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Following the Child to Health: Evaluating the Potential of Montessori Programs as a Public Health Intervention

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Evaluating the Potential of Montessori Programs as a Public Health Intervention

Abstract

The Montessori education philosophy has been around for over 100 years but has become particularly popular in the United States in the last two decades. Montessori is characterized by its child-centered lens, promotion of independence, and support of a child's natural desire to learn. Montessori programs are often associated with wealthy families able to pay for private preschool, but the Montessori curriculum was originally developed and implemented with great success in low-income communities in early 20th century Rome. With this in mind, I determined to investigate the opportunity for using Montessori programs as a public health intervention in low-income communities. The central goal of the resulting project is the education of a general audience about the opportunity for existing Montessori programs in early childhood to serve as an intervention to decrease health disparities in later life. The resulting research paper comprises a literature review of relevant research, a discussion of the link between education and health outcomes, and interviews with Montessori educators and early childhood specialists. From this research, Montessori programs were found to have great potential to serve as an equalizer between children from low- and high-income communities, predicting future academic success, decreasing wealth gaps, and improving adult health outcomes.

Introduction

The Montessori method is an educational philosophy that was developed by Italian doctor Maria Montessori. Since the teaching style was first created in the early 1900s, the Montessori method has seen rises and dips in popularity (American Montessori Society). At present, there are estimated to be more than 20,000 Montessori schools in 110 countries across the world (McTamaney, 2020). The celebrity alumni of Montessori programs (including Bill Gates, Google founders Larry Page and Sergey Brin, Taylor Swift, and Julia Childs) have only served to boost the educational method's reputation in the 21st century (Creative Montessori, 2022).

Maria Montessori designed and first implemented her child-led teaching principles in a factory district of post-revolutionary Italy. Working with some of the most impoverished children in the country, Montessori's methods were based on careful observation (O'Shaughnessy, 2016), and designed to serve children regardless of educational background or socioeconomic status. For this reason, Montessori education has been recognized as an opportunity for equalizing the gaps that often follow high-and low-income learners through life (Langhorne, 2013). This paper will serve to analyze the potential for Montessori programs to be used as a public health intervention. To fully understand this opportunity, a brief history of the Montessori method and an explanation of Montessori philosophy will be given. From there, a literature review comprising research on the education-health link as well as current research on the impacts of Montessori programs will be presented. From there, the limitations of the research will be reviewed. Key excerpts from interviews with Montessori educators and early-childhood specialists will then be presented. A discussion of the potential benefits and challenges with implementing Montessori programs as a public health intervention will comprise the paper's conclusion.

Early history of Montessori

In order to understand why Montessori education may be a successful part of an intervention addressing lifelong health disparities between high- and low-income children, it is essential to first have a background of the Montessori method.

Maria Montessori was born in 1870 in the province of Ancona, Italy, but moved to Rome with her family when she was 5 (Standing, 1957). She grew up during the period of poverty and civil struggle that followed the Italian unification, a social-political movement that united the unique states on the Italian peninsula into the Kingdom of Italy (Kramer, 1988). Dr. Montessori is remembered as being a highly confident child and persistent about getting her way (DeStefano, 2022). These traits eventually led to her attending a technical school for engineering, unusual for a woman of her time (Association Montessori Internationale, 2022). Though a successful engineering student, Dr. Montessori eventually switched tracks to pursue and earn a medical degree (Seldin, 2021). Her combined interests in education and psychiatry eventually led her to be appointed as co-director of a program for training special education teachers (Association Montessori Internationale). From this experience, Dr. Montessori went on to open a care center for young children of factory workers in one of the poorest districts of Rome (Standing, 1957). Through careful observation, Dr. Montessori developed an extensive set of teachings and techniques for helping each child at the center achieve their full potential. Many of the children she worked with had significant mental or physical disabilities and were generally believed by society to be incapable of learning (Montessori, 1912). Thus, Dr. Montessori's teaching methods began to generate international attention when even her most delayed students out-performed neurotypical children in higher grades on national exams (Sriram, 2020). Less than 5 years after the first 'Casi dei Bambini' had opened its doors, Montessori schools began

springing up across Europe and the United States, with many more to follow globally (Gutek & Gutek, 2016). Interestingly enough, Montessori's international success was initially very short-lived. While she continued traveling and teaching until her death in 1952, the worldwide clamor around the Montessori method died out rather quickly. Following a 1914 critique of the Montessori method by William Kilpatrick, from the influential Teachers College at Columbia University, Montessori schools lost popularity in the United States (Whitescarver & Cossentino, 2008). It was not until over a decade after Dr. Montessori's death that Montessori education experienced a resurgence (Kramer, 1988).

Explanation of the Montessori philosophy

The most basic philosophy of Montessori education is its tagline, 'follow the child' (Bennetts & Bone, 2020). This overarching theme encourages educators and guardians to provide experiences and opportunities that will help a child to learn more about what naturally interests them. Dr. Montessori believed that children are born with an innate curiosity for their world, and a love for learning (Montessori, 1949). She maintained that this should be embraced and that children should be allowed to learn from their environment, at their own pace, inspired by their own natural interests.

Dr. Montessori observed that even the youngest children in her classroom were capable of concentrating deeply for long periods of time on tasks that intrigued them (Montessori, 1912). She identified periods of development when most children were interested in exploring and practicing the same specific skills or concepts. Dr. Montessori developed toys and tools that allowed children in these stages to explore their current fascinations (Montessori, 1912). These materials are the hallmark of a Montessori education, and are still widely used today. In

Montessori classrooms, each child's unique natural interests are embraced and supported, as opposed to a focus on achieving learning goals on the educator's schedule. The overall goal of Montessori education is for children to become independent, peaceful, and intellectually curious adults (Lillard, 2019).

Tenets of a Montessori education

Montessori education is characterized by several main traits. The first, as explained above, is the philosophy of following the child. The child-led teaching style of a Montessori school comes into sharp contrast against traditional, educator-led classrooms. In a practical application, this involves allowing a child to work on an activity of their choice for as long as they want, undisturbed by praise or suggestion from an adult. In a Montessori classroom, the day is broken up into several 'work cycles', two to three-hour time blocks in which children as young as 18 months move independently around the classroom and engage in activities of their choice, uninterrupted.

As mentioned above, Montessori education is also characterized by the use of Montessori materials made from natural materials such as wood. Battery-operated toys and screens are not traditionally seen in a Montessori environment. Of course, this type of technology was not available in Montessori's time, and so there is some discussion among Montessori academics and educators about the place of technology in the Montessori classroom, with many schools allowing selective technology usage in older grades (MacDonald, 2015).

Another key tenet of Montessori education is a focus on practical life skills. Montessori observed that all children have a desire for independence, and thus the phrase, 'help me to do it myself' is a guideline for Montessori teachers and guardians to prepare an environment that

allows children to be safely independent. This involves providing children with appropriately sized, but completely functional tools, in order for them to complete ‘care of self’ activities. The emphasis on learning practical life skills from a young age is also characteristic of Montessori education, as Montessori observed that children have a natural fascination with completing and assisting with tasks of daily living (Ramani, 2013). Even very young children in a Montessori environment often get dressed independently, help to prepare food with real knives, use glassware instead of sippy cups, and complete household tasks such as dishes and laundry. While Dr. Montessori advocated that ‘play is the work of the child’, she also strongly encouraged that children should be given every opportunity possible to be involved in the daily life activities of the family (Montessori, 1923).

Montessori Program Options

Montessori programs exist in several different forms. While Dr. Montessori developed education materials and systems for children from newborn up through 8th grade, her first, and arguably most popular work was with children ages three to six, in preschool and lower elementary. Thus, while some Montessori schools encompass 18 months to 8th grade, stand-alone Montessori preschools are also common. Montessori schools may be public, charter, or private, and some families choose to homeschool using Montessori methods. Private Montessori education can be extremely costly, with average annual tuition varying widely from \$10-\$40,000 (Montessori for Today 2022). However, Montessori programs are not intended only for children of the wealthy. As the popularity of the Montessori method has grown, a move to increase the accessibility of Montessori education has inspired public Montessori schools. The American Montessori Association estimates that over 500 public Montessori schools exist in the United States alone (American Montessori Society, 2022). In some instances, conventional schools

have chosen to incorporate Montessori-trained teachers and Montessori materials to better serve students. Fleming (2019) offers further insight into the function of these such programs, describing a success story of a traditional Title-1 public elementary school transitioning to a public Montessori school in North Carolina. In any setting, a true Montessori classroom is characterized by licensed Montessori instructors, mixed-age classrooms, child-directed, independent, and uninterrupted work cycles, and use of Montessori materials (American Montessori Association). Montessori is not trademarked and there is no single governing body that oversees all schools. Thus, unfortunately, there is much variation in the quality and type of programs that market themselves as being Montessori (Caldwell, 2017).

Review of the literature

Combining the knowledge that education is a predictor of good health, and the proven success of Montessori programs for decreasing education gaps, it can be reasoned that there is an opportunity for Montessori programs to be used as a public health intervention to reduce health disparities between high- and low-income learners. A literature review was completed both for current research into the impact of Montessori education, and for the education-health link. Information was sourced from scholarly articles, gray literature, Montessori's personal journals, and other Montessori-specific publications.

Methods

Research databases such as PubMed, Cochrane Library, and databases through EBSCO were used to gather scholarly articles. Search terms included "Montessori", "early childhood", "health disparities", and "achievement gap". Other search terms included, "retrospective cohort, randomized, and "systematic review". Gray literature searches took place within the websites of

popular news media such as The New York Times and The Wall Street Journal, using similar search terms. Montessori-focused sources were also reviewed including school websites and parenting resources. Other sources included text and magazine publications about the Montessori method. Primary sources included Dr. Montessori's published personal journals.

Education-health link

The evidence for the impacts of early childhood intervention on adult health outcomes is robust. Cutler & Lleras-Muney (2006) explain the link between education and health as being twofold. Firstly, the authors offer an economic perspective, identifying that higher levels of education predict higher earnings and increased occupational options (Cutler & Lleras-Muney, 2006). However, Cutler and Lleras-Muney also propose that those with greater education have better health outcomes because higher education impacts thinking and decision-making patterns. Lawrence (2017) connects college degree attainment with an increased likelihood of health behaviors such as exercise and healthy eating. In a more specific example, Davies, Dickson, Smith, Berg, & Windmeijer (2018) specifically reported, as a result of a natural experiment in which the minimum age to leave school was increased, that higher education was a protector against diabetes. The Federal Reserve Bank of Minneapolis found significant evidence that investment in early childhood development not only decreases achievement gaps but has high public returns (2003, 2015). Rich (2014) emphasizes the importance of early childhood education, explaining that knowledge gaps begin during infancy. Weisleder and Fernald (2013) echo this sentiment, adding that families of lower socioeconomic status are less likely, for a variety of reasons, than their wealthier counterparts to stimulate language development by speaking to their babies. As a result, children of low socioeconomic status typically enter school with poorer language skills than their classmates, setting them up for an achievement gap

(Weisleder and Fernald, 2013). Hahn and Truman (2015) add evidence to the importance of early learning, explaining that education is a key social determinant of health and that programs that close education gaps between high- and low-income populations are a key public health priority for promoting health equity.

The impacts of Montessori education

With the above health effects of education in mind, the importance of early childhood intervention is clear. But why implement Montessori programs specifically to address health disparity as a result of achievement gaps? The answer is two-fold. Firstly, Montessori education has demonstrated its success in improving both academic performance and personal development among children. Secondly, Montessori programs have been demonstrated in the literature to be more effective than conventional education in equalizing academic and personal development gaps between children of differing socio-economic statuses. For these two main reasons, Montessori education is uniquely positioned to be a successful early-childhood intervention for decreasing achievement gaps, and reducing the resulting health disparities in later life.

Academic Achievement

The impacts of Montessori education were first analyzed in terms of program effects on academic achievement. Academic performance in childhood predicts future participation and success in higher education, and in turn, improved health as an adult (Center for Disease Control and Prevention, 2019).

Culclasure, Fleming, Riga, & Sprogis (2018) completed a four-year study of the effects of public Montessori programs on a variety of learning-related outcomes. 126 Montessori classrooms were observed, and over 7,000 students were matched to non-Montessori counterparts. Researchers found that, on average, students in Montessori schools outperformed conventionally educated children in both the math and language arts sections of standardized tests (Culclasure, Fleming, Riga, & Sprogis (2018). Echoing these results, Mallet & Schroeder (2015) found in a study comparing over 1,000 elementary students in traditional and Montessori public schools, that Montessori-schooled children in fourth and fifth grades, specifically, scored significantly higher in both math and reading compared to conventionally schooled children. Continuing this trend, Diamond & Lee (2011) found that Montessori educated 5-year-olds had higher math scores and reading abilities than their conventionally-educated counterparts. Courtier, Gardes, Noveck, Croset, Epinat-Duclos, Leone, Prado, & Van der Henst (2021) too had similar findings. In a randomized control trial of disadvantaged preschoolers in the French public-school system, 196 participants were recruited and followed over 3 years. Half of the children completed their education at traditional public schools, and the other half were placed in adapted Montessori programs. The adaptations included fewer materials, shorter work periods, and limited Montessori training for teachers (a low-fidelity program). It was found that children in the Montessori classrooms significantly outperformed their counterparts in reading, with scores comparable to those of advantaged children in accredited Montessori programs. Importantly, this finding demonstrates that even low fidelity Montessori programs may have academic benefits. Finally, Rindskopf Dohrmann, Nishida, Gartner, Kerzner Lipsky, & Grimm, (2009) present evidence of the lasting positive effects of Montessori elementary education. High school students who attended public Montessori schools from preschool through 5th grade were

matched on a variety of characteristics (including gender, socio-economic status, and race and ethnicity) to students who attended conventional public schools (Rindskopf Dohrmann, Nishida, Gartner, Kerzner Lipsky, & Grimm). Montessori-educated students were found to have significantly higher test scores in science and math (Rindskopf Dohrmann, Nishida, Gartner, Kerzner Lipsky, & Grimm).

Personal Development

Beyond academic performance, Montessori programs have also been demonstrated to positively influence a child's personal development. In a variety of areas, including executive functioning skills, creative skills, emotional well-being, and development of independence and practical skill abilities, Montessori students have been demonstrated to excel. The importance of developing these skills in early childhood is that they are essential for productive, healthy adult life.

Executive functioning comprises abilities such as working memory, prioritization, decision making, and self-control (Harvard University, 2015). Developing strong executive functioning skills in early childhood predicts improved academic performance, school attendance, behavior, and social-emotional development, all factors contributing to adult health outcomes (Ackerman & Friedman-Krauss, 2017). Denervaud, Knebel, Hagmann, & Gentaz (2019) conducted a study comparing the cognitive flexibility, working memory, and selective attention skills (three core measures of executive functioning) of kindergarten and elementary school children in private Montessori schools and conventional public schools. 201 children were enrolled (99 from Montessori schools and 102 from conventional schools) and tested on the various measures. Montessori students were found to outperform their peers academically, and

score significantly higher on tests of working memory. Individuals in the Montessori kindergarten group also had better self-reported health than their conventionally schooled counterparts. It is important to note that the Montessori programs in this study were private and were being compared to public conventional schools, however analysis of this data controlled for socio-economic status.

Voreis's research adds that participation in practical life skills, a key component of Montessori education, has the potential to increase executive functioning skills (2016). Besançon & Lubart (2008) studied 210 elementary children over two years in a variety of non-traditional school settings. It was found that children enrolled in Montessori programs, as compared to children in Freinet schools (another educational method), had the most significant creative development over the two years.

He, Yan, Zuo, Liu, Zh&ang (2009) offer a look at the effects of limited Montessori exposure on the intellectual development of 2-6-year-olds. All subjects were enrolled in traditional pre-schools, but half participated in Montessori activities for two hours a day, while the control group did not (He, Yan, Zuo, Liu, & Zhang, 2009). After one year, while no significant differences in intelligence between the groups were measured, fine motor skills, adaptation ability, language skills, and social behavior were all significantly better in the Montessori group, compared to the group that did not participate in Montessori activities (He, Yan, Zuo, Liu, & Zhang, 2009). This finding further suggests that even limited exposure to Montessori activities may have positive impacts on the development of young children.

Guinan & Hansel (2014) describe how an early intervention Montessori program was used as part of a residential program for low-income, single mothers and their children. They

explain that the Montessori education and environment children experience while enrolled in the program nurtures parent/child relationships, promotes mutual respect and patience, and helps children to become independent and self-motivated (Guinan & Hansel, 2014).

Pate, O'Neill, Byun, McIver, Dowda, & Brown (2015) note that in a study comparing over 300 children in Montessori and traditional preschools, children in Montessori schools got significantly more physical activity and time outdoors than their conventionally schooled counterparts. This is important, as fostering an enjoyment of physical activity and outdoor engagement will increase the likelihood that children will have these behaviors in the future, both of which have been linked to improved physical, mental, and cognitive health (Weir, 2020).

Ortiz-Blanes explains the positive impact public Montessori education has had not only on student development, but on an entire community in a low-income neighborhood in Guaynabo, Puerto Rico. Benefits seen following the introduction of a public Montessori school included increased school attendance, increased teacher retention rates, improved test scores, and decreased drug usage and violence within the community (2018). Following this trend, attendance was also found to be better among students who attended public Montessori schools in the United States, compared to traditional public schools (Culclasure, Fleming, Riga, & Sprogis (2018). Improved attendance may be explained by student engagement and enjoyment of school. Rathunde & Csikszentmihalyi (2005) surveyed 290 middle school students in Montessori and traditional programs. It was found that the Montessori students were more likely to report feelings of high intrinsic motivation, energy, and undivided interest while doing academic work.

Evidence of the longer-term effects of Montessori education has also been provided through studies that follow children over time. Ervin, Wash, and Mecca followed over 250 young elementary students, half in public Montessori schools and the other half in traditional public schools, for three years (2010). Through a series of child interviews, parent interviews, and testing, it was determined that Montessori-educated children had both better self-regulation skills and higher academic performance, compared to children in public school (Ervin, Wash, & Mecca, 2010). In a study of over 1,900 adults, half of whom attended conventional schools, and the other half of whom attended Montessori programs for 2-16 years, Lillard, Meyer, Vasc, & Fakuda (2021) found that Montessori educated adults were significantly more likely to have higher wellbeing, controlling for age, gender, race, socioeconomic status, and private school attendance. Furthermore, it was found that the more years of Montessori education an adult had completed, the higher their well-being was. Finally, Lillard, Heise, Richey, Tong, Hart & Bray (2017) completed a longitudinal study surrounding Montessori preschool as an outcome equalizer in early childhood. The study began with a randomized lottery for admission to two public magnet schools in a high-poverty city in the United States. A sample of 141 children (70 in Montessori school and 71 in other schools) resulted. Over 3 years of preschool, ages 3-6, children were tested 4 times per year in cognitive and socio-emotional measures. While initially differences between groups were not noted, it was found that over time, children in the Montessori preschools performed better in academic achievement, social understanding, executive functioning at age 4, and were also, on average, more likely to report enjoying school. Interestingly, it was also found that educational disparities between high and low-income children were equalized by Montessori education, with the low-income children in the Montessori preschools having smaller academic achievement gaps than conventionally schooled

children of higher income levels. This gap slowly closed throughout the study and was no longer statistically significant at the study's end. A final result of this study was that children in Montessori classrooms who had lower executive functioning scores at the start of the study scored just as well in academic achievement as children with higher scores. The authors explain that this finding is in contrast with the generally accepted knowledge that executive functioning predicts academic achievement.

From reviewing the existing literature, it can be concluded that Montessori programs may provide a variety of academic and personal development benefits to learners. The literature shows that Montessori education is successful both in a private and public school setting, and that it is effective in reducing both academic and personal development gaps between learners of differing socio-economic status. It can be recommended that high fidelity programs, those which closely follow the Montessori method, are most effective, but that any exposure to a Montessori environment may be beneficial. Furthermore, it can be argued that for maximum benefit, public Montessori education should be introduced at, and sustained through preschool.

Study Limitations

There are several limitations to the evaluation of Montessori methods, as well as to this literature review as a whole. Firstly, while traditional evaluation of educational program success is often composed solely of academic performance, Dr. Montessori emphasized a 'whole child' approach (Creative Montessori, 2019). The development of the child as a person in all aspects (physical, mental, social, emotional, etc.), was considered a critical outcome of a child's education (Houle, 1997). Thus, it is important to note that the primary goal of Montessori education is not specific academic achievement. However, test scores are often used in research

studies as a measure of academic success, to standardize comparisons between Montessori and conventionally-educated groups. This is a limitation in that test scores do not necessarily reflect upon the outcomes that are important to a Montessori education (Marshall, 2017), and thus the method used to evaluate success may not actually be evaluating what Dr. Montessori intended her method to achieve.

Another of the primary challenges with studying the effects of Montessori education is the limited amount of longitudinal and randomized research that has been conducted. Studies that only follow children for several years do not present a full picture of the impacts their education may have had on adult education or linked health outcomes. Marshall (2017) adds that another challenge of presenting Montessori education as a health intervention is that it is difficult to know what aspect of Montessori education may have had the most impact on study outcomes. Lillard (2012) found that children in high-fidelity Montessori programs out-performed those in low-fidelity or conventional preschool settings, but it is difficult to know what aspects of the high-fidelity programs resulted in such outcomes. A lack of randomized studies, considered to be the gold standard, also contributes to a lack of high-quality study data.

A further limitation of Montessori research is a lack of consistency across Montessori programs. In recent years, more relaxed, “Montessori inspired” programs have taken root with parents and educators, allowing individuals to experience some of the benefits of Montessori education, without having to commit to some of the more rigid tenets of a traditional Montessori experience (National Center for Montessori in the Public Sector, 2019.) Daoust (2004) explains that like any other education method, individual instructors' teaching styles vary. In a study of over 60 early childhood Montessori educators, it was found that beliefs about the importance of certain aspects of Montessori, such as age-blended classrooms, varied widely, and impacted how

classrooms were run (Daoust, 2004) Another major concern of studies comparing Montessori and conventional school outcomes is the differing demographics of students in attendance at private Montessori schools versus public schools. This is partially accounted for in the majority of studies by matching participants or otherwise controlling for characteristics such as socioeconomic status and race. Furthermore, many studies involve comparisons between public Montessori schools, and traditional public schools within the same county or state, decreasing demographic concerns.

A final concern is study validity. In non-randomized studies, in particular, selection bias occurs, as parents who choose Montessori schools differ from those who do not, beyond race and socio-economic status. Children who are not successful in a Montessori environment are more likely to drop out of a study, introducing yet another bias, attrition bias. Furthermore, those who are willing to participate in a study, randomized or otherwise, differ from those who are not, introducing bias from the beginning of most studies. It is important to acknowledge these limitations, as they will affect study results, generalizability, and social value of findings.

Discussion of potential concerns/solutions

While the potential for Montessori programs to be used as a public health intervention certainly seems to have merit based on the promising results of education positively impacting health and the positive effects of Montessori education, it would be remiss to not acknowledge and address some of the potential challenges and concerns that may arise when implementing such a program.

Firstly, Murray (2005) presents several threats to the success of public Montessori programs, which are essential for intervention accessibility. These include budget cuts and lack of funding, teacher shortages, and increasing state-regulations around standardized testing.

One common critique of the Montessori method is the concern that children in Montessori classrooms will not develop collaborative skills, as they spend much of their time working independently (Meinke, 2019). While independent work is certainly present in a Montessori environment, an important part of Montessori education is interaction in a multi-age classroom. Children in a traditional Montessori setting are encouraged to teach and learn from one another, with specific parts of the day set aside for partnered or group lessons and activities (Lelei, 2015).

Another concern with Montessori education is that children in child-led classrooms will neglect subjects that they are uninterested in (Ramussen, 2019). This is entirely possible. A child may want to focus only on math-based activities, and have no interest in learning to read. Montessori teachers are trained to mitigate this concern, introducing children to different subjects by relating them to a child's current interests (Montessori Family, 2020). For example, a reluctant reader who prefers to focus on math may be given a book of stories about math concepts, or introduced to word problems in an effort to bridge an area of interest to a subject with less appeal for the child.

The lack of structure that the Montessori classroom provides is another commonly cited concern of the education method (Ramussen, 2019). While setting respectful boundaries between students and within the classroom is a key part of the Montessori environment, some children may need more structure or routine than a Montessori classroom traditionally offers. Children

who have a difficult time managing their own interests without becoming disruptive to others may particularly struggle to be successful in a Montessori classroom. Conversely, for children who find sitting still for long periods of time in a conventional classroom difficult, the freedom of movement in a Montessori environment may help them to focus and engage with their learning.

In juxtaposition to the above point, another of the common critiques of Montessori education is the perceived and experienced rigidity of the method and educators who implement it. While Montessori did develop tools to be used in a certain developmental order, Hunt & Valsiner point out in their 2014 introduction to Montessori's *The Montessori Method* that adherence to Montessori methods does not necessitate 'cultish behavior'. The researchers insist it is most in-line with Montessori principles for educators to be highly flexible and innovative as Montessori herself was (Hunt and Valsiner, 2014). It must be noted however, that the Montessori community is divided on this issue, led by differing philosophies from the two primary global Montessori organizations. AMI (Association Montessori Internationale) is the more traditional of the two, founded by Montessori herself, and committed to enacting Montessori's methods exactly as she would have (Hanover Research, 2016). AMS (American Montessori Society) takes a more flexible approach, maintaining Montessori principles, but bringing her teachings into a modern day context, and generally allowing for more flexibility (Hanover Research, 2016).

Finally, a significant concern about Montessori programs in a practical application is whether the methods will be successful for children with cognitive limitations or behavioral needs. While a Montessori classroom setting may not be ideal for every child, Montessori herself did work with many developmentally delayed children. As mentioned previously, it was found

that her methods worked well for allowing most children to excel academically and personally. Furthermore, Montessori also implemented her methods successfully with “mentally disturbed” children, working to provide education and behavioral intervention for war-traumatized children following World War 1 (Moretti, 2021).

Interviews

In order to get additional perspectives on Montessori education and the potential for this method to be used as a public health intervention, a series of interviews were completed. Individuals who had experience working in early childhood development, within the public school system, as Montessori parents, and as Montessori educators were interviewed. Following the interviews, comments were compiled and reviewed. Common themes and key ideas are summarized below.

Interviewees were first asked if they were familiar with Montessori, and what their general perceptions of the method or programs were. Interviewees frequently highlighted their understanding that Montessori programs were child-led, more flexible than conventional schools, and required different educator licensing.

Interviewees who were familiar with Montessori were asked to describe their experiences with the method. A teacher in a public Montessori school noted that Montessori programs worked well for children with disabilities, especially in the area of mathematics. The interviewee added that children with additional needs (including neurodiverse children, and those with behavioral needs) were not viewed by the Montessori teachers as a problem, but that these children were objectively observed just as the rest of the class. Further supporting this, a different participant said they felt that Montessori teachers were trained to see a child as

themselves, not as having deficits. One interviewee whose children had attended a Montessori preschool commented that their children had a wonderful experience. The interviewee felt that in a Montessori setting, children expressed interests before being taught things and that the program was curiosity driven. Another interviewee who had experience teaching in a Montessori preschool added that they felt Montessori ‘met children where they are’. One participant mentioned their belief that Montessori was truly about the child. Another interviewee remembered feeling surprised when their preschool-aged children learned responsibility in a Montessori school setting by waiting their turn for materials, washing dishes, using real utensils, and helping to clean the classroom. The participant mentioned that these skills transferred to the home environment. This experience was echoed by other participants in separate interviews as well.

One of the most highlighted strengths of Montessori across the interviews were the Montessori-trained teachers. One interviewee stated that they thought the true strength of Montessori education was the training provided to educators. The participant felt that Montessori training gives teachers observation skills to learn about the children without correction. A Montessori teacher mentioned that they felt empowered by their training to not feel that they had to immediately fix every issue. Rather, Montessori teachers are taught to focus on what exactly is causing a behavior. The interviewee stated, ‘Montessori teachers never say “I can’t deal with this”, they say, ‘what is causing this, what am I seeing here?’ One participant who taught at a public school but whose children attended a Montessori school, added evidence to the unique skills of a Montessori educator. They explained that they wished to embody the Montessori teacher’s ability to connect with every child individually in their own classroom.

When asked to speak about the downsides of the Montessori method, one participant mentioned that the way Montessori taught Italian was difficult to translate into teaching English reading and writing skills, due to different phonetics. It was explained that this could result in difficulties teaching children in Montessori environments to read. The participant, who worked as a reading interventionist in a public school, mentioned that in a public school setting, this would put children learning English at school for the first time at a disadvantage.

At this point in the interview, the main ideas of the project were explained, and participants were then asked to speak about their thoughts on Montessori as a public health intervention.

A shared belief across the interviewees was that a public health program would be most effective if it were a combination of private and public school philosophy. One participant shared that they thought the role of public school was ensuring basic skill development, especially for children who may not develop these skills at home. Though in agreement that a combination program would be best, a participant with experience teaching in both conventional and Montessori public school environments acknowledged that facilitating the clash between Montessori philosophy and the need for standards in public education was difficult. One interviewer commented that they felt Montessori could be a uniquely successful early childhood intervention because Montessori reaches children in developmental phases that are non-academic. Another participant added that the close relationships Montessori educators form with children in their classrooms could alone provide massive mental health benefits for a child. Another participant felt that regardless of socio-economic status, children could benefit from the skill learning and empowerment of independence that Montessori education instills. One interviewee mentioned that students who are missing skills need 1:1 time and smaller class sizes

to catch up and grow academically, and thought that a Montessori environment would make this easier to achieve. Finally, one participant felt that early childhood Montessori intervention would be more effective than a traditional early-child intervention because Montessori teaches behaviors/lifestyles that are conducive to developing learning habits that allow children to be academically successful in later grades.

Participants were then to share what they thought might be the major barriers to implementing public Montessori programs as an intervention. The main concern across participants was the expense of materials and training. One interviewer felt that a second challenge would be balancing the pressures of public school testing with the freedom of a Montessori classroom. One participant mentioned that Montessori programs might offer too much independence, and that children might struggle to meet necessary public school standards. A common comment from interviewees was that it would be important that a public Montessori intervention begin early in childhood, so that students could adjust to the Montessori environment. A public school Montessori teacher added that early intervention would be essential, as it would aid in students learning a respect for the materials, which is less innate for older students who did not have a Montessori background. The reading interventionist specifically mentioned a concern that Montessori education alone might cause students to struggle with language development and reading. Finally, one participant warned that uncertified teachers put into the Montessori environment may fall into the trap of following the materials, becoming too strict to follow the child. Finally, one participant believed that the main barrier would be community buy in, and emphasized the importance of culturally sensitive teachers, staff, and administration in public Montessori schools.

Conclusions

From the compiled literature review and interviews, several conclusions about the potential benefits of Montessori education as a health intervention can be made. The demonstrated link between education, specifically in early childhood, and improved health outcomes is the basis for believing that such an intervention could be effective. Montessori methods are uniquely positioned to be a successful intervention for reducing academic gaps, and future health disparities between low- and high-income learners. Montessori has been demonstrated to predict academic success, and foster personal development skills that have been linked to positive health outcomes. Given the many demonstrated positive impacts of Montessori education, it is unsurprising that Montessori has been seen as a great opportunity to equalize education gaps and resulting health disparities. That Dr. Montessori originally designed her methods and materials for children in low-income communities, coupled with the success of similar past interventions provides further evidence. It can thus be concluded that public, early childhood Montessori programs have the potential to be used as a public health intervention to close academic achievement gaps, and improve later-life health outcomes. Some considerations include the need for the Montessori program to be classical in nature, involving certified instructors and legitimate Montessori tools and activities. The program must also be affordable and accessible to community members, and be a hybrid blend with the structure of a conventional school, and the educator training and skill empowerment of a Montessori program. Finally, it must be understood that while Montessori methods can be catered to the needs of every child, a Montessori classroom setting may not be the ideal placement for every child, and that child success will look different for every student.

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