CHILDREN'S EFFORTFUL CONTROL IN A MONTESSORI CLASSROOM:

EFFECTS OF PARENTING AND PURPOSEFUL WORK

Judith S. Blahut

University of Arkansas and Walnut Farm Montessori School

Abstract

Research in effortful control is necessary to understand and support children's behaviors in social and classroom settings (Rimm-Kaufman, Curby, Grimm, Brock, & Nathanson, 2009). This study reviewed literature discussing the relationship between parenting style and effortful control and Montessori philosophy as it relates to the work in practical life. The literature reviewed in this study suggested that parenting style may also be related to a child's effortful control. In addition, it was expected that the work of practical life in a Montessori classroom would positively influence effortful control in children. Using an experimental design, this study examined the efficacy of a Montessori Table Washing Task to prime effortful control in children ages 3-6. The Mischel Marshmallow Test (Mischel & Baker 1975) was used to test effortful control in the children. Children in the control group received only the Marshmallow Test. Children in the experiment group received a Montessori Table Washing Lesson prior to receiving the Marshmallow Test. Although not statistically significant, there was a difference in the groups. However, in this study, there was no correlation found between parenting style and the effortful control of the children. Implications of this study are that practical life work, like a Montessori Table Washing Task, may positively affect effortful control in pre-school age children.

Purpose

This study predicted that a Montessori Table Washing Task (Schmidt, 2009 p,121), presented to children in an experiment group, may prime effortful control in young children. The experiment tested the efficacy of the Table Washing Task to prime effortful control in preschool children. Purposeful work, such as household chores (table washing) may positively affect effortful control in children (Lillard, 2005). Understanding the efficacy of the Table Washing Task and its relation to effortful control required investigation because preparing classroom activities with similar characteristics may help preschool children to regulate their behavior and cognition. In other words, it may provide preschool teachers with specific activities to improve classroom environments, supporting individual children to develop effortful control, leading to a more successful classroom experience.

The purpose of this study was to measure the efficacy of a Montessori Table Washing Task to prime effortful control in preschool children. In addition, this study sought to determine if a relation existed between parenting style and effortful control in preschool children. It was predicted that children who received the Table Washing Task prior to the Marshmallow Test would be higher in effortful control than children that only received the Marshmallow test. It was expected that parenting style would be a variable that would affect the results of the experiment. Therefore, parenting style was correlated to see if the children who scored higher in effortful control also had parents who balanced demandingness and



Methods

The present study used an experimental design (Campbell & Stanley, 1963) to measure the efficacy of a Montessori Table Washing Task to prime effortful control in children. The study consisted of a control group and an experiment group. The experiment group received a Table Washing Task and then received the Marshmallow Test. Children in the control group only received the Marshmallow Test. The parents of all the children participating in the study were asked to complete a parenting questionnaire.

Subjects

The subjects were 52 parents and their children ages 3-6 years who were enrolled in a Montessori school. Informed consent was received by parents of all participating children and families for participation in the study. After receiving consent, 52 children were randomly assigned to either an experimental group or control group.

Procedure

Data pertaining to parenting style was collected using The Revised Parental Authority Questionnaire (PAQ-R) (Reitman, Rhode, Hupp, & Altobello, 2002). An additional questionnaire was given to parents to obtain general demographic information. Data relating to the child's effortful control was collected during the Marshmallow Test of Delayed Gratifications (Mischel & Butler 1975).

Instrumentation

The instrument used to measure parenting style was The revised Parental Authority Questionnaire (Reitman, Rhode, Hupp, & Altobello, 2002). The instrument used to measure effortful control in the children was the Marshmallow Test (Mischel Delay of Gratification Task) (Mischel & Butler, 1975)

The Marshmallow Test (Mischel Delay of Gratification Task) received its name from an experiment at Stanford University in the 1960s (Mischel & Butler1975). It was designed to test self-control. Researchers told a group of 4-year-old nursery school children that they could have one thing they really wanted right away like a marshmallow, a candy, or a cookie. They were also told that if they could wait while the researcher left the room and came back about 15 minutes later, they could have two of the treats. The researchers, led by psychologist Walter Mischel, found that children who could exhibit self-control by waiting were more likely to exhibit more qualities of self-regulation and better learning (Mischel & Butler, 1975; Metcalfe & Mischel, 1999). For the purpose of this study, the Marshmallow Test was used to measure effortful control. Kochanska et al (2000) defined effortful control as the ability to inhibit a reactive response as well as suppressing a typical response and then maintaining the new response (Kochanska, Murry, & Harlan, 2000).

Spinrad, Eisenberg, and Gaertner (2007) support the The Mischel Delay of Gratification Task as a valid measure of effortful control. They suggested that the task is effective in testing both attentional control and impulsivity (Spinrad et al., 2007). Spinrad et al., (2007) used the snack delay test with children 18 and 30 months of age (goldfish crackers at 18 months and m&m's at 30 months). In their experiment, children were asked to put their hands on a mat that had designated places to put hands (Spinrad et al., 2007). A snack was presented to the toddler and the toddler was asked to keep his hands on the mat until the experimenter rang a bell (Spinrad et al., 2007). The delays were 10, 15, and 20 seconds and scores ranged from 1-7 with one indicating that the child ate the snack right away and seven indicating that the child waited the entire trial (Spinrad et al., 2007). At 18 months of age, toddlers average scores were 2.60 (SD = 1.74; range = 1-8) (Spinrad et al., 2007). Children at 30 months had much better delay skills. They had an average score of 6.21 (SD = 2.60; range = 1-9). Seventy—nine percent of these children waited for the experimenter to ring the bell (Spinrad et al., 2007). Toddlers' performance on this task were not stable over time r (202) = .03, p = ns (Spinrad et al., 2007).

Because the ages of the children in the present study ranged from 3-6 years, a longer waiting period (10 minutes) was used. This time was chosen as being reasonable for children in this age group.

Parenting Types

The Parental Authority Questionnaire-Revised was intended for use by parents with children ages three to eight years old and was developed by Reitman, Rhode, Hupp, & Altobello, (2002). The instrument consists of 30 items, with three 10-item scales representing authoritative, authoritarian, and permissive parenting styles (Reitman et al., 2002). Items are rated on a 5-point Likert scale ranging from one (strongly disagree) to five (strongly agree). Sub-scale scores range from 10 to 50 (Reitman et al., 2002). Co-efficient alphas for the Authoritarian and Permissive scales ranged from .72 to .76 across samples (Reitman et al., 2002), although coefficient alphas above .80 are generally considered most desirable (Reitman et al., 2002). The internal consistency PAQ-R subscales ranged from .56 to.77. Reliabilities, both test-retest and internal consistency for the Authoritarian and Permissive subscales, were moderate (Reitman et al., 2002). The original PAQ was used in a study by Abar, Kermit, and Adam (2009) to measure perceived maternal parenting style (Abar, Carter, & Winsler, 2009). They found internal consistency scales used here were .83 for authoritarianism, .86 for authoritativeness and .66 for permissiveness. They found the reliability for the six PAQ scales ranged from .75 to .85 for maternal styles and .74 to .87 for paternal styles (Abar et al., 2009). For the purpose of the present study, parents' scores on the three subscales of the PAQ-R will be converted into group membership into the parenting style with the highest score as rated by the parents.

Results

Descriptive Analysis

It was predicted that children who participated in the Table Washing Task and who were parented in an authoritative style would demonstrate higher levels of effortful control than children who did not participate in the Table Washing Task.

Means and standard deviations of demographic variables as well as variables included in the study may be viewed in Table 1. Of the 61 packets returned, 52 children were eligible for the experiment. Of the children whose parents returned the materials, four declined to participate. Another three participants were ineligible due to improperly completed parental questionnaires. In the sample of 52, 100% of the participants were parents and 100% claimed married status. The majority of the parents were in the age groups 30-39 at 44.2% and 40-49 at 40.4%. The largest ethnic group was Caucasian at 80.8%. Children participating in the study were first separated according to gender. The male/female groups were then randomly assigned to control and experiment groups. Of the children enrolled in the half-day program, 48% were in the experiment group and 52% were in the control group. The children enrolled in the full-day program randomly divided 61.1% in the experiment group and 38.9% in the control group. The genders of the children were equally divided across groups. After random assortment, the number of males in the experiment group equaled 57.1% and females 48.5%. In the control group, male children accounted for 42.9% of the group and female children accounted for 51.5%. The mean for the amount of time that the entire sample had been in the program was 14.8 months and the mean age of the entire sample was 56 months (See table 1).

Parents' self-ratings of parenting behaviors and beliefs on the Parenting Style Questionnaire PAQ-R (Reitman et al., 2002) resulted in sub scores for Authoritative, Authoritarian, and Permissive parenting styles for each parent. The highest mean of the group was authoritative x = 32.1, authoritarian x = 13.9, and permissive x = 17.63, suggesting that parents related most strongly to dimensions of authoritative parenting. An example question from the authoritative sub-scale: once family rules have been made, I discuss the reasons for the rules with my children (Reitman et al., 2002). Contrary to the research hypothesis, parenting style did not relate significantly to children's effortful control. The only variable that was accounted for in this study that related to effortful control was the number of marshmallows eaten before the bell or the return of the researcher.

Of the children in the experimental group, none of the children ate a marshmallow before ringing the bell or before the researcher returned after the 10-minute interval. In the control group, three children ate a marshmallow or marshmallows before ringing the bell or before the researcher returned. Based on Levene's test, which showed significantly different group variances between experimental and control groups, homogeneity of variance could not be assumed. With unequal group variances, the group differences observed in Mischel's Marshmallow Test for effortful control were not significant.

Judith Blahut Table 1. Parent and Child Characteristics by Experimental Grou

	Experimental group $(n = 29)$	Control group $(n=23)$	Sig. group differences (*p<.05)
6 Classroom	(1. 20)	(** ==)	(F acc)
A	11.5	21.3	C>E
В	23.0	11.5	E>C
C	18.0	14.7	ns
6 child female	26.2	19.7	ns
parent female	32.8	39.3	ns
age of parent			
20-29	1.6	1.6	ns
30-39	27.9	23.0	ns
40-49	23.0	19.7	ns
50-59	0.0	3.2	ns
1 age of child	55.2 (12.3)	55.1 (12.0)	ns
Ethnicity of child			
Caucasian	42.6	36.1	ns
African American	1.6	1.6	ns
Hispanic or Latino	4.9	3.3	ns
Asian	3.3	3.3	ns
Multiethnic	0.0	3.3	ns
arent marital status	100.0	100.0	ns
Months in program	14.3 (11.1)	15.2 (6.3)	ns
AQ-R			
M Authoritative score	32.5 (3.6)	31.6 (3.3)	ns
M Authoritarian score	13.5 (5.2)	14.8 (5.0)	ns
M Permissive score	16.69 (4.8)	18.5 (5.5)	ns
otal time child waits	7.6 (3.7)	8.4 (2.9)	ns
otal time until marshmallow	7.6 (3.8)	7.4 (3.8)	ns
lumber of marshmallows eaten	0.0 (0.0)	0.3 (0.9)	C>E*
Anxiety or distress	2.4(1.2)	2.6 (1.1)	ns

Conclusion

Having effortful control and the ability to override behavior responses that are aggressive or destructive may help children have more success in a classroom (Lillard, 2005). The purpose of this study was to further research about effortful control by seeking to establish a relationship between Practical Life lessons in a Montessori classroom and its affect on effortful control. This study predicted that a Montessori Table Washing Task (Schmidt, 2009), presented to children in an experimental study design, may prime effortful control in young children. The Table Washing Task experiment, although not statistically significant, suggested a difference between the two groups that illustrated a positive relationship between the Practical Life Lesson of washing a table and the effortful control behavior of waiting to eat a marshmallow. It may be concluded that children will demonstrate higher levels of effortful control when offered more work like the Table Washing Task.

In addition to predicting that the Table Washing Task would positively affect effortful control in children, this study also predicted that differences in effortful control, although partially due to heredity, may also be due to the quality of parent-child interactions (Eisenberg et al., 2005). This study showed that no significant relationship existed between parents' self-report of parenting style and effortful control in the children.

Therefore, helping children develop positive effortful control early in life may help them with control associated with reactive tendencies later in life (Eisenberg et al., 2004). Based on the results of this study, the early childhood field, both within Montessori and beyond, may wish to consider including Practical Life lessons for the support of effortful control in young children.

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