Efficacy of Montessori and traditional method of education on self-concept development of children

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1*Shivakumara K,  
1Dhiksha J,  
and  
2Nagaraj, O

1Department of Psychology, Karnataka University, Dharwad- 580003 Karnataka, India.  
2Department of Psychology, Government First Grade College, Davanagere- 577004, Karnataka, India.  

*Corresponding Author E-mail: kumarpsy123@rediffmail.com  
Tel.: +91-9844935744

Montessori is a method of education started by Maria Montessori in 1903 for the educationally backward children; after finding its efficacy on them it was thought that it even well suits for the normal children. It became very popular throughout the world in the 20th century and has been implemented both in private and public institutions. Based on certain principles it is evident in many of the researches conducted so far that the Montessori education is conducive for the overall development in social, emotional and cognitive components of children. With this background the present study was conducted to explore the effect of Montessori education on social development in terms of self-concept of the children as compared to the children of traditional method of education. Using descriptive and parametric tests for the obtained data it was found that the Montessori children have very high self-concept than the traditional children. Percentage result shows that the traditional children's self-concept ranges from low to high category and the Montessori children's self-concept ranges from high and very high, which indicated marked difference between them in self-concept. According to independent samples t-test results there was a statistical significant difference between the Montessori children group and the traditional children group, the Montessori children are found to have higher self-concept.

Key words: Montessori education, traditional education, self-concept

INTRODUCTION

Montessori method

“The Montessori method is a spontaneous, expansive educational system designed to afford the child liberty to move and act in a prepared environment encouraging self-development” (Orem, 1965). Orem’s statement highlights the importance of the Montessori method of teaching/learning. In her method, Dr. Montessori believed the child himself/herself must be the center of education. In his study, Tzuo (2007) believed that children are enabled to make free choices by using the Montessori materials; that children have the power to learn on their own; and that Montessori education is a factor that complements the role of the teacher.

The primary role of a Montessori educator is to creating a cooperative and supportive setting that is organized and seems aesthetically pleasing to the learners. The teacher performs the observer role to direct spontaneous actions of the students (Ruenzel, 1997). According to Montessori, “education is not something which the teacher does, but rather a natural process which develops spontaneously in the human being” (Weissglass, 1999). Maria Montessori’s program is very different from most traditional schools. Montessori method involves self-direction, cooperative and non-competitive activities to develop high self-esteem, strong self-image, and confidence to solve problem and make decisions.

In traditional classrooms the teacher has the active role where as the child has the passive role. Maria Montessori emphasized the importance of children taking an active role
in their learning. She did not design the classroom around the teacher, but rather around the learner (Weissglass, 1999). The children are able to move freely in the classroom, explore the prepared environment, and use the teacher as a guide. Montessori children learn to become independent, however, also get an experience in collaborative work with their peers.

Most of the traditional schools have one age group for each class. On the contrary, Montessori classrooms consist of children of various ages. Montessori opined that having a three-year span of age grouping encourages the teacher, students and parents to develop supportive, collaborative, trusting relationships. The children constantly interact with each other that support their social development. In the Montessori method children are encouraged to teach, collaborate and help each other. Number of research studies indicate that people learn better when working collaboratively than when working alone (Azmitia and Crowley, 2001, Lillard, 2005). In Montessori settings, children are grouped in mixed ages and abilities. Ages are mixed so that older students can assist and mentor the younger children in the group. Students are grouped based on common interests and experiences rather than the ability and skill level (Pickering, 2004). However, mixed age-group procedure may not be strictly followed in the Indian Montessori schools.

Montessori’s well designed materials allow each child to work and learn at their own pace. The child’s learning speed is internally determined rather than externally. This indicates that the child determines when they are ready to move on, rather than the teacher. The materials are designed in a sequential order. The materials break activities into a series of steps and once a child has learnt one material he will move on the next. While designing materials Montessori wanted the children to be able to complete the task at hand on their own and gain some self-sufficiency and independence (Lillard, 2005). The materials are neatly put away on shelves and are ready for the next child to use. The children may repeat any material as long as they want. The repetition helps to refine child’s senses through repeated focused attention, comparison and judgment (Montessori, 1964). The children use the material until they have perfected it and internalized the feelings of success (Montessori, 1967). Common manipulators, or manipulative materials used by Montessori included wooden letters and numbers, cylinders, blocks, beads, rods, puzzles, gymnastic equipment, metal objects, and household items. Using a sensory learning the child gains knowledge by playing the inquisitive role of the naive scientist. This method is commonly followed in the Montessori schools and to some extent in traditional schools in India.

Montessori chose the colour of learning materials based on research that both adults and children are usually attracted to red and blue (Lillard, 2005). Curriculum topics are strategically linked by the teacher so that no subject is taught in isolation. Lessons cover disciplines such as geometry, sensory development, language acquisition and expression, literature, science, history, government and life skills.

Through her research and study in the field, Montessori observed that effective teaching styles required the establishment of a “sensory rich” environment that offered learning opportunities. Montessori believed that it was necessary to train the senses first before training the mind (Lopata et al., 2005).

Freedom to Maria Montessori (1966) does not mean that we leave child on his/her own to do whatever he/she wishes to do. Freedom in a Montessori environment means for a child to freely walk around and get a new activity when the child so desires, and observe another child and learn by observing (Montessori, 1972). Movement in education was important for Dr. Montessori. It was needed in indoors and outdoors. Dr. Montessori taught children to walk and march indoors. She believed that children should play outdoors so that they could be kept healthy and grow (Montessori, 1966).

**Self-concept**

Self-concept may be understood as a perception every human has of himself or herself. It is a component of personality development and indicates who we are and how we fit into the world. Machargo (1991) perceives self-concept as a set of perceptions or reference points that the subject has about himself, a set of characteristics, attributes, qualities and deficiencies, capacities and limits, values and relationships that the individual knows to be descriptive of himself and which he perceives as data concerning his identity.

According to Cooley (2000) self-concept is broadly conceptualized as how a student views his/her ability when compared with other students. For him, to be academically successful individuals must be identified with domain of academics. Academics must be part of their self-concept; more specifically, they must have a positive academic self-concept. Some previous research works suggest that there is a positive relationship between academic self-concept and academic achievement as measured by grade point average (Cooley, 2000; Gerardi, 2009).

In the following section we have reviewed related research studies in the area of Montessori education conducted on different sample groups. In one study researchers examined the social interactions of preschool children at three Montessori preschools, two university laboratory preschools, and a parent cooperative preschool. The results of the study showed that the Montessori schools had the highest rates of peer interactions. The Montessori children’s interactions with their peers and with their teachers were found to be longer. The above result showed that the Montessori children had more advanced social skills and cooperation from the children. Overall, it was found that the children in the Montessori classrooms had more quality social interactions (Reuter and Yunik, 1973). Children what they feel about themselves during the school years can have important consequences for their later
development and psychological well-being. Overall, children who view themselves positively tend to be happier than those who do not (Swann, 1983). Moreover, negative self-perceptions once formed can be extremely resistant to change (Swann, 1983). Thus, Marsh and Yeung (1997) concluded that the research "supports the usefulness of self-concept not only as an important outcome variable in its own right but also as a mediating variable that facilitates the attainment of their desirable outcomes" (Chapman, 1988). The study conducted by Badiei and Sulaiman (2014) revealed that children in Montessori curriculum have a higher score in cognitive, social and language development than children in public kindergarten with National Preschool Curriculum. Other studies have yielded similar results that there is a difference between Montessori and traditional kindergartens in cognitive, language and social skill development (Jones, 2005; Singh, 2005; Lillard and Else-Quest, 2006; Bell and Wolfe, 2004; Centofanti, 2010; Crain, 2003; Murray, 2008) results favouring the Montessori kindergarten students. Ozerem and Kavaz (2013) evaluated the efficacy of Montessori method education on pre-school children. The results showed that the creativity and social skills ability were found to be higher in more per cent of the students, further implying that the Montessori students have higher creativity and social skills. Lillard (2011a) found that children in Montessori programs showed high social problem solving strategies. Social competence in preschool is associated with better outcomes in social and academic domains (Copage and Watson, 2001; Ladd et al., 1999; Malecki and Elliott, 2002; Welsh et al., 2001). Thus present research has high significance in the context of its importance in the education field.

**METHODOLOGY**

The present study adopted both descriptive and parametric test analyses to focus on the effect of educational methods on self-concept development of the children. It was hypothesized that higher percentage of children of Montessori education have very high self-concept than the percentage of children of traditional education. It was also hypothesized that children of Montessori education have significantly highly favourable self-concept than the children of traditional education.

**Pilot study**

After designing the study, a pilot study was conducted on 139 children of Montessori and traditional education method selected from schools of Dharwad district. As the Self-concept Questionnaire was translated from English to Kannada language, we verified the reliability. The data yielded significant level of reliability for the Montessori children with value of .82, whereas for the traditional children the obtained reliability score was .84, these values were found to be highly significant.

**Main study sample and selection**

The present research included of total 1082 school children of Montessori and traditional education. Of them, 549 children were of Montessori education and 533 children were of traditional education background. The total number of male and female children in the Montessori education group was 287 and 262 respectively, whereas in the traditional education group it was 275 and 258 respectively. The purposive sampling technique was used to select the districts and schools for the study. However, while selecting the section of class from specific school (since there were more sections in each class) odd and even number was followed to select the class from A, B, C, D sections. After selecting particular section of the class the odd and even number of children's register numbers were chosen. Hence, the systematic randomization method was adopted at the final stage of sample selection.

**Rationale of the study**

The Montessori education was developed by Maria Montessori with the main objective of insisting overall development of the children. The method provides many features which are different from traditional method of education, where Dr. Montessori believed that the children develop academic and social-emotional abilities far superior to that of traditional children. Based on this assumption and its proven efficacy the Montessori method of education has become popular worldwide. Hence, the present study was carried out with the prime rationale that the children who attended their schools in Montessori method of education have better social development than the children of traditional schools.

**Measures**

**Self-concept questionnaire**

The Self-concept Questionnaire constructed by Saraswat (1997) was administered to the subjects for assessing self-concept. The self-concept questionnaire consists of six dimensions such as physical, social, temperamental, educational, moral, and intellectual self-concepts. The scale norms also provide a global self-worth of the subject based on the added raw scores of all 6 dimensions. There are 8 items on each dimension and in all there are 48 items. The responses are arranged in such a way that the scoring system for all the items will be 5, 4, 3, 2, and 1. A high score on this inventory indicates a higher self-concept, while low score shows low self-concept. The total raw score ranges from 40 to 220. For measuring self-concept as very high to very low on 5 point category the description from manual was used. However, for finding statistical significance level of difference the raw scores were converted into standard scores. By independent 't' analysis the difference between groups were ascertained.

The test-retest reliability coefficient of the inventory had
been reported 0.91 by Saraswat (1997). Reliability coefficients of its dimensions vary from .67 to .88. Experts’ opinions were obtained by the test author to establish the validity of the inventory. 100 items were given to 25 psychologists to classify the items to the category to which it belongs. Items of highest agreement and not less than 80% of agreement were selected. Thus the content and construct validity were established by the test author.

Statistical techniques

Mean and SD were calculated for each of the sample groups, descriptive analysis using percentage test was conducted to find out the size of children in Montessori and traditional education having different levels of self-concept. In order to run the parametric independent ‘t’ test, the raw scores were converted into standard scores and SPSS 20.0 software was used to analyze the data.

RESULTS AND DISCUSSION

Figure 1 depicts the percentage of children of Montessori and traditional method of education on self-concept. The above results clearly imply that higher percentage of children of Montessori education have very high self-concept. The traditional education children are scattered from very low to very high category of self-concept. This suggests that higher percentage of the Montessori children have very high self-concept than the percentage of traditional children.

Table 1 depicts that the children of Montessori education have higher level of global self-concept than the children of traditional education (Montessori Mean = 56.74, traditional Mean = 43.06; t = 30.83, p < .001). On the physical self-concept, the children of Montessori education have higher mean scores (56.44) than the children of traditional education (43.37). The obtained ‘t’ value is 28.37, which is highly significant at .001 level. This shows that the children of Montessori education have higher physical self-concept than the children of traditional education. In the social development the first self to develop in the individual is perception of oneself. Where the individual evaluates himself and forms impressions about oneself. The Montessori children are found to develop good impression about their physical appearance, physical abilities etc and helps for the development of positive physical self-concepts.

Further, it was evident that the Montessori children feel a sense of worth in social interactions with peers, teachers and significant others as compared to the traditional children. On the social self-concept, the mean scores of the children of Montessori education is higher as compared to the mean scores of traditional children (Montessori Mean = 56.94, traditional Mean = 42.85; t = 32.63, p < .001). This result clearly implies that the children of Montessori education have higher social self-concept than the children of traditional education. Similarly, on the temperament self-concept, it was found that the Montessori children are found to have positive emotional states and their kind of
### Table 1: Descriptive statistics with comparison of Self-Concept scores of Montessori group and traditional group by independent t-test

<table>
<thead>
<tr>
<th>Dimensions of Self-Concept</th>
<th>Montessori Children (N=549)</th>
<th>Traditional Children (N=533)</th>
<th>t - value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>56.44</td>
<td>43.37</td>
<td>28.37***</td>
</tr>
<tr>
<td>SD</td>
<td>03.94</td>
<td>10.02</td>
<td></td>
</tr>
<tr>
<td>Physical</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Mean</td>
<td>56.94</td>
<td>42.85</td>
<td>32.63***</td>
</tr>
<tr>
<td>SD</td>
<td>03.54</td>
<td>09.45</td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>56.42</td>
<td>43.38</td>
<td>28.27***</td>
</tr>
<tr>
<td>SD</td>
<td>03.62</td>
<td>10.16</td>
<td></td>
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<tr>
<td>Temperament</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>55.10</td>
<td>44.75</td>
<td>19.87***</td>
</tr>
<tr>
<td>SD</td>
<td>03.83</td>
<td>11.56</td>
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<tr>
<td>Education</td>
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<td></td>
</tr>
<tr>
<td>Mean</td>
<td>55.79</td>
<td>44.04</td>
<td>23.87***</td>
</tr>
<tr>
<td>SD</td>
<td>03.27</td>
<td>11.04</td>
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<tr>
<td>Moral</td>
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</tr>
<tr>
<td>Mean</td>
<td>56.29</td>
<td>43.52</td>
<td>27.28***</td>
</tr>
<tr>
<td>SD</td>
<td>05.40</td>
<td>09.49</td>
<td></td>
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<tr>
<td>Intellectual</td>
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</tr>
<tr>
<td>Mean</td>
<td>56.74</td>
<td>43.06</td>
<td>30.83***</td>
</tr>
<tr>
<td>SD</td>
<td>03.16</td>
<td>09.88</td>
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<tr>
<td>Global Self-Concept</td>
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</tr>
<tr>
<td>Mean</td>
<td>56.74</td>
<td>43.06</td>
<td>30.83***</td>
</tr>
<tr>
<td>SD</td>
<td>03.16</td>
<td>09.88</td>
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</table>

*** p<.001

![Graphical representation of self-concept scores of the children of Montessori and traditional education](image)

Figure 2: Graphical representation of self-concept scores of the children of Montessori and traditional education

emotional reactions are positive in nature and they have positive temperaments. The obtained mean scores of the children of Montessori education is higher than the children of traditional education (Montessori Mean = 56.42, traditional Mean = 43.38; t = 28.27, p < .001). It shows that the children of Montessori education have highly favourable temperaments than the children of traditional education. On education self-concept, there is significant difference between the children of Montessori and traditional education (Montessori Mean = 55.10, Traditional Mean = 44.75, t = 19.87, p < .001). This result indicates that the Montessori children have positive views about their academic performance and their relation with teacher is found to be positive and they are good in extra-curricular activities. The mean scores obtained also indicate that the children of Montessori education have higher moral self-concept than the children of traditional education (Montessori Mean = 55.79, traditional Mean = 44.04; t = 23.87, p < .001). The Montessori children report their higher ability to judge right and wrong things and their values. On the last dimension – intellectual self-concept, the obtained 't' value is 27.28, which is highly significant at .001 level (Montessori Mean = 56.29, traditional Mean = 43.52). The scores indicate that there is significant difference, the intellectual self-concept scores favours the children of Montessori education. The Montessori children are very much aware of their intellectual and problem solving abilities. They are good in making judgements in the problem situations. The same results have been presented in the graphical representation in Figure 2.

The overall findings of the present study on the global self-concept and its dimensions suggest that the children of Montessori education have higher self-concept than the children of traditional education. The present finding is in accordance with the assumptions that the Montessori education has favourable effect on the self-concept development of children as compared to the traditional education. Probably the most high profile study to date was published in 2006 in the journal Science (Lillard and Else-Quest, 2006). The study evaluated the impact of Montessori education on social and academic outcomes for children at the end of Montessori age groups. Results showed superior outcomes for the children who attended school in the Montessori method. Montessori children in the younger age group had positive interaction on the playground, and
showed more advanced social cognition. They also expressed more concern for fairness and justice. The Montessori children exhibited superior social skills and reported strong sense of community compared to the non-Montessori students. Lillard and Else-Quest (2006) study showed that at 5 and 12 years Montessori children scored higher on several social and cognitive outcome measures. Children in Montessori programs found to show increased social problem solving strategies (Lillard, 2011b). Social competence in preschool is associated with better outcomes in social and academic domains (Copage and Watson, 2001; Ladd et al., 1999; Malecki and Elliott, 2002; Welsh et al., 2001). Thus present research has high significance in the context of its importance in education system.

Self-concept plays significant role in academic performance of the students. Given that self-concept and school performance mutually influence each other, teachers and parents should aim to improve both academic achievement and self-concept in students and address potential mediators. Increasingly, efforts to enhance student self-concepts are focusing on enhancing feelings of empowerment and confidence by creating a friendly and encouraging school environment that appreciates personal strengths and assets (Liem et al., 2015). One of the most significant factors responsible for students’ academic performance is their self-concept (Bandura, 1997, Villarroel, 2001; Boulter, 2002). In Rogers’ (1947) view, the self is the central ingredient in human personality and personality adjustment. Rogers described the self as a social product developing and of interpersonal relationship striving for consistency. He argued that there is a basic human need for positive regard both from others and from oneself and that in every person there is a tendency towards self-actualization and development so long as this is permitted and encouraged by an inviting environment (Purkey and Schmidt, 1987).

CONCLUSIONS

For the total 549 and 533 Montessori and traditional children respectively, the percentage results of self-concept variable are that 98.9% of the Montessori children have very high self-concept than only 43.9% of the traditional children. The remaining 1.1% of the Montessori children have high self-concept, whereas rest of 66.1% of the traditional children have self-concept at low to high level category. This implies that there is significant difference between both the groups in their level of self-concept; the higher self-concept results favouring the Montessori children. From the findings of independent ‘t’ test carried out it emerged that there is significant statistical difference between the Montessori and the traditional children. The Montessori children are found to have higher self-concept as compared to the traditional children. This suggests that the Montessori education has favourable effect on social development of the children compared to the traditional education; this could be due to the conducive physical and social-psychological environmental conditions provided in the Montessori method of education.

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Competing interests

The authors declare that they have no competing interests

REFERENCES


Gerardi S (2009). Academic self-concept as a predictor of


