Maternal Employment and the Impact
On a Child’s Cognitive Outcome

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Abstract

There are more children, today, who are being raised in households with mothers who work compared to generations ago, when most mothers did not engage in workplace employment. This is an important change because it could affect children. In this study, ten demographically diverse elementary schools in the state of Minnesota will be used. All children who had a working mother from birth to age five will serve as the experimental group. The expected results are that the student’s who had a working mother, will have more positive cognitive outcomes than those whose mothers stayed at home with the child.
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One of the most dramatic trends occurring over the last fifty years has been the increasing number of women with children who are working in the labor force. In 2004, over 73% of all women with children were in the labor force (Ruhm, 2004). This demonstrates that more children are being raised in households with employed mothers compared to children generations ago, when most mothers did not work outside of the home. It is due to the high level of maternal workforce participation that researchers, policymakers, and families need to question whether and in what ways maternal employment impacts a child’s development.

There are many difficulties in trying to determine the impact of maternal employment on children (Harvey, 1999). Fortunately, there has been a large amount of research on the variables and characteristics that impact a student’s cognitive outcomes. One variable that can play a role in the cognitive outcome of a child is the personality characteristics of the child. Also, the quality of daycare the child engaged in prior to beginning kindergarten can play a role in the cognitive outcomes (Hill, Waldfogel, Brooks-Gunn, & Han, 2005).

Personality Characteristics

Personality characteristics in a child can have a strong impact on whether or not the child will excel academically (Ridgell, Lousbury, 2004). For example, a study by Gosling, Rentfrow, and Swann (2003) indicates that a child’s personality characteristics affect a student’s level of conscientiousness, and curiosity to learn. The Five-Factor Personality Inventory - Children (FFPI-C) is a standardized assessment of personality traits for children and adolescents. The FFPI-C is based on the modern five-factor model of personality, also known as big-five personality theory. It measures the traits, Agreeableness, Extraversion, Conscientiousness, Openness to Experience, and Emotional Regulation (Ridgell, Lousbury, 2004). According to
Gosling, Rentfrow, and Swann (2003) certain personality traits can be related to a student’s academic achievement and cognitive success. Conscientiousness and Openness to Experience domains reflect higher academic achievement (Ridgell, Lousbury, 2004).

**Non-maternal Care**

Research conducted by Hill, Waldfogel, & Brooks-Gunn (2004) focused on the long term effects of early maternal employment on a child’s academic achievement and found that quality of child care had a small but statistically significant association with the child outcome. The author found that the amount of non-maternal child care was weakly associated with positive child outcomes; however, the quality of day care was highly associated with positive child outcomes. This means that the amount of time infants and toddlers spent in non-maternal child-care arrangements, did not impact a child’s cognitive success, however, the quality of the child care the child was receiving impacted, slightly, the child’s cognitive outcome.

**Hypothesis 1**

Maternal employment does not impact a child’s academic or developmental outcomes in a negative way.

**Hypothesis 2**

Children who engage in high-quality day care (and therefore, have working mothers) will have higher academic and developmental outcomes.

**Methods**

**Participants**

The participants who will be in this study are students enrolled in 10 separate elementary schools in the state of Minnesota. The schools will vary demographically in order to account for a variety of rural and urban school settings. Test participants will range in age from 5 to 12 and
will consist of an approximately equal number of girls and boys. Due to the fact that the students will be from a variety of schools, and will have varying levels of maternal employment the results should demonstrate if maternal employment impacts the child’s academic and developmental outcomes.

**Instruments**

The primary variables in this analysis are measures of academic and overall development in children. The academic outcomes are measured by scores on the Peabody Individual Assessment Tests of Mathematics (PIATMATH) (Markwardt, 1970) and Peabody Individual Assessment Tests of Reading Recognition (PIATREAD) (Markwardt, 1970). These assessments indicate academic achievement for children aged five and above. Both of these assessments are widely recognized tests and the PIATREAD, in particular, has been linked to other measures of achievement (reading and math) as well as verbal intelligence (Markwardt, 1970). The measure for a child’s non-cognitive development is the Developmental Assessment of Young Children (DAYC) (Voress & Maddox, 1998), which measures developmental abilities in young children ages 5 or above.

The Peabody Individual Assessment Test of Mathematics (PIATMATH) (Markwardt, 1970) and Peabody Individual Assessment Test of Reading (PIATREAD) (Markwardt, 1970) were designed to measure students' academic achievement in the area of mathematics and reading. They are among the most widely used brief assessments of academic achievement, and demonstrate high test-retest reliability and concurrent validity (Markwardt, 1970). The tests were designed to provide measurements in six content areas that can be used with students in kindergarten through the 12th grade. The content areas include: 1) General Information, 2) Reading Recognition, 3) Reading Comprehension, 4) Mathematics 5) Spelling and 6) Written
Expression. The PIATREAD and PIATMATH were normed on nearly 1,200 students and appear to be normed on a representative sample of students in the United States. This would mean that the assessment would be free of ethnic, gender, socioeconomic, or demographic bias (Markwardt, 1970). The median correlation of validity between these two assessments and other measures of academic achievement is a .88 correlation (Markwardt, 1970). Markwardt (1970) reports that reliability correlations for the PIATMATH and PIATREAD range from .84 to .98 across the different testing grade levels. The PIATMATH and PIATREAD are very applicable assessments to use in order to measure academic achievement in students.

The second assessment that will be used is the Developmental Assessment of Young Children (DAYC) (Voress & Maddox, 1998). The purpose of the DAYC is to measure children’s developmental outcomes (Voress & Maddox, 1998). The assessment is scored using subtests that are completed using observation, interview or direct assessment techniques. Items that are passed receive 1 point and items failed receive 0 points. Subtest ceilings are established when 3 of 5 items are failed. Basals are established by three consecutive passes. The DAYC was normed on a sample that included 1,269 children residing in 27 different states. This population is comparable to the general population of the United States in terms of geographic region, gender, race, rural or urban residence, ethnicity, family income, educational attainment of parents and disability status. Voress & Maddox (1998) indicate that content validity of the DAYC was quantitatively established by computing item discrimination coefficients at each of eight age intervals and correlating Delta scores of different subgroups for each of the subtests. Item discrimination coefficients for the normative sample ranged from .41 to .94, indicating adequate item discrimination. The correlations between scores for 5 subgroups (gender, ethnicity, disability status) ranged from .94 to .99, indicating a relative item difficulty for each of
the subgroups was very similar (virtually no systematic item bias). Criterion-related validity is based on two studies; first involving 26 children residing in one of the three states and the second comprising 18 children. Construct validity was demonstrated by examining the mean scores across 12 age intervals, correlating age and subtest scores, examining mean scores of different subgroups, correlating subtests with one another, and conducting a factor analysis. Results of the exploratory factor analysis for the normative sample indicated a single factor underlying test performance. A principal components factor analysis for seven subgroups indicated one factor for each of the subgroups. Thus, it appears that for all subjects within the normative sample, the DAYC is measuring a single construct, namely developmental skills. Internal consistency, test-retest, and inter-rater reliability were computed for the DAYC. Estimates of internal consistency, using coefficient alphas, indicated a high reliability (.90 or higher) across all eight 6 month age intervals. The DAYC takes approximately an hour and forty minutes to complete and assesses students that are ages 5-11.

Procedure

After informed consent is received from both the parent and child, assessments will be given in each of the 10 schools. The children within each of these schools and ages 5-11 will be divided into groups. For this comparison, the experiential group is considered the group whose mothers worked during the first five years of the child’s life. The control group will consist of the children whose mothers have not worked. The students from each of the two groups will be given the PIATMATH, PIATREAD, and the DAYC at the beginning of each new school year, despite what group they are in. It is expected that the experiential group will show significantly higher results in academic achievement and overall development ability, than students from the control group whose mothers never worked.
Results

An ANOVA will be used in order to assess the data for significance. ANOVA will be used to compute the comparison between the experiential and control group, as well as the within group comparison. I would use a level of significance of $p< .05$. An ANOVA is the best option to use for this test of significance between the two groups because I will use it each time that I assess. The results of this study will indicate that maternal employment does not impact the child’s academic and developmental outcome in a negative way, but in fact, impacts these constructs in a positive way. It is expected that the scores on the PIATMATH and PIATREAD will be higher for students whose mothers work. Scores for the DAYC should also be relatively the same or higher for students whose mothers work when compared to students whose mothers do not work. In other words, there will be no overall negative impact on a child (See Appendix A).

Discussion

The implications of this study could be important to all parents who are making the difficult decision as to what kind of childcare, if any, is best for their child. This study will attempt to show that the personality characteristics of the child will have an impact on the child’s cognitive outcomes. Furthermore, that high quality daycare should be a high priority for parents when considering their child’s future cognitive success. The hypothetical results of this study indicate that there is not a negative impact on a child, who engages in high quality, once they reach elementary school. In fact, results from this study will show that when children engage in high quality daycare, they are given a higher likelihood of academic success and higher cognitive
functioning than children who have had mothers that stay at home with them from birth to age five.

There are a few things that could go wrong with this study that could impact the results. My major concern with this study is the threat of internal and external validity. There are several outside factors that could impact a child’s cognitive outcome, other than simply maternal employment. Internal validity is a concern and that is largely due to the student’s previous history, as well as, maturation of the student during elementary school. Another concern when reviewing and conducting this type of research is biases that researchers themselves may have, as it relates to maternal employment. Since this is a very controversial topic, it would be pertinent to control for these outside biases and factors.

Future research should focus on using different assessment tools in order to determine if the child’s cognitive outcome was impacted by the mother’s employment. In using a variety of assessment techniques it is hoped that the results of the study could be further represented. Furthermore, future research could take a look at the national implications on child’s cognitive outcomes as they relate to maternal employment. In doing so, research could possibly be able to assist parents in making the best decision, as it relates to childcare, for their child’s cognitive development.
References


Figure 1. Mean scores of assessments for cognition and developmental outcomes. The children of employed mothers serve as the experimental group.