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Autonomy-Supportive Teaching and Student Motivation: A Closer Look at Applied Montessori Theory

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Abstract:

The degree to which students are motivated in their K-12 years can have a significant impact on their future opportunities for college, career, and community involvement. According to Deci and Ryan's (2000) Self-Determination Theory, students' internal motivation for their schoolwork forms from three central needs: autonomy, competence, and relatedness. These needs are best fulfilled if students have autonomy-supportive teachers (that is, teachers who invite student expression, encourage student exploration, and support students through both success and failure) and thwarted by controlling teachers (those who impose their viewpoint on the student and expect the student to conform to their expectations; Reeve et al., 2014). This literature review first describes the contrasting effects of autonomy-supportive and controlling teaching methods on students. Next it describes Montessori-school theory, which centers on student autonomy. Finally, it confirms that autonomy-supportive teachers in Montessori classrooms create significant differences in student experience and performance when compared to traditional classrooms.

An individual's education from kindergarten to 12th grade includes many formative experiences that affect the likelihood of higher education, a satisfactory career, and meaningful contribution to one's society. But even though these years are high stakes, many K-12 students remain marginally motivated in their pursuit of an education. They neglect assignments, avoid building relationships with teachers, and are content to remain in lower-level classes.

A teacher's instructional style can affect student performance. Research has categorized teaching styles into two major categories: controlling teaching and autonomy-supportive teaching. Teachers who focus predominately on their own perspective rather than the students' are considered controlling teachers, and may pressure student to conform to their expectations (Reeve, 2009). Conversely, autonomy-supportive teaching is exemplified by teachers who sympathize with students' viewpoints, invite student expression by facilitating open communication, and support students through success and failure (Reeve, 2009; Reeve, Jang, Carrell, Jeon, & Barch, 2004).

When compared to the controlling style, autonomy-supportive teaching consistently produces better learning

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outcomes. This is particularly the case in Montessori schools, where autonomy-supportive teaching operates as a central tenet of Montessori theory. Students enrolled in such programs show elevated levels of engagement, flow, and academic achievement as compared to students enrolled in more traditional settings (Dohrmann, Nishida, Gartner, Lipsky, & Grimm, 2007; Lillard, 2012; Rathunde & Csikszentmihalyi, 2005a). The purpose of this literature review is to first establish the contrasting effects of autonomy-supportive and controlling teaching, then to show that Montessori-schools are characterized by a higher incidence of autonomy-supportive teachers as compared to traditional school systems. Finally, I will summarize outcomes of this difference.

Self Determination Theory and Student Motivation

Deci and Ryan (2000) and Neimiec and Ryan (2009) conjectured that humans have innate needs for autonomy, competence, and relatedness, which, when satisfied, contribute to the internalization of motivation (Autonomy refers to perceiving one's behavior as one's choice, that is, self-produced and not forced by other factors; Deci & Ryan, 2000). Competence refers to one's perception that one has the skills adequate to complete a task and feels capable of completing

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it (Deci & Ryan, 2000). Relatedness refers to the need to feel connected to and understood by others (Deci & Ryan, 2000). In school settings, this need involves the student's perception that the teacher respects and values her or him (Niemiec & Ryan, 2009). The degree to which the three needs are satisfied determines whether the student's motivation is internalized.

Deci and Ryan (2000) delineated intrinsic motivation from extrinsic motivation. Intrinsic motivation refers to being motivated by personal interest without external factors pressuring the individual to behave in a particular way. For example, intrinsic motivation might motivate one to explore a new area of town out of curiosity or engage in a new craft or project. Extrinsic motivation is much more common and refers to motivation that is instigated and maintained by external forces (Deci & Ryan, 2000; Niemiec & Ryan, 2009). Extrinsic motivation can be further categorized as external regulation, introjected regulation, identified regulation, and integrated regulation (see pg. 17, Table 1). External regulation is least autonomy supportive and is basic motivation by reward or punishment. An example is receiving a gold star for completing a homework assignment or a red frowny face for non-completion. Introjected regulation denotes motivation

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to preserve one's self-esteem. For example, a student may complete science homework in order to maintain a reputation as a good student or to avoid the guilt of not having completed her or his homework. Identified regulation represents a shift from externalized motivation to internal based on finding value in particular behaviors. An example is a student doing science homework because learning about science is perceived as a valuable endeavor. Integrated regulation occurs when a student engages in behavior that she or he perceives to be a central part of her or his identity. Under this mode, completing science homework occurs because of the student's intent to be a scientist someday, continuing a process of discovery that is of personal value. Niemiec & Ryan (2009) asserted that the more internalized the student's motivation the more success and satisfaction she or he will find in schoolwork.

Autonomy-Supportive and Controlling Teaching Styles Impact Students Differently

As mentioned previously, whether a teacher is autonomy-supportive or controlling may bear on whether the student's motivation is internalized or externalized. When teachers help their students satisfy the basic needs for autonomy, relatedness, and competence, students' internal

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motivation grows and they become more engaged in their learning (Niemiec & Ryan, 2009; Reeve, 2009; Reeve et al., 2014). Conversely, when teachers thwart satisfaction of the autonomy, relatedness, and competence needs, students show higher levels of amotivation, feel more controlled by their teachers, and are less likely to actively engage in learning (Deci & Ryan, 2000; De Meyer et al., 2014).

Researchers have demonstrated that a controlling teaching style can interfere with student learning, but an autonomy-supportive style is associated with lower stress and more self-directed learning. Reeve and Tseng (2011) assigned three groups of participants to different conditions—a no-narration condition, a controlling-narration condition, and an autonomy-supportive narration condition—and asked the three groups to complete a puzzle task. The authors found that participants in the autonomy-supportive narration group reported lower levels of stress than those in both the controlling-narration and the no-narration groups. In an experiment testing the effect of controlling teaching in a Physical Education setting, De Meyer et al. (2014) found that the negative effects of controlling teaching were present even when the incidence of controlling teaching was low. Surveying

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174 high-school sophomores, Mih & Mih (2013) found that autonomy-supportive teaching was related to students perceiving themselves as more self-efficacious and as better able to perform their academic tasks. Both measures predict for future academic success. Reeve et al. (2014) found that the differential effects of controlling and autonomy-supportive teaching styles were found cross-culturally.

Influences on Teachers' Choice of an Autonomy-Supportive or Controlling Style

Given the preponderance of findings favoring autonomy-supportive teaching, it seems reasonable to suppose that teachers would utilize the approach. However, teachers often exhibit controlling teaching in spite of the evidence favoring autonomy-supportive teaching (Kusurkar, Croiset, & Ten Cate, 2011; Reeve 2009; Reeve et al., 2004; Reeve et al., 2014;). Several factors may influence a teacher's choice to implement a controlling teaching style (see pg. 18, Table 2). First, personal beliefs about teaching style have a significant bearing on the choice. If teachers view controlling teaching as effective, easy to implement, and commonplace, they are more likely to implement it (Reeve et al., 2014). Second, how teachers perceive students plays a pivotal role in teaching style.

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For example, if teachers perceive that students are capable of growth, they are more likely to be autonomy-supportive in their teaching style (Leroy, Bressoux, Sarrazin, & Trouilloud, 2007). Conversely, if teachers perceive their students as not likely as having static ability, they are more likely to utilize a controlling teaching method (Leroy et al., 2007). Pressure from administrators also contributes to the likelihood of teachers exhibiting a controlling or autonomy-supportive teaching style (Leroy et al., 2007; Reeve, 2009). Leroy et al. (2007) found that, when teachers experienced external pressure (from national, state, or local standards for student learning, for example), their self-efficacy decreased, and they responded to the pressure by exerting pressure on their students. Conversely, when teachers reported having an autonomy-supportive administration, their self-efficacy increased and they were more likely to teach using an autonomy-supportive style.

Autonomy-Support as a Central Tenet of Montessori Theory

Acknowledging that administrative pressures have an impact on a teacher's decision to implement a controlling or an autonomy-supportive teaching style, administrative endorsement of autonomy-centered techniques could increase the acceptability and adoption of autonomy-supportive modes

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of teaching (Leroy et al. 2007; Maehr & Midgeley, 1991; Reeve, 2009). This typically occurs in Montessori schools, of which there are over 4,000 in the United States alone (Cossentino, 2005; Rathunde & Csikszentmihalyi, 2005a). The Montessori theory of teaching and learning centers on respecting the student's autonomy and right to explore (Lillard, 1996, 2005). According to Lillard (2005) and Malm (2004), in Montessori schools teachers "see" their students and allow them a wide range of exploration and expression (see pg. 19, Table 3).

Through observation and experimentation, Maria Montessori learned that supporting children's autonomy-centered drive for learning produced heightened their engagement in it (Lillard, 1996, 2005). Lillard (2005) listed the Eight Principles of Montessori Education, among which are (a) "learning and well-being are improved when people have control over their lives," (b) "people learn better when they are interested in what they are learning," and (c) "tying extrinsic rewards to an activity…like high grades for tests, negatively impacts motivation to engage in that activity when the reward is withdrawn" (p. 29). The principles focus on students' needs for autonomy, competence, and relatedness, thus closely dovetailing with Deci and Ryan's (2000) self-determination

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theory. The principles also assume the best about students—that they are naturally curious, want to engage with their environment in a productive way, and personally desire to expand their knowledge and capacities.

The assumption that students desire knowledge influences the layout and operational structure of Montessori classrooms. These classrooms are enriched with educational materials that engage students and help them learn through self-directed play (Lillard, 1996, 2005). The teacher serves primarily as a guide, setting clear limits and high expectations, but leaving students free to experiment within those expectations (Lillard, 2005). As such, instead of the top-down method employed in traditional schools (where students learn primarily via a teacher's transmission of information), Montessori students learn through first-hand experience, including collaboration with their peers (Lillard, 1996, 2005; Rathunde & Csikszentmihalyi, 2005b). This model qualifies as a student-centered learning environment (SLE; Smit, de Brabander, & Martens, 2014). An SLE provides specifically structured organization for students, including a wide variety of activities; gives students an active role in their learning; and restrains the teacher's role to that of coach and facilitator.

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Thus the needs for autonomy, competence, and relatedness are anticipated in theory and satisfied in practice, making the classroom experience a rewarding one for both teacher and student (Malm, 2004; Rathunde & Csikszentmihalyi, 2005b).

In a qualitative study reported by Malm (2004), Montessori teachers consistently mentioned their efforts to "see" the whole child, a vantage point that led to greater feelings of respect for the child and his or her freedom to explore. This perspective enhanced work satisfaction among teachers, with one teacher reporting, "This is the way I believe children should be treated," and another reporting, "This is the way I want to work, this is the way it should be" (p. 402). Moreover, as students felt their needs being met, Rathunde and Csikszentmihalyi (2005a) found that students reported feelings of warmth and loyalty to the Montessori system. Specifically, Montessori middle-schoolers felt supported by their teachers in their individual pursuits, safe from attack and criticism in the classroom, and respected in their desire to work on self-selected tasks.

Differences Between Student Experience in Montessori and Traditional School Settings

Though research on the effects of a Montessori

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education is limited, the existing research demonstrates benefits that emerge from this autonomy-supportive environment (Lillard, 2012; Rathunde & Csikszentmihalyi, 2005a). When Montessori programs were compared to traditional programs, researchers found higher levels of engagement, flow, and academic achievement in Montessori programs (Lillard, 2012; Rathunde & Csikszentmihalyi, 2005a; Smit et al., 2014).

Students' Experience of Engagement in Montessori and Traditional Settings

Utilizing a timed response system, Rathunde and Csikszentmihalyi (2005a, 2005b) assessed five classes of Montessori students and six classes of traditionally schooled students on their activity and engagement levels for several weeks. They found benefits to those engaged in autonomy-supportive Montessori classrooms. For example, when they tested for the intrinsic motivation and interest in schoolwork, Rathunde and Csikszentmihalyi (2005a) found that students in Montessori schools reported 40% of their schoolwork to be interesting and important to them. Students in a traditional environment reported 24% of their work to be such. According to the authors, "Montessori students spent approximately three-and-a-half hours more per week than traditional students doing

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schoolwork they felt was interesting and important" (p. 363) a figure that, when extended over the entire school year, would be considerable.

Students' Experience of Flow in Montessori and Traditional Settings

Student engagement is closely related to the concept of flow, which is the experience of being highly engaged in an intrinsically motivated task to the point where individuals report an increased sense of clarity and control, and time seeming to speed up (Csikszentmihalyi, 1990). This experience is particularly salient when a student's ability and the difficulty of the task in which he or she is engaged are evenly matched (Csikszentmihalyi, 1990: Niemiec & Ryan, 2009). In Rathunde and Csikszentmihalyi's (2005a) study comparing Montessori students to traditional students, they found that Montessori students reported flow experiences while engaged in schoolwork 7% more often than their peers in traditional schools did. This meant that the Montessori students experienced flow approximately an hour-and-a-half more per week.

Academic Achievement in Montessori and Traditional Settings

Greater academic gains have been found for students participating in Montessori programs when compared to their traditionally schooled peers. Lillard (2012) examined academic achievement in preschool students. In classrooms matched for socioeconomic status, race, and age of students, the author found that the greater the fidelity of the program (i.e., the greater the involvement of Montessori theory), the greater the school-year improvement for students when compared to those in traditional programs. On measures of executive function (a combined measure of working memory, inhibitory control, attention, and flexibility), students in the Montessori programs gained 14 points across the year, while students in supplemented programs (programs with some elements of Montessori method integrated into a traditional school setting) gained 7-8 points, and students in traditional programs gained 2-5 points. In reading and vocabulary gains, students in so-called "high-fidelity" Montessori programs gained twice that of students in the other programs (11 points vs. 5-6 points).

Lillard (2012) reported other gains by students in high-fidelity Montessori programs in applied-problem solving and social-problem solving, though not in theory of mind). The gains predicted enhanced success of the students in future

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social and academic endeavors (see Blair, 2002; Camilli, Vargas, Ryan, & Barnett, 2010). Dohrmann, Nishida, Gartner, Lipsky, and Grimm (2007) found long-term gains on tests of math and science in students who had attended Montessori elementary schools and later transitioned to traditional high school. Though gains in English and social studies were no greater than for students who had attended traditional elementary schools, the greater gains in math and science remained..

Limitations of the Research

Findings that indicate that Montessori students perform better than students in traditional programs should be considered preliminary (Lopata, Wallace & Finn, 2005; Rathunde & Csikszentmihalyi, 2005a). In fact, some research had indicated the opposite, namely, that Montessori students may underperform when compared to students in traditional programs. Lopata, Wallace & Finn (2005) compared scores on standardized tests between students enrolled in a Montessori program, a structured magnet school (a magnet school is a public school with a specialized curriculum that parents can choose to send their children to; a structured magnet school utilizes an education philosophy that is teacher directed and techniques emphasizing drill and practice and memorization),

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an open magnet school (a magnet school that utilizes an open-education philosophy intended to foster community responsibility), and a traditional non-magnet school. The authors reported that Montessori students outperformed those in the other schools in only one of 12 comparisons. Furthermore, the Montessori students underperformed in four comparisons, and their scores were not significantly different in the remaining seven comparisons. Montessori students performed especially poorly on tests of language arts. Such results suggest that, although there may be a qualitative difference in students' experience of school between Montessori programs and others (see Rathunde & Csikszentmihalyi, 2005a), actual academic gains may not be as different as Montessori educators would like to believe.

Conclusion

The research I have reviewed here suggests that teachers with a controlling teaching style reasonably might be encouraged to adopt an autonomy-supportive style (Kusurkar et al., 2011; Leroy et al., 2007; Niemiec & Ryan, 2009; Reeve, 2009; Reeve et al., 2014). A crucial way to do this is by overturning the beliefs that motivate the controlling teaching style. Many teachers believe that the controlling teaching style is normative,

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effective, and easy to implement (and, thus, conversely that the autonomy-supportive style is divergent, ineffective, and difficult to implement), (Reeve, 2009; Reeve et al., 2014). Furthermore, when teachers feel pressured by administrators, they are more likely to pressure their students, withholding autonomy support and becoming more authoritarian (Leroy et al., 2007). As teachers learn the student's perspective, become more patient with the student's struggles, and nurture the student's internal motivational resources, the student's needs for competence, relatedness and autonomy will be met more effectively (Niemiec & Ryan 2009; Reeve, 2009). Though research on the impact of Montessori school theory on student outcomes is not yet definitive, the autonomy-supportive nature of these programs points to the possibility of a more positive (and thus more motivating) school experience for students. When involved in autonomy-supportive programs such as the Montessori approach, students will engage more directly in the learning process and likely will experience greater academic success.

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Appendix A

Tables

Table 1

Types of Extrinsic Motivation Progressing From the Most-externalized Form to the Least-externalized Form, (adapted from Niemiec and Ryan, 2009)

	External Regulation	Introjected Regulation	Identified Regulation	Integrated Regulation
Associated Processes	Individual values external rewards and punishments	Individual satisfies internal contingencies; ego soothing	Finds value/importance in an activity	Synthesizes activity with other aspects of self
Perceived locus of causality	External	Somewhat External	Somewhat Internal	Internal

Note. Autonomy increases from right to left

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Table 2

Seven Reasons Why Teachers Adopt a Controlling Motivating

Style Towards Students. (Adapted from Reeve, 2009)

Pressure from above	•Teachers inherently occupy a powerful role, which affects teacher-student interactions •Teachers feel personally accountable for student performance •A controlling teaching style is culturally valued •The notion of being 'in control' is sometimes equated to providing a structured learning environment for students
Pressure from below	•Passive student behavior often elicits a controlling teaching style from teachers
Pressure from within	•Teachers tend to endorse a 'maximal-operant' principle of motivation •Teachers may be naturally inclined towards a controlling style

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Table 3

How Motivation Theories Are Integrated Into the Montessori

Classroom, (From Murray, 2011)

Component of Motivation	Montessori Practice
Autonomy	•Student in control of work time •Teacher as guide •Individualized goal setting activities between student and teacher
Interest	•Linking new knowledge to larger universe •Uninterrupted work cycle
Competence	•Sequential and individual-ized nature of the curriculum •Three year age span •Evaluation process
Relatedness	•Three year age cycle •Frequent small group work •Class meetings