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Academic Intrinsic Motivation in Homeschooled Children

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Many homeschooling parents want to foster a love of learning in their children (Mayberry, 1993; Medlin 1993; Rakestraw, 1988). For some, this is why they teach their children at home. They believe homeschooling creates a unique educational environment that can help children's natural curiosity mature into a lifelong enjoyment of learning. And they say it exempts their children from the negative influences they see in so many conventional schools--excessive competition, an emphasis on grades, and a distracting social environment--that may undermine children's desire to learn.

Children often do something simply because it is interesting or enjoyable for its own sake, not because it is motivated by external rewards. Such activities--playing, exploring, imagining, and sometimes, learning--are said to be driven by intrinsic motivation. Although there are many different explanations of intrinsic motivation (see Deci & Ryan, 1985; Dweck & Elliot, 1983), an influential theory by Deci and Ryan (1985) proposes that children enjoy activities that fulfill innate needs for competence and self-determination. The theory asserts that children seek out challenges and work to master them because success provides a satisfying sense of accomplishment and independence.

Deci and Ryan warn, however, that intrinsic motivation is a fragile thing, and that children's interest in an activity can be undermined by anything that lessens self-determination. They say, for example, that offers of reward can convince children that they are doing something not because they want to but because they have to in order to earn the reward. By curtailing children's freedom of choice, this external pressure replaces intrinsic interest as the controlling motive for their behavior. When the pressure is withdrawn, this theory predicts that behavior will stop because there is no longer intrinsic motivation to support it or external contingency to compel it. Thus the very things parents and teachers often do to motivate children may ultimately have the

opposite effect. Rewards help, the theory says, only when children have no intrinsic interest in the activity to begin with and motivation must rely on external supports.

Much of the research on intrinsic motivation has focused on the idea that rewards can be harmful. Cameron and Pierce (1994) reviewed nearly 100 studies of the effects of rewards and concluded that an expected, tangible reward for simply completing a task does reduce intrinsic motivation for that task. Awards, prizes, money, privileges, and even food all have the same effect (Anderson, Manoogian, & Reznick, 1976; Harackiewicz, 1979; Lepper & Greene, 1975; Lepper, Greene, & Nisbett, 1973; Ross, Karniol, & Rothstein, 1976). Only verbal praise works differently. It can actually strengthen intrinsic motivation, perhaps because it reinforces children's feelings of competence (Deci & Ryan, 1985; Martin, 1977).

How does all of this apply to school, where rewards and other forms of external control--including grades--abound? Research on academic intrinsic motivation has shown, not surprisingly, that children who enjoy learning tend to do well on achievement tests (Gottfried, 1990). There is, however, a long list of things that can undermine children's interest in learning. Public evaluation of performance, frequent use of grades, and high levels of competition all reduce intrinsic motivation for learning (Ames, 1992; Butler, 1989; Deci & Ryan, 1987; Dweck & Leggett, 1988; Grolnick & Ryan, 1987). So do supervising homework too closely, imposing performance standards on children without their involvement, and threatening children with punishment for academic failure (Ginsburg & Bronstein, 1993; Gottfried, Fleming, & Gottfried, 1994; Mossholder, 1980).

Fortunately, there are also steps teachers and parents can take to support children's academic intrinsic motivation. Giving children choices in their school work, helping them to truly understand new material, and offering plenty of verbal encouragement can sustain academic intrinsic motivation (and improve achievement) (Cordova & Lepper, 1996; Deci & Ryan, 1987; Fink, Boggiano, & Barrett, 1990; Ginsburg

& Bronstein, 1993). Allowing children to work together on learning tasks, showing them how new information can be used in everyday life, and exposing them to many new experiences can help (Benware & Deci, 1984; Gottfried, Fleming, & Gottfried, 1994; Johnson & Johnson, 1974). And so can encouraging them to be curious, persistent, and independent, and surrounding them with emotional warmth and acceptance (Ginsburg & Bronstein, 1993; Gottfried, Fleming, & Gottfried, 1994). An intellectually stimulating home environment--in which parents do such things as encourage children to read, take them to museums and libraries, and limit television viewing--is also associated with higher academic intrinsic motivation (Gottfried, Fleming, & Gottfried, 1998).

Research on homeschooling suggests that measures supporting academic intrinsic motivation may often be a part of many homeschools. For example, homeschooling parents seldom use material rewards to motivate their children in their school work, and only about half of them give their children grades (Medlin, 1994). Most homeschooling parents work to develop their children's independence (Johnson, 1991), and many allow their children freedom in directing their own studies (Medlin, 1996). It is perhaps reasonable to assume that homeschools avoid some of the things that can undermine intrinsic motivation in a conventional classroom--public evaluation of performance, competition, deadlines--though these assumptions have not been empirically verified. The one-on-one nature of homeschool instruction may allow children to receive more verbal praise for their efforts, to succeed in understanding new material, and to learn within the context of a warm and personal relationship. And most homeschooling parents are committed to creating a cognitively stimulating home environment (Mayberry, 1993; Rudner, 1999). It might be supposed, then, that homeschooling can provide the kind of environment in which a love of learning can thrive, as homeschooling parents often believe.

The purpose of this study was to analyze academic intrinsic motivation in homeschooled children. Intrinsic interest in learning was measured in children from

three different educational settings: homeschools, a public school using grades for student evaluation, and a public school using portfolio assessment instead of grades. (A portfolio is an organized collection of samples of a student's work.) Also, homeschooled children's academic achievement was tested and their parents' attitudes and teaching practices were recorded to see what relationship these factors might have to academic intrinsic motivation.

It was expected that homeschooled children would have higher academic intrinsic motivation than children attending conventional schools and that homeschooled children's academic intrinsic motivation would be related to their achievement scores. It was also thought that homeschooled children's intrinsic motivation would be positively related to the amount of time parents were directly involved in instruction and to parents' satisfaction with and commitment to homeschooling. Intrinsic motivation was expected to be negatively related to parents' use of rewards.

Method

Participants

The participants were 96 children from three different educational settings: homeschools, a public school using grades for student evaluation, and a public school using portfolio assessment instead of grades.

Homeschool group. Thirty homeschooled children--10 boys and 20 girls--took part in this study. According to their parents, eight of these children were in fourth grade, eight were in fifth grade, and 14 were in sixth grade. The children's mean age was 11.42 years and they had been homeschooled for an average of 2.87 years.

Grades group. Thirty-four participants attended a public school in which grades were used for student evaluation. These seven boys and 27 girls were all in fifth grade, and their average age was 10.71 years.

Portfolios group. Thirty-two participants attended a public school in which portfolios were used to assess students' progress. There were 14 boys and 18 girls in this group of fifth graders. Their mean age was 10.50 years.

Materials

The materials used in this research were the Children's Academic Intrinsic Motivation Inventory (CAIMI) (Gottfried, 1986), the Stanford Achievement Test (SAT), Eighth Edition (Psychological Corporation, 1992), and a brief questionnaire for the homeschooled children's parents.

Children's Academic Intrinsic Motivation Inventory. The CAIMI is a 122-item, self-report inventory designed to measure academic intrinsic motivation in upper elementary and junior high school students. The test yields five scale scores: intrinsic motivation for reading, math, social studies, science, and school learning in general. High scores indicate an "enjoyment of school learning characterized by an orientation toward mastery, curiosity, persistence, and the learning of challenging, difficult, and novel tasks" (Gottfried, 1986, p. 4).

The reliability of the CAIMI has been established using internal consistency and test-retest methods. Internal consistency was found to be high (coefficients ranged from .80 to .93) while test-retest reliability was moderate (coefficients ranged from .66 to .76) (Gottfried, 1986). Test validity has been based on item construction and on positive correlations between CAIMI scores and such measures as academic achievement, children's perceptions of their own academic competence, and teachers' judgments of students' intrinsic motivation (Gottfried, 1986).

Stanford Achievement Test. The SAT is a norm-referenced, multi-level test battery that measures achievement in reading, mathematics, language, spelling, study skills, science, social studies, and listening.

The reliability of the SAT has been evaluated using internal consistency, test-retest, and alternate forms methods. The reliability coefficients generated by these

methods “cluster around .90” (Keyser & Sweetland, 1987, p. 540). Test validity has been based largely on item development: Items were derived from an extensive review of many of the most popular textbook series at each grade level and were thoroughly field-tested (Keyser & Sweetland, 1987).

Parent Questionnaire. Parents of homeschooled children were asked how much of each homeschool day they were involved in direct instruction with their children, expressed in percent. They used a five-point rating scale to indicate how satisfied they were with their homeschool, how likely they would be to send their children to a conventional school if a good one were available to them, and how frequently they used external rewards to motivate their children to complete their schoolwork.

Procedure and Experimental Design

The CAIMI was administered to children in the grades and portfolios groups in their regular classrooms by their teachers. Homeschooled children took the CAIMI and the SAT as a part of achievement testing offered to homeschoolers by a private school. While the homeschooled children were being tested, their parents completed the questionnaire. For the homeschool group only, therefore, SAT scores and questionnaire data were available along with CAIMI scores.

Results

Mean CAIMI scale scores for each group are presented in Table 1. Notice that reading scale scores of the homeschool group were somewhat higher than those of the grades group but similar to those of the portfolios group. On the math scale, however, the grades and portfolios groups scored several points higher than the homeschool group. The portfolios group scored lower than the other two groups on the social studies scale, while the mean scores for the science and general scales were roughly equivalent among the three groups.

Insert Table 1 about here

In a series of planned comparisons, *t*-tests were used to determine if mean CAIMI scale scores for the homeschool group were significantly different from those of the grades and portfolios groups. (Preliminary analyses showed no effect of participants' gender on CAIMI scores, consequently data were combined across gender for these comparisons.) Two significant differences emerged: Homeschooled children were more intrinsically motivated than the grades group in reading, $t(62)=2.44$, $p<.05$, and less intrinsically motivated than the grades group in math, $t(62)=-2.53$, $p<.05$.

For all analyses involving the SAT, Normal Curve Equivalent (NCE) scores were used. The NCE scale is an equal-interval scale with a mean of 50 and a standard deviation of 21.06. The mean SAT complete battery score for the homeschool group was 57.96, which corresponds to a percentile rank of 65. The mean SAT scores for reading, math, social studies and science, converted to percentile ranks, were 73, 55, 64, and 73 respectively.

Because achievement data were available for the homeschooled children, it was possible to calculate correlations between SAT scores and CAIMI scores for this group. SAT scores in reading, math, social studies, and science, and the complete battery scores were correlated with corresponding CAIMI scale scores. Only one of these correlations was significant: SAT math scores were negatively correlated with CAIMI math scale scores, $r=-.37$, $p<.05$, indicating that homeschooled children who scored higher in math achievement were less intrinsically motivated in that subject. A positive correlation between social studies achievement scores and CAIMI social studies scale scores approached significance, $r=.35$, $p=.056$.

Sixteen of the questionnaires given to parents of the homeschooled children were completed, yielding a return rate of 53%. Correlations between questionnaire responses and CAIMI scores revealed that parents' direct involvement in instruction was related to children's intrinsic motivation in both reading, $r=.52$, $p<.05$, and math, $r=.62$, $p<.05$. Parents' satisfaction with homeschooling was correlated with children's intrinsic

motivation in reading, $r=.52$, $p<.05$. Parents' unwillingness to place their children in a conventional school was related to intrinsic motivation for both reading, $r=.65$, $p<.05$, and schoolwork in general, $r=.59$, $p<.05$. The use of external rewards was positively correlated with intrinsic motivation in science, $r=.54$, $p<.05$.

Discussion

Homeschooled children were more intrinsically motivated in reading and less intrinsically motivated in math than children attending a conventional school using grades to evaluate students' performance. There were no differences in academic intrinsic motivation between homeschooled children and children attending a school using portfolio assessment. Achievement scores for the homeschooled children in this study were above the national average for public school students (the 50th percentile) but not as high as those found in larger studies of homeschooled students (for example, Rudner, 1999).

It was expected, of course, that differences in academic motivation between homeschooled children and children attending conventional schools would be more conspicuous and one-sided. It is unclear why they were not. Perhaps the assumption that homeschools naturally include features supporting academic intrinsic motivation was mistaken. For example, it has been suggested that novice homeschoolers often duplicate the methods of conventional schools, rather than taking advantage of the opportunities homeschooling affords to do things differently (Lines, 1991; Taylor, 1993; Van Galen, 1988). It would be well for future research to look more closely at what homeschooling parents actually do and how this affects their children's enjoyment of learning.

It is also unclear why homeschooled children's intrinsic motivation was higher for reading but lower for math compared to children who attended a conventional school and received grades for their work. Freedom from grades--a salient external reward--may allow children to maintain their interest in reading, which is often an

appealing activity in itself. Math, on the other hand, may work differently. For example, there is some evidence that children's intrinsic motivation for school work is related to the amount of instruction they receive (Stevenson & Lee, 1990). In this study, the more time homeschooling parents spent directly involved in instruction, the higher their children's intrinsic motivation was for both reading and math. While intensive instruction in math is standard in conventional schools, many homeschooling parents use the Saxon math books as part of a self-teaching program involving minimal instruction (Richman, Girtten, & Snyder, 1992; Sande, 1995). Thus less instructional time may have contributed to lower intrinsic motivation for math among homeschooled students.

This research produced other puzzling results as well. Among homeschooled children, intrinsic motivation was related to higher achievement only for social studies, and that relationship was weak. For math, intrinsic motivation and achievement were actually negatively correlated. Previous research has shown intrinsic motivation and achievement to be positively related (Gottfried, 1990). And children's intrinsic motivation for science was related to more frequent use of rewards by their parents. This also contradicts earlier research, which has typically found that rewards undermine intrinsic motivation (Cameron & Pierce, 1994). Previous studies of the relationship between motivation and achievement and rewards, of course, have tested children attending conventional schools, not homeschooled children, but it is not apparent whether this difference alone accounts for these unexpected results.

Parental satisfaction with homeschooling was associated with intrinsic motivation for reading. Parents' commitment to homeschooling, as measured by their unwillingness to place their children in a conventional school, was related to children's intrinsic motivation for both reading and schoolwork in general. Parental commitment to homeschooling may be related to a constellation of attitudes and behaviors that affect children's academic motivation and performance. Research on

effective learning environments (see Mayberry, 1993), for example, shows that successful teachers are committed to academic excellence, believe in their students' ability to learn, care about their students and treat them with warmth and respect, are confident in their own ability to teach, and demonstrate a love for learning. And cross-cultural research suggests that Chinese parents' involvement in and commitment to their children's education is related to children's enjoyment of school (Stevenson & Lee, 1990).

This research suggests that homeschooled children are not necessarily more intrinsically motivated to learn than children attending conventional schools. However, homeschooled children who enjoy learning more have parents who are more involved in, satisfied with, and committed to their homeschools.

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Table 1

Means and Standard Deviations of CAIMI Scale Scores for Each Group

CAIMI Scale	Homeschool Group	Grades Group	Portfolios Group
Reading	89.43 (18.76)	77.29 (20.83)	91.72 (16.27)
Math	84.33 (19.28)	96.47 (19.00)	92.16 (20.46)
Social Studies	87.73 (15.39)	87.97 (18.70)	79.13 (21.00)
Science	85.90 (19.44)	90.82 (21.24)	90.75 (19.32)
General	65.50 (9.50)	65.47 (9.78)	68.81 (8.52)

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