and an adolescent’s developmental needs (Eccles, Midgley, Wigfield, et al.).

Jacquelynne Eccles and her colleagues (Eccles, Midgley, Wigfield, et al.) have written extensively on the poor fit between adolescents’ developmental stage and the school environment. Young adolescents are developing a greater capacity for deductive thought and the ability to “see below the surface of things.” These same cognitive skills, however, also increase the capacity for self-evaluation, self-consciousness, and a potential loss of self-esteem (Covington). Young adolescents also want to exercise more choice and autonomy in the process of self-definition, and they increasingly look to peer relationships for feedback (Erikson; Simmons & Blyth). Middle schools, however, often provide a context that does not fit well with these emerging characteristics. Despite the students’ capacity for more independent thought, the typical school environment is more rigid and provides fewer opportunities for freedom of choice (Eccles, Lord, & Midgely). Although adolescents are more peer-oriented, middle schools often discourage collaborative work (Wentzel). When adult mentors are

needed more than ever, teachers are seen as more remote and impersonal (Feldlaufer, Midgley, & Eccles). At a time of increasing self-consciousness, middle schools emphasize public evaluation and grades more strongly than ever (Anderman, Maehr, & Midgley).

These mismatches could not come at a worse time in development. Many scholars point out that habits formed in adolescence could undermine lifelong learning and the future quality of life (Sternberg; Csikszentmihalyi & Schneider). Therefore, a great deal of effort has been invested over the last fifteen years trying to identify the qualities of classrooms and school cultures that enhance student success and motivation (Ames; Anderman, Maehr, & Midgley). Unfortunately, Montessori ideas have gone unrecognized and have not contributed to the debate about how to reform middle schools. One obvious reason for this oversight is that Maria Montessori wrote more about early childhood than about adolescence. However, the transposition of Montessori philosophy to the middle school environment is clearly possible. According to the NAMTA database of schools, approximately 250 middle schools now incorporate some aspects of a Montessori model. Furthermore, when the Montessori philosophy is applied to middle schools, it is surprisingly consistent with contemporary perspectives on motivation and school reform.

The most obvious implication of flow theory for middle school reform is the importance of placing a high value on student experience. This experiential perspective is the strongest link between optimal experience theory and Montessori education. Maria Montessori believed that children's spontaneous concentration revealed the essence of being human, and there is little doubt that what she had in mind when speaking about concentration was something akin to flow.

Montessori Ideas and Contemporary Motivation Theory

Two contemporary motivation theories, goal theory and flow theory, have important implications for middle school reform and much in common with Montessori philosophy. Before discussing the results from the study, it is important to lay down a conceptual

framework for understanding why we expected Montessori students to report a more positive quality of experience in school. In other words, both theories can help illustrate different positive dimensions of the Montessori schools.

Goal Theory

Goal theory suggests how students' goals mediate the quality of their engagement at school. Two qualitatively different kinds of goals are distinguished: task and performance (Anderman & Maehr). Task-focused students are intrinsically motivated; they are drawn to novelty and the desire to master challenging tasks. Performance-focused students, in contrast, are worried about public evaluations of their ability; this can disrupt learning by diminishing risk-taking and effort (Dweck & Leggett). Since the characteristics and structure of many middle schools appear to reinforce and socialize performance goals (Anderman, Maehr, & Midgley), attempts to change classrooms and school cultures have focused on strategies that presumably reinforce students' task focus. These strategies have been summarized with the acronym "TARGET" (Task, Authority, Recognition, Grouping, Evaluation, and Time).

It is remarkable how much the policies and practices of the Montessori schools in this study reflected the TARGET proposals. For example, a *task focus* was emphasized by a common school culture that celebrated intrinsic motivation. Teachers, consistent with their Montessori training, gave students freedom to select projects and several hours per day to complete them. *Authority* was not rigidly hierarchical in the Montessori classrooms; students often planned details of field trips, had input into various topics of study, and were called upon in "leadership groups" to help maintain the classrooms and the school. *Recognition* of students was done in ways that avoided achievement competition. For example, one frequently used strategy was to have students identify a topic of personal interest, research it, and then be responsible for presenting the information to the class. *Ability grouping* was rarely practiced; instead, student groups were typically based on shared interests. Because a significant amount of daily time was unstructured, students also had ample time for peer interaction and were encouraged to collaborate with others. In terms of *evaluation*, only about one quarter of the Montessori students re-

ceived grades; and those who did, did so voluntarily (i.e., it was not a mandatory practice). Finally, *time* was often managed in flexible ways. For example, block scheduling at some of the schools allowed teachers to expand or contract their meeting time with students depending upon what was happening at the moment in the classroom.

All of these observations are based on site visits made to the Montessori schools and on conversations with teachers. The five schools, of course, were not exactly the same, but there was consistency on the basic principles outlined above. The schools were also similar in terms of students' freedom of movement, the buzz in the classroom, and the informal and aesthetically pleasing classroom environments in each of them. These qualities were readily apparent, and they distinguished the Montessori schools from the more formal and structured environments one typically encounters in middle schools.

Flow Theory

Optimal experience theory, or flow theory, is familiar to many Montessorians. Flow is an intrinsically motivated, task-focused state characterized by full concentration, a change in the awareness of time (e.g., time passing quickly), feelings of clarity and control, a merging of action and awareness, and a lack of self-consciousness (Csikszentmihalyi, *Flow*). The experience is triggered by a *good fit* between a person's skills in an activity and the challenges afforded by the environment. Flow has been shown to promote learning and development because experiences of deep and total concentration are intrinsically rewarding, and they motivate students to repeat an activity at progressively higher levels of challenge (Csikszentmihalyi, Rathunde, & Whalen).

The most obvious implication of flow theory for middle school reform is the importance of placing a high value on student experience. This experiential perspective is the strongest link between optimal experience theory and Montessori education. Maria Montessori believed that children's spontaneous concentration revealed the essence of being human, and there is little doubt that what she had in mind when speaking about concentration was something akin to flow.

According to E.M. Standing's biography of Montessori, a key turning point in the development of her method occurred after observing a three-year-old child who was so engaged with wooden cylinders that she could not be distracted. Montessori was impressed with children's powers of concentration: "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 ignored all that is happening around him" (Montessori, Unpublished lectures, 83-84). Witnessing this episode apparently evolved into the main theme of the Montessori method: creating a school environment that fostered deep engagement and concentration.

According to optimal experience theory, a school or family context enhances flow experience by (a) supporting students' interests and (b) challenging students to work at developing those interests (Csikszentmihalyi & Rathunde; Rathunde, "Family Context"). In this way, a dynamic interrelation of involuntary and selective modes of attention is initiated (see James)—or what Dewey once referred to as being "playful and serious at the same time" (218). Such a combination is thought to provide an efficient use of attention that generates the momentum necessary to trigger flow experiences (Rathunde, "The Experience of Interest"; Rathunde, "Family Context"). For example, if a school context were only supportive, children would be susceptible to "fooling," or jumping haphazardly from one interest to the next without focusing on a goal. Conversely, if a context were only challenging—the more typical condition in most middle schools and high schools—children would be susceptible to "drudgery," or being told what to concentrate on without an emotional investment in what they were doing at the moment.

The policies and practices of the Montessori schools in this study also reflected the above implications of optimal experience theory. For example, consistent with the idea of combining playfulness and seriousness, the schools emphasized the Montessori theme of keeping body and mind united through the integration of *acting and thinking* in the classroom (Montessori, *From Childhood to Adolescence* 24-25). In this way, the teachers avoided the overtly didactic methods more typical of traditional middle schools (e.g., frequent lectures). Such

methods often separate thinking from its experiential context and result in drudgery. Consistent with the idea of creating a balanced context that supports and challenges students' interests, the schools in the study practiced the traditional Montessori doctrine of *freedom with discipline*. Although most non-Montessorians only recognize a Montessori environment as one where a student is given the freedom to choose an activity and explore his or her interests, Maria Montessori also emphasized the need for discipline: "You must not imagine that liberty is something without rule or law" (cited in Standing 286). In these two ways, the Montessori schools employed strategies that were expected to enhance student concentration and flow.

In summary, many of the policies and practices of the Montessori schools in this study were consistent with two contemporary motivation perspectives, goal theory and flow theory. The expectation that the Montessori students would report a more positive quality of experience was based on these similarities.

The Design of the Study

Some information about the design of the study must be presented in order to provide readers with a context for understanding the results. However, many of the details about the study's methods and statistics can be safely eliminated without jeopardizing an understanding of what was found. Those readers who would like more information than is presented here can find it in the two articles submitted for publication (Rathunde & Csikszentmihalyi, *Middle School Students' Motivation*; Rathunde & Csikszentmihalyi, *The Social Context of Middle School*).

Who Participated?

Five Montessori schools from four U.S. states participated in the study. Approximately 150 sixth and eighth grade students (60% female and 40% male) attended the five schools and filled out the necessary measures. The traditional middle school students were selected from a larger study involving twenty middle schools and approximately 400 students in grades six and eight (see Csikszentmihalyi & Schneider). The full sample encompassed all social class levels, and approximately half of the students were from ethnic minority families.

Some of the first analyses in the study took a closer look at the full sample of traditional students; the results indicated that the full sample was too different from the Montessori students to offer a fair comparison. Using questionnaires and other sources of information, we found that the traditional students had larger class sizes, many of the schools were located in the inner city, there were higher numbers of minority students, and their average grades were lower (e.g., compared to the small sample of Montessori students who received grades). More importantly, their family backgrounds were very different. The traditional students came from families with fewer resources (e.g., computers, books), more divorce, lower parental employment, a higher number of children, less parental education, less parental discussion about school, less parental monitoring of school activities, and less parental involvement at school.

Since previous research has shown that family characteristics, socioeconomic status (SES), and ethnic background are strongly related to students' engagement in the classroom (Finn; Lee & Smith; Marks; Wentzel), a subset of schools was selected that matched the primarily European American and higher SES status of the Montessori students. Six of the twenty middle schools in the traditional sample satisfied the matching of criteria (average parental education equivalent to a bachelor's degree, ethnic composition approximately 75% European American, small teacher-student ratios). The final sample of traditional students included approximately 160 students (55% female, 45% male).

To confirm that the two samples were indeed similar and allowed a fair comparison of schools, the samples were compared again using all the variables described above. This time, *there were no statistically significant differences between the two samples on any of the individual, family, school, or community variables*. The ethnic breakdown of the sample was almost exactly the same (approximately 75% white), parents had similar levels of education (bachelor's degree or higher), and the schools were all modern, attractive, and with good student-teacher ratios (approximately 15:1). Table 1 lists the background variables comparing the two samples.

Table 1. Comparison of the Montessori and Traditional Students on Background Variables

- No differences in parents' education
- Similar attractive schools with good teacher-student ratios
- Similar ethnic breakdown
- No differences in home resources
- Similar parent-child discussion about school
- Similar monitoring of school activities
- Parents just as involved at school
- Same number of siblings
- No differences in percent of intact homes
- No differences in mother/father employment
- Similar grades (half A's and half B's)

Data Collection and the Experiential Measures

In addition to making sure that the Montessori and traditional samples were similar in terms of background, it was also important that the students in both samples used similar procedures and measures. Therefore, data collection from the Montessori students was set up using the procedures and measures that had been established several years earlier in the study of traditional students. In other words, students received the same instructions for filling out the various measures, and the measures themselves contained the same questions formatted in a similar way.

Students in both samples responded to the Experience Sampling Method (ESM). The ESM uses watches programmed to signal students approximately eight times per day between the hours of 7:30 am and 10:30 pm for seven consecutive days (see Csikszentmihalyi & Larson). When the watches "beeped," students took out a response form and answered questions about what they were feeling at the moment, where they were, what they were thinking about, and other questions

about their momentary experience. Students in both samples also completed a detailed questionnaire with similar questions about their backgrounds.

The five main ESM measures used in the study of traditional public schools were also used in this study: *affect* (general mood or happiness), *potency* (energy level or excitement), *salience* (feelings of importance), *intrinsic motivation* (sense of enjoyment and interest), and *flow*. A sixth measure was added, *undivided interest* (bringing enjoyment and importance together), based on work done in previous family and education studies (Rathunde, "The Experience of Interest"; Rathunde, "Family Context"). A more complete description of these six measures is presented in Table 2. More detailed information about the reliability of the measures can be found in the research articles (Rathunde & Csikszentmihalyi, *Middle School Students' Motivation*; Rathunde & Csikszentmihalyi, *The Social Context of Middle School*).

The results showed that the Montessori students reported a significantly better quality of experience in academic work than the traditional students. There were strong differences suggesting that Montessori students were feeling more active, strong, excited, happy, relaxed, sociable, and proud while engaged in academic work. They were also enjoying themselves more, they were more interested in what they were doing, and they wanted to be doing academic work more than the traditional students.

More detailed information about the reliability of the measures can be found in the research articles (Rathunde & Csikszentmihalyi, *Middle School Students' Motivation*; Rathunde & Csikszentmihalyi, *The Social Context of Middle School*).

In addition to the undivided interest percentage described in Table 2, three other interest "quadrants" were computed using the intrinsic motivation and salience variables. *Disinterest* was the opposite of undivided interest, or times when intrinsic motivation and salience were *both* below average. Two kinds of "divided interest" were also calculated: *Fooling* described times when intrinsic motivation was above average but salience was below average, and *drudgery* described times when salience was above average and intrinsic motivation was below average. The assumption underlying this classification comes from John Dewey, who suggested that the ideal mental condition was to be "playful and serious at the same time" (218); he

Table 2. Understanding the Measures

HOW THE COMPOSITE MEASURES WERE CALCULATED

1. Several individual items were added together to create four “composite” measures:

AFFECT = happy + relaxed + sociable + proud

POTENCY = strong + active + excited

SALIENCE = challenge + importance to self + importance to future

INTRINSIC MOTIVATION = enjoyment + interest + wish to be doing the activity

2. A value for each composite was calculated for *two contexts at school*: 1) when students were doing academic activities (e.g. working in class, presentations, homework, etc.); and 2) when students were doing non-academic activities (e.g. eating lunch, socializing, leisure, etc.). The ESM item “What was the main thing you were doing?” was used to distinguish these two contexts.

INTERPRETING THE COMPOSITES

All of the measures are standardized so that a score of “zero” means average for the week. Therefore, an affect score of $-.16$ in academic activities would mean that students’ affect while doing schoolwork was below their average levels of affect for the week.

HOW FLOW AND UNDIVIDED INTEREST WERE CALCULATED

Some of the ESM items were used to create percentage scores of flow and undivided interest.

1. When a student responded to an ESM signal, if their skills and challenges were *both* above their average levels for the week, that was considered a flow signal; when a student’s intrinsic motivation and salience were *both* above their weekly levels, that signal was considered undivided interest.

FLOW: above average challenge and skill

UNDIVIDED INTEREST: above average intrinsic motivation and salience

2. A percentage value for each of the above variables was computed for academic and non-academic contexts at school. For example, if a student responded to 10 ESM signals while doing academic work, and 4 of them indicated above average skill and challenge, the flow percentage would equal 40%. The percentage for undivided interest was computed exactly the same way.

referred to divided states that were overly playful or overly serious as “fooling” and “drudgery,” respectively.

Analysis Plan

None of the statistical details of the analyses will be presented in this article. However, a basic description of the technique used, and a primer on some terminology, is useful for making sense of the findings.

The statistical technique selected was multivariate analysis of covariance (or MANCOVA). This is a technique that assesses differences between several variables and factors at the same time, while adjusting or “controlling” for any differences in important background variables. Such an approach attempts to verify that school-related differences found between the Montessori and traditional students are not related to differences in the students’ grade level, education of their parents, ethnic background, or gender.

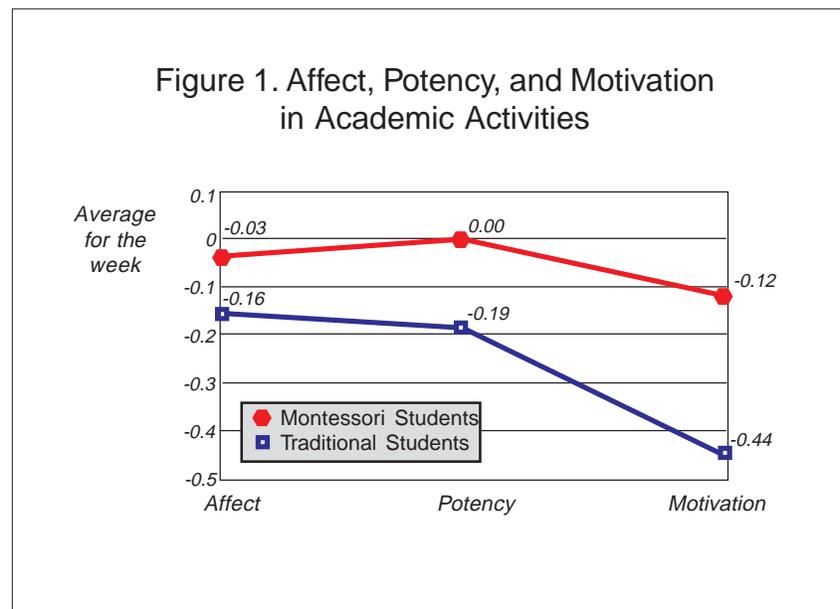
When all of the conditions of the multivariate analyses are successfully met, then one can say with confidence that a particular difference is meaningful or *significant*. Statistically speaking, a significant difference means that there is less than a 5 in 100 chance that the difference could have occurred by chance; or conversely, we could be at least 95% sure that the differences were real and not random. The notation used to represent such a finding is $p < .05$, or probability is less than 5 in 100. Many of the findings in this study were much stronger than this conventional rule of thumb. There were very few significant differences related to grade level or the background variables. Therefore, the remainder of this article focuses on significant differences that occurred between the Montessori and traditional students.

We hypothesized that students in Montessori middle schools would report more positive motivation and experience than the traditional students. This expectation was based on the fact that the policies and practices of the Montessori schools were more in line with contemporary motivation theory. However, *most of these positive differences were expected to occur in academic rather than non-academic activities.*

In other words, non-academic activities were outside the “mission” of the school and less influenced by pedagogical differences. In those circumstances, therefore, students were expected to report similar experiences.

Results (Part 1): Do Montessori Students Have More Optimal Experience While Working in School?

The ESM results are based on approximately 4,000 signals collected from the Montessori and traditional students while they were at school; about 2,500 of those 4,000 signals captured students doing academic work. Figure 1 summarizes the results for three of the composites that measured students’ experience in academic work: affect, potency, and intrinsic motivation. The results showed that the *Montessori students reported a significantly better quality of experience in academic work than the traditional students*. There were strong differences suggesting that Montessori students were feeling more active, strong, excited, happy, relaxed, sociable, and proud while engaged in academic work. They were also enjoying themselves more, they were more interested in what they were doing, and they wanted to be doing academic work more than the traditional students.



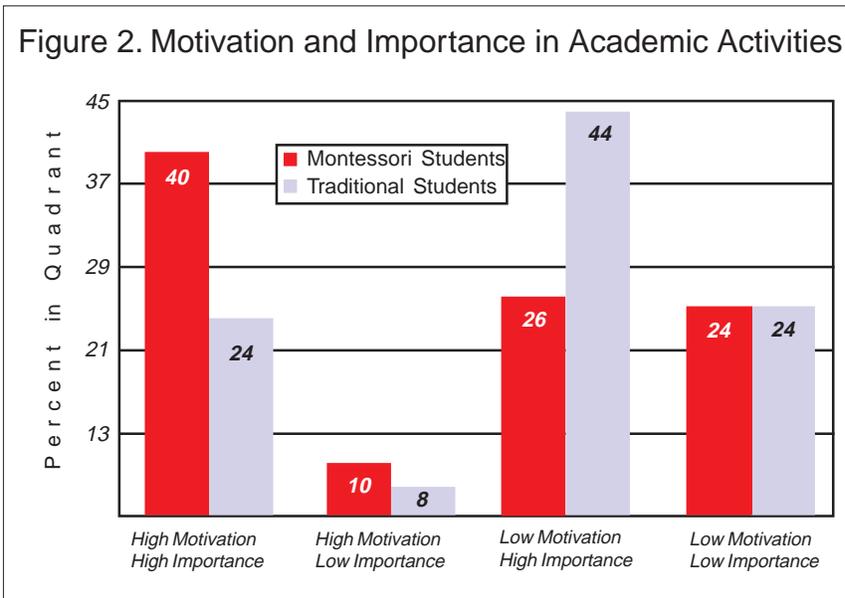
In addition to the comparison of the Montessori and traditional students, Figure 1 also provides additional interesting information about experience while working at school. The Montessori students' affect, potency, and motivation in academic work were about the same as their average levels for the week. In other words, they seemed to be just as engaged while doing work in school as they were the rest of the week doing various activities outside of school. Another way to make the same point is to take a closer look at the potency variable. The score of "0" tells us that the Montessori students' potency was right at their average for the week. That average, in terms of the categories on the ESM forms, suggests a mildly positive state (feeling "some" potency). In contrast, the traditional students' score of $-.19$ suggests their potency in academic work was below their weekly average. These students did not feel any positive sense of strength or excitement; relative to their experience in other contexts, they felt weaker and more bored while working in school.

The primary experience for the traditional students was what John Dewey referred to as drudgery. Drudgery is the feeling that what one is doing is important to future goals, but pursuing those goals is not motivating or enjoyable at the moment. Therefore, the traditional students' high salience only serves to confirm the problem that is often reported in the middle school literature: Traditional schools often focus on achievement or performance goals in ways that can undermine or ignore the importance of intrinsic motivation.

The fact that Montessori students were feeling about the same in school as the rest of their life may not, at first glance, seem like a ringing endorsement of school; however, such a pattern of experience is actually quite positive. ESM studies for the past twenty years have found that students' quality of experience doing schoolwork is usually much less positive than their experience during the rest of the week. This is true even for young adolescents who have special academic gifts and talents (see Csikszentmihalyi, Rathunde, & Whalen). Therefore, the fact that Montessori students are feeling about the same in schoolwork as in the rest of their lives (e.g., feeling "some" sense of excitement and strength) suggests that school is not an aversive place; it fits well into the ecology of their lives.

The ESM measure of salience showed a different pattern. Both the Montessori and the traditional students reported salience levels well above their weekly average while they were doing academic work. This was not surprising; students understand that schoolwork is important to their futures. What was surprising was that the traditional students reported significantly higher salience levels than the Montessori students. On closer inspection, however, this finding turned out to be a “false positive.” Low levels of intrinsic motivation accompanied the traditional students’ feelings of high salience. In other words, the traditional students had the feeling that what they were doing was important; but as they were doing these academic activities, they were not feeling much interest or enjoyment. Figure 2 illustrates the combinations of intrinsic motivation and salience reported by the Montessori and traditional students.

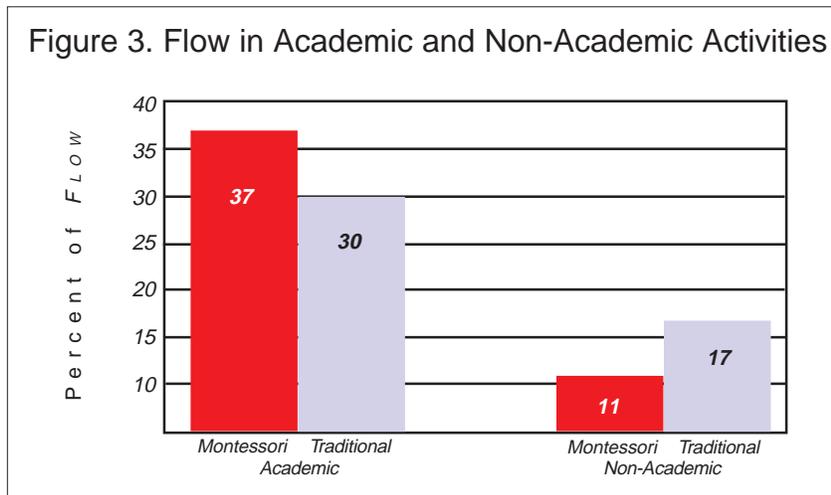
There are two striking differences in Figure 2. First, the Montessori students reported a significantly higher percentage of undivided interest—times when high motivation and high salience occurred *at the same time*. In other words, Montessori students reported above average intrinsic motivation *and* above average salience 40% of the time in academic work. In comparison, the traditional students re-



ported undivided interest only 24% of the time. The primary experience for the traditional students was what John Dewey referred to as drudgery. Drudgery is the feeling that what one is doing is important to future goals, but pursuing those goals is not motivating or enjoyable at the moment. Therefore, the traditional students' high salience only serves to confirm the problem that is often reported in the middle school literature: Traditional schools often focus on achievement or performance goals in ways that can undermine or ignore the importance of intrinsic motivation.

Flow Experience

The ESM composites suggested that the Montessori students were having more optimal experience while doing academic work. However, there was one additional, important way to verify if this was indeed the case. Flow theory suggests that when challenges and skills are both above average for a student, the conditions are optimal for flow experience. A great deal of research over the years has shown this to be the case (see Csikszentmihalyi, *Flow*). Figure 3 illustrates the combinations of high skills and high challenges observed in the two groups of students. As expected, the Montessori students reported more flow-like conditions while doing academic work. This finding, in combination with the others on affect, potency, motivation, and undivided interest, make a strong empirical case that the Montessori students' experience was more optimal in school-related activities.



Experience in Non-Academic Work

What about the times when students were doing non-academic work? The expectation was that when students were eating lunch, hanging out in the halls, talking with friends, and so on, that they would report fairly similar experiences. In other words, in activities that were outside the missions of the schools, we did not expect to see many positive experiential differences in favor of Montessori students. This lack of difference, in fact, is what we found. *The Montessori and traditional students reported similar levels of potency, intrinsic motivation, and undivided interest while they were doing non-academic activities.* Only two variables—*affect and salience*—showed the same pattern observed in academic work. That is, the Montessori students still reported more positive affect in non-academic activities and the traditional students reported higher salience. Furthermore, Figure 3 illustrates that traditional students actually perceived non-academic activities to be *more* flow-like than did the Montessori students.

The above reversals are very important to the interpretation of the study. If the Montessori students reported more positive experience in both academic and non-academic work, it might be argued that their ESM responses were biased and indiscriminate (i.e., they just wanted to make their schools look better). The fact that the significant differences in intrinsic motivation, flow, potency, and undivided interest disappeared in non-academic activities diminishes the plausibility of a bias explanation. Students were not aware of what school experiences were being targeted; as far as they knew, a negative response while eating lunch, walking to class, or talking to a friend in the halls could just as easily have made their schools look “bad.” The fact that students in both samples reported similar experiences during their down time suggests that a general school bias was not a major factor affecting the results. Given the clear differences in the pedagogical approach of the Montessori schools, an approach that was more sensitive to students’ intrinsic motivation and self-direction, a much more plausible explanation of the findings is that the policies and practices of the Montessori schools (i.e., the school culture) were responsible for the superior quality of experience reported by the Montessori students.

PART 2. THE SOCIAL CONTEXT OF MIDDLE SCHOOL: TEACHERS, FRIENDS, AND ACTIVITIES IN MONTESSORI AND TRADITIONAL SCHOOLS

The quality of student experience was not the only outcome of interest in this study. In addition to problems of student motivation, many scholars have identified deficiencies in the typical social context that young adolescents encounter after leaving the elementary grades. Do Montessori middle schools provide a more healthy community for learning than traditional middle schools? Can differences in the social contexts of the two types of schools help to explain the dramatic experiential differences that were reported in Part 1 of this article? These questions will be addressed after summarizing some of the social context problems that have been identified in the education literature.

Why the negative experience and lower motivation in many middle schools? Part of the problem is the social context. There are three main areas of concern that are the focus in Part 2 of this article: (1) There is a growing distance in teacher-student relations at a time in early adolescence when adult support is crucial (Feldlaufer, Midgley, & Eccles); (2) there are fewer opportunities for meaningful peer interaction (Eccles, Lord, & Midgley) at a time when peers are becoming more highly valued (Brown; Savin-Williams & Berndt); and (3) there is a growing emphasis placed on one-directional communication (e.g., lectures, seatwork, and viewing media) (Guthrie & Davis; Mac Iver, Young, & Washburn) just as young adolescents are becoming more capable of more complex thought and communication (Piaget; Sternberg). Research suggests that these three problems in middle schools can have a negative impact on student motivation, experience, and achievement.

Schools are inherently social places, and their interpersonal dynamics have a great potential to influence student motivation and interest (Juvonen & Wentzel). Teacher-student relations, of course, are of central importance. Many studies have confirmed the importance of teacher *support* on student achievement and other outcomes (Fraser & Fisher; Midgley, Feldlaufer, & Eccles; Wentzel). From an experiential perspective, feeling that teachers care and can be trusted is essential for students' ability to invest themselves in the moment. The same

applies to parenting; adolescents who feel supported at home report more positive affective states (Rathunde, "Family Context"). Teachers can also influence student experience by the way they structure opportunities for student autonomy and by what they communicate about the goals of the learning environment. For example, when a teacher creates an environment that emphasizes public performance instead of task-engagement or mastery, student motivation suffers (Anderman, Maehr, & Midgley).

While teacher influences on student experience are universally recognized as important, peer influences are often neglected. When they are discussed and studied, it is usually in relation to the development of adolescents' social skills (Brown). Much less is known about how peers provide a context that affects adolescent motivation in middle school (Eccles, Wigfield, & Schiefele; Ryan). A growing body of research, however, suggests that successful peer relationships need to be taken seriously; studies show that they are important for student engagement, efficient cognitive strategies, adjustment to school, and academic achievement (Berndt & Keefe; Ryan & Patrick; Wentzel). Positive interactions with peers may also be important for a student's self-regulation at school. For example, when discussion in the classroom is promoted and students can draw on information from other perspectives, it improves a student's ability to strategize and plan a task (Dimant & Bearison; McCaslin & Good).

Classroom activities are another important influence on student motivation and the social dynamics of a school. After leaving the elementary grades, students report a steady decline in interest, choice, and the enjoyment of classroom activities (Gentry, Gable, & Rizza). Part of this decline might be related to the greater use of textbooks that formalize instruction, eliminate student choice, and minimize real-world applications (Guthrie & Davis; Mac Iver, Young, & Washburn). More importantly, the organization of activities in a classroom can impact interpersonal relations at school (Ryan & Patrick). Students report that active, collaborative, and bi-directional tasks, such as working with friends, help them to learn. In contrast, passive, one-directional activities, like listening to a lecture or watching educational videos, are perceived as less helpful (Freeman, McPhail, &

Berndt). When tasks are more collaborative, students also report a stronger mastery goal orientation (Nichols & Miller).

The next set of analyses in the study focused on differences in teacher-student relations, peer relations, and the activities that connected students and teachers in the Montessori and traditional schools. We expected that the social contexts in the two types of middle schools would differ in these three areas, and that these differences would help to explain why the Montessori students reported more positive experience in their academic work.

Social Context Measures

Before presenting the results of the social context analyses, a brief explanation of the measures is necessary.

Teacher-School Measure

Students rated their teachers and schools on a background questionnaire. A statistical procedure called “factor analysis” was used to identify three main dimensions of teacher-school quality: supportive, orderly, and safe. Table 3 provides a quick summary of the individual items that make up each dimension.

Friends and Classmates Measure

The students’ ESM responses were used to provide a subtle measure of how students felt about their classmates. After each ESM signal that occurred during academic work at school, students would indicate whom they were with by placing a check in a box. There were ten possible choices, including the two categories of interest here: “friends” and “classmates/peers.” When the watch signaled a student, he or she could select the singular choices of “classmates/peers” or “friends.” *Students were also free to indicate the combined choice of “classmates/peers” and “friends” if that was how they perceived the social environment.* We used this free-choice situation to construct three percentage measures of how students perceived their compatriots at school: classmates (only), friends (only), and classmates-and-friends. In other words, if a student responded to ten signals while engaged in schoolwork, and four signals indicated they were with classmates, two with friends,

Table 3.
Questions on the Teacher and School Measure

SUPPORTIVE

- Students & Teachers Get Along
- There Is School Spirit
- Discipline Is Fair
- Teaching Is Good
- Teachers Interested in Students
- Teachers Praise Student Efforts
- Teachers Listen

ORDERLY

- Students Not Disrupt Class
- Disruptions Not Interrupt Learning
- Misbehavior Not Tolerated

SAFE

- Teachers Not Put Down Students
- Students Not Put Down Students
- Students Feel Safe

and four with classmates and friends, the corresponding percentages would equal 40%, 20%, and 40%, respectively.

Classroom Activities Measure

A subsection of the ESM coding scheme for academic activities dealt specifically with classroom activities; these codes provided an opportunity to compare the two samples on the instructional practices that occurred in the classroom. In addition to an “unspecified” category for times when students responded generically to the “what were you doing” question (e.g., “working in class”), there were twelve additional codes that provided some detail about classroom instruction. These twelve categories were recoded into four qualitatively different instructional practices: *passive listening* (listening to a lecture, listening and taking notes, listening to a discussion); *collaborative work* (participating in a discussion, lab work in a group, group work/activity, group presentation, talking to the teacher); *individual work* (individual lab work, individual work/activity, solo presentation); and *media* (watching TV, film, or video). After selecting this group of

detailed classroom signals, percentage variables were calculated for each student and for the Montessori and traditional schools.²

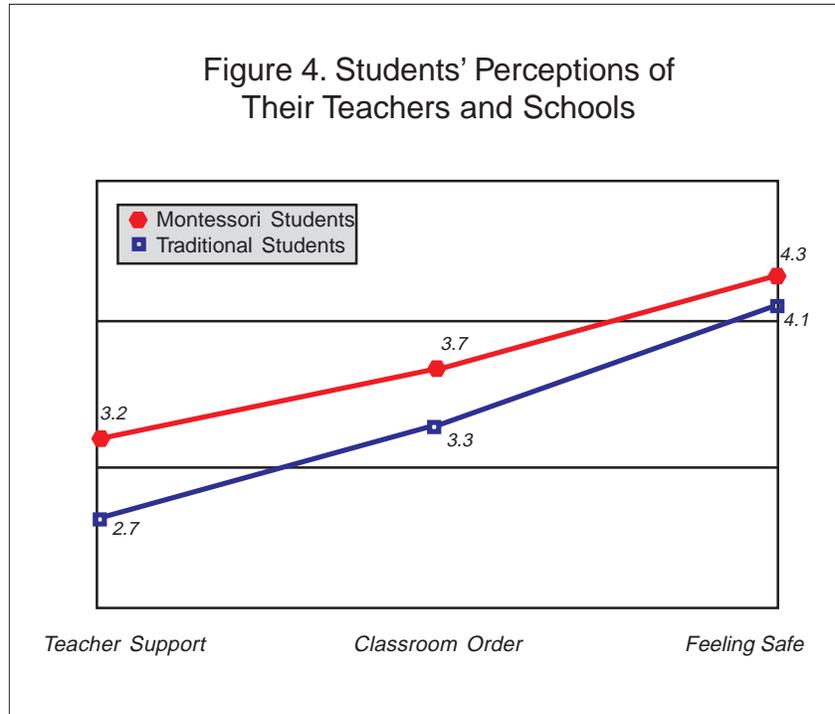
Results (Part 2): Do Montessori Schools Provide a More Positive Community for Learning?

The findings in Part 2, similar to those presented in Part 1, focus on the Montessori versus traditional school comparisons. Once again, there were very few statistical differences associated with grade level or any of the background variables (parental education, ethnicity, and gender).

Figure 4 summarizes the findings for the students' perceptions of their teachers and schools. All of the teacher-school variables were significantly different for the two school contexts. Montessori students reported more support from teachers, more order in the classroom, and a greater feeling of emotional/psychological safety. The findings here are clear and simple to interpret. The Montessori students were much more positive about the quality of their school environments. Overall, the Montessori students (1) saw their teachers as more fair, friendly, and interested in them; (2) did not perceive as much chaos in the environment in terms of disruptions and misbehavior; and (3) felt safe from the emotional pain associated with putdowns by teachers and students. There is little doubt that some of the positive experiential findings reported in Part 1 are related to the more positive perceptions that Montessori students had of their teachers and schools. Past ESM research has shown that a supportive and orderly social context enhances students' quality of experience (Csikszentmihalyi, Rathunde, & Whalen; Rathunde, "Family Context").

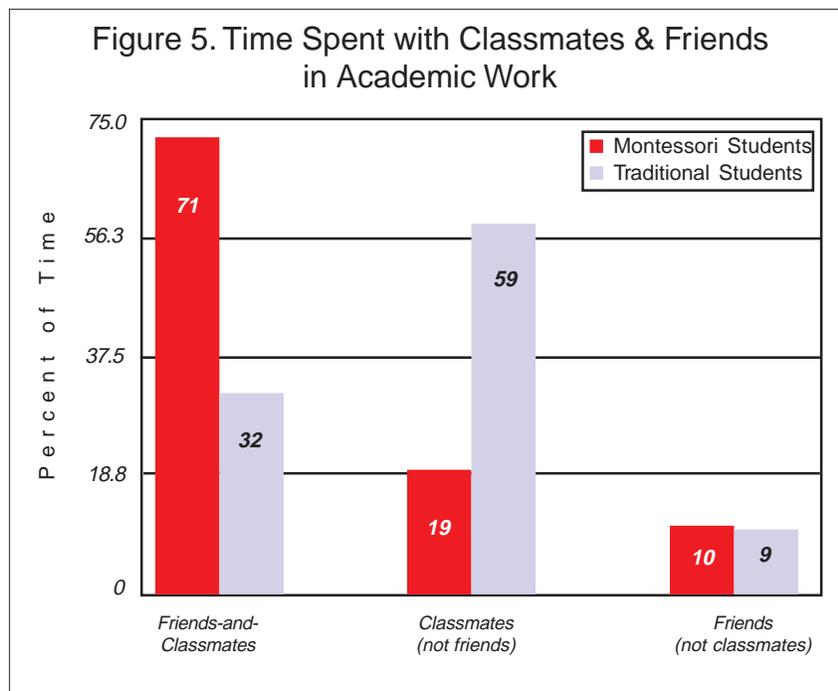
²These particular percentage variables are less reliable than the overall school activity codes because they are based on a smaller number of signals and, therefore, can fluctuate more easily. In addition, these codes depended upon the detail "voluntarily" provided by students (i.e., if students responded with a general phrase like "in class" and did not specify what they were doing, it could not be coded into one of the more detailed classroom practice categories). However, all of the students had an equal chance to report what they were doing, and both samples received the same instructions for responding to the ESM; therefore, these measures provided some useful information about classroom practices.

Figure 4. Students' Perceptions of Their Teachers and Schools



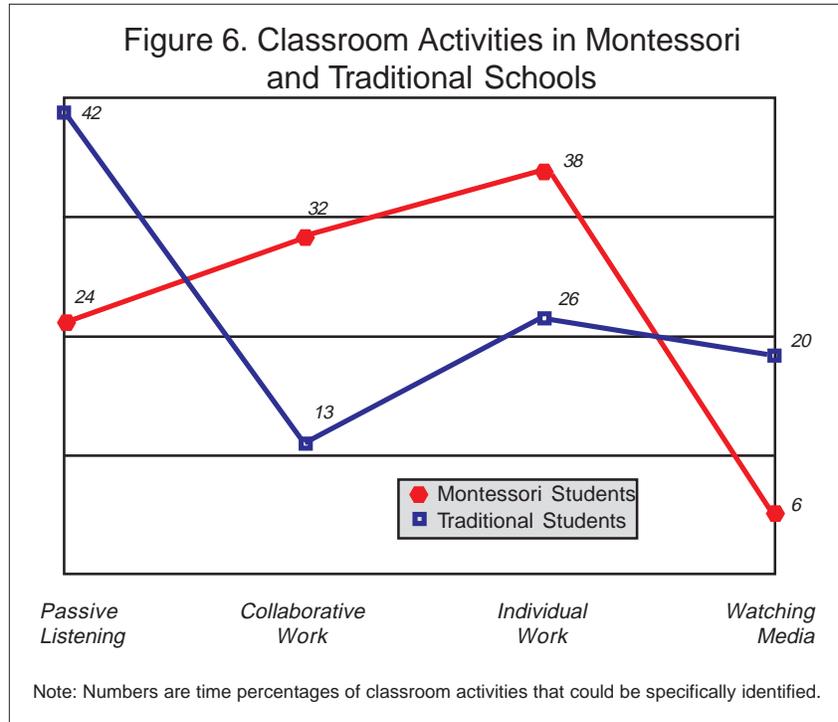
The findings for students' perceptions of their friends and classmates were the most surprising of the study. Figure 5 illustrates the results. The Montessori and traditional students perceived a very different social context with respect to their peers. The Montessori students more often perceived their peers as friends-and-classmates while they were doing schoolwork; the traditional students, in contrast, saw their peers as classmates only. Both differences were highly significant in statistical terms. The Montessori and traditional students reported the same percentage of time with just friends.

It is hard to overestimate the magnitude of these results for friends and classmates; Figure 5 does not do justice to the size of the difference. Another way to think about the practical significance of these findings is in terms of time. If students were doing five hours of academic work per school day, the figure suggests that Montessori students spent about two hours more per day feeling like they were working with friends and classmates. In contrast, the traditional students were



spending about two hours more per day feeling like they were with classmates but not friends. When one starts to multiply these time differences by days, weeks, and months, the Montessori and traditional social contexts appear to be very different.

A plausible explanation for this difference is the way the two types of schools were organized. The traditional middle schools were more likely to have students sitting in class together listening to the teacher or working on a class assignment. In the Montessori classrooms, if students were not working alone, they were moving in and out of small groups. Because the groups were based on shared interests rather than students' ability levels, the composition of students in the groups continually shifted as new interests formed. In the traditional situation, it makes sense that students would report being with classmates—the social context is impersonal. On the other hand, if students are working in small groups, or with one or two other students doing a similar project, the intimate situation lends itself to the feeling of sharing work with friends *and* classmates.



The suggestion that the classrooms in the two types of schools were organized differently is not speculation. The ESM was used to compare the activities of students in the two school contexts. Figure 6 presents confirmation that the Montessori and traditional students engaged in a different mix of classroom activities. All of the differences illustrated in the figure are statistically significant. The Montessori students spent less time in the passive listening category (listening to a lecture or discussion, taking notes) and less time watching TV, film, or video. They spent more time than the traditional students working on collaborative and individual projects.

SUMMARY AND CONCLUSIONS

There are a number of questions that are often asked by people who are aware of my involvement in this study. The questions come from Montessorians who are interested in the results and what it all means for their schools, from colleagues interested in education and development, and from friends and acquaintances who are just curious.

Despite the different interests of all these individuals, the questions that keep coming up are often very similar. Therefore, they provide an excellent way to summarize the study and discuss its implications.

What did we find?

Results from the study showed that while engaged in academic work at school, Montessori students reported higher affect, potency (feeling alert and energetic), intrinsic motivation (enjoyment, interest), and flow experience than students from traditional middle schools. The traditional students did report higher salience (feelings of importance for their futures). However, when this finding is interpreted within the context of the other experiential differences, it is not very positive. For example, when looking at the students' undivided interest (above average intrinsic motivation *and* salience), or the times when students said they were feeling high interest while doing something with high relevance for their futures, the Montessori students' experiences were far more positive. Almost 40% of their schoolwork was intrinsically motivating and important; in contrast, the traditional students felt this way only 24% of the time.

Results also showed clear differences in the social environments of the two types of schools. Montessori students reported more favorable impressions of their schools and teachers. Teachers were seen as more supportive, classrooms were seen as more orderly, and the overall environment was safer from the slings and arrows of putdowns from teachers and students. In addition, various time use estimates suggested that the Montessori students had more positive perceptions of their classmates, more often perceiving them as friends as well as classmates. Finally, other time use estimates showed that Montessori students spent less time in class listening to lectures and watching media and more time working in collaborative and self-directed ways.

There are a number of other findings discussed in the articles submitted for publication; but the above summary covers the main findings thus far. It is also worth noting that there is more information to look at, and there will be more to report in the near future.

Could the results be due to bias? In other words, were the Montessori students just trying to make their schools look better?

There are several reasons why the bias explanation does not make sense. First, we used a technique with the ESM that was designed to eliminate any “cheating” with respect to high or low responses. We calculated each student’s mean on each variable for the week, and that mean became a student’s baseline. Therefore, the differences in school experience that were found between the Montessori and traditional students could not be due to the Montessori students trying to intentionally make their schools look better. Such a way of responding would only have raised the baseline for those students. The findings in this study suggest that learning in school is a more positive experience in the lives of Montessori students than it is in the lives of traditional students. Secondly, the plausibility of a bias explanation is also reduced by the fact that students in both samples reported similar experiences during their “down time” when the pedagogical differences between the two school contexts were not an issue. Finally, the time use differences we found (e.g., more time in group work and less time watching media) are not subject to a response bias. There is no way to put a positive or negative spin on time use unless students are simply lying about what they were doing when the watch signaled them.

Could the positive results for the Montessori students be due to other advantages they possess?

It is impossible to eliminate all of the potential differences between groups of students that are being compared. That is the nature of comparative educational research (Watson). However, steps were taken to statistically control for SES, gender, and ethnic differences, and a great deal of time was spent matching the samples and verifying that the students came from families with similar levels of education, number of siblings, parental employment, incidence of divorce, home resources, and school-related parental discussion and involvement. The two sets of schools were also similar with respect to the modern and attractive school environments, small to moderate size, favorable teacher-student ratio, and strong communities in which they were located. The Montessori students, as a group, had many advantages; but so did the students from the traditional schools.

There is one advantage that the Montessori students did possess. For most of them, the transition from the elementary grades did not require moving to a new school or building. For example, three of the six traditional middle schools were housed in buildings that were separate from the students' elementary schools; only one of the five Montessori schools required such a transition. Such transitions are known to be difficult for students. However, if the differences observed in this study were simply the result of school transitions, one would expect that by eighth grade the transition effects would have subsided and students would have looked similar again. That is not what we found. There were very few grade effects; that is, the Montessori students in sixth *and* eighth grade reported more positive experience and motivation. For one important variable, the perception of classmates as friends, the difference between the Montessori and traditional students actually *increased* from sixth to eighth grade. Therefore, it is unlikely that all of the differences we found were simply the result of school transitions.

Why are the results important for Montessorians?

This question is better answered by Montessorians themselves, but I will offer my opinion. There are a few different levels on which these results can be seen as important for the Montessori community. On the most basic level, the results are a confirmation that the pedagogical approach facilitates students' intrinsic motivation and flow experience. There has been very little independent research that has assessed the benefits of the Montessori approach; this is especially true in relation to middle schools and young adolescents. This study provides some independent confirmation. The teachers and schools involved, therefore, should see the results as an affirmation of what they are doing.

In addition to this much needed research and confirmation, I believe that this study could lead to new insights and growth within the Montessori community. Many conceptual doors have been opened between Montessori ideas and ideas in the motivation, education, and developmental literature. There was not time to discuss all of these conceptual links in the present article; however, they are discussed in more detail in a previous *NAMTA Journal* article (Rathunde, "Montessori

Education and Optimal Experience”), a theoretical article recently submitted to an academic journal (Rathunde, *An Experiential Perspective*), and the two research articles also under review (Rathunde & Csikszentmihalyi, *Middle School Students’ Motivation*; Rathunde & Csikszentmihalyi, *The Social Context of Middle School*). Interested readers are encouraged to take a closer look at these articles. One of the most important connections discussed in them is the connection to flow theory. However, there are other interesting, theoretical perspectives that are relevant for reflecting on Montessori education. Such a cross-fertilization of ideas could initiate a productive dialogue and result in positive changes.

It has become a common and unfortunate trend in our society to think about achievement out of context. In other words, the goal of performance has become all-important and little attention is paid to the means to that goal. *The means to quality education and achievement are the very things that were found in this study: motivation, flow, interest, strong teacher-student relations, peer collaboration, and self-directed and active pursuits in the classroom.*

Another possible benefit to the Montessori community may come in a few years, after these studies have been published and assimilated by the education community. The results of this study may lead other researchers and scholars who are interested in education to take a new look at the dynamics of Montessori education. Only time will tell.

Finally, as I have mentioned a few times, there will be more analyses and results in the near future. Many of the analyses to come will look *within* the Montessori schools (i.e., the comparative part of the project is largely complete). Looking within the Montessori schools could result in findings that can be applied to further improving student experience and motivation.

Why are these results important for the Montessori middle school students?

Many skeptics will look at these results and say, “O.K., the students have better experience in school, they like their teachers, they feel more connected to their peers—so what? How does it affect what really counts—their education and achievement?” This is a valid question;

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however, its assumptions are shortsighted and its answer is obvious. It has become a common and unfortunate trend in our society to think about achievement out of context. In other words, the goal of performance has become all-important and little attention is

paid to the means to that goal. *The means to quality education and achievement are the very things that were found in this study: motivation, flow, interest, strong teacher-student relations, peer collaboration, and self-directed and active pursuits in the classroom.*

Proof of the above statement can be found in many past studies. The exact ESM variables used in this study (e.g., motivation, flow, interest) predicted superior talent development in a sample of talented teenagers (Csikszentmihalyi, Rathunde, & Whalen). These same variables have predicted positive outcomes in other ESM studies, most recently in a study of career development (Csikszentmihalyi & Schneider). Scores of studies have likewise confirmed that feelings of interest and intrinsic motivation result in superior student achievement (see Deci & Ryan and Renninger, Krapp, & Hidi for reviews). In other words, positive experience in academic work is not a frivolous variable that can be discounted and ignored.

Maria Montessori understood the importance of positive experience when she commented, “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” (*Spontaneous Activity* 218-219). William James and John Dewey, the most celebrated American psychologist and philosopher, respectively, also emphasized the connection between experience and education. If further proof is needed, it can be found in Csikszentmihalyi’s study of creativity (*Creativity*); the interviews in that study clearly show the intimate connections between motivation, deep engagement, and creative accomplishment.

The Montessori students in this study will benefit in the future from their better quality of experience. When they enter high school or college, more of them will have learned how to enjoy working hard. In addition to this experiential advantage, other benefits are likely to emerge from their middle school experiences. A great deal of research has validated the importance of teachers and peers for adolescent education and achievement. Perceiving teachers as supportive is crucial for students’ motivation and achievement (Goodenow; Fraser & Fisher; Harter; Wentzel). Successful peer interaction at school has been associated with student engagement, useful cognitive strategies, problem solving, adjustment to school, academic achievement, and self-regulation (Berndt & Keefe; Brown; Dimant & Bearison; McCaslin & Good; Ryan & Patrick). Given that teachers and students create the social context in which students spend dozens of hours each week, there is little doubt that the quality of these relationships in the Montessori schools will be a significant advantage for the future success of the students.

Why are these results important beyond the Montessori community?

With this question, I return to a theme introduced at the beginning of this article. Current education trends are emphasizing students’ performance with little regard for their quality of experience. There is a growing backlash against approaches that appear to emphasize making students feel good at the expense of the rigor of their education. I suspect that Montessorians are already well aware of this backlash and have been dealing with it for generations. The problem with this critique of experience-centered approaches is that it is based on a false

premise, namely, that the goal of such approaches is for students to have fun. However, it is important to draw a clear distinction between flow and fun; the former requires high challenge, the latter does not. Once this idea becomes more accepted, the pedagogical debate will become more meaningful and productive.

Until this debate comes of age, I would suggest that the importance of this study for non-Montessorians lies elsewhere. There is a preponderance of evidence accumulating about the problems of middle schools (Eccles, Midgley, Wigfield, et al.). These problems are occurring more often as public schools drift toward transmission models of top-down education, standards-based testing, and a narrowing perspective that equates intellectual skills with a thin set of cognitive skills that ignore affect and the quality of experience. Over the last fifteen years, great effort and expense have been invested in reforming schools and trying to enhance adolescents' motivation and achievement (Ames; Maehr, Midgley, & Urdan). However, these reform movements are facing an uphill battle: It is hard to prove the value of the suggested reforms because it is so difficult to change the culture of a school. That is where the wider value of this study, I believe, comes into focus. The Montessori schools in this study provided established school cultures that reflected many of the reforms promoted by current motivation theory (more student self-direction, student leadership, less competition and emphasis on grades, and so on). The benefits associated with the Montessori schools, therefore, provide evidence that supports the case for reform.

I hope that other reformers in the field of education take notice of this study, not because it pats Montessori schools on the back, but because it supports some of the very ideas they have been trying to implement. The Montessori school culture, supported by a century-old philosophy of intrinsic motivation, could help make the case for turning away from an even greater narrowing of the meaning of education.

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