

Full Length Research

Parental involvement and academic success: Evidence from GATE vs. non GATE fifth and sixth grade public school students

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The present study examines whether parental involvement has any effect on student academic success by comparing responses from the Gifted and Talented Education program known as GATE students and non-GATE students for fifth and sixth grade students enrolled in the public school program. The findings show that there is a significant difference between GATE and non-GATE students and parental involvement. In general, GATE students do better in math and science subjects without parental support, while non-GATE students do better in ELA grades without parental support. The average grades between the male and female students are very close to each other in all subjects and not statistically significant. However, female students tend to have slightly higher grades than male students in all subjects. For all students GATE and non-GATE, in all subject areas, grades are not spread apart enough to be statistically different whether they have parental support or not. Sixth grade students tend to spend more time studying during weekends than fifth grade students. This is in line with the view that maturity and study discipline increases in sixth grade.

Key words: Parental involvement, academic success, GATE, fifth and sixth grade students.

INTRODUCTION

The determinant of academic success is a much debated topic. There is vast evidence in literature citing many factors. However, the findings are mixed as some studies found a positive link while others found no or negative association. The present study investigates one of such topic, parental involvement. In particular a survey is conducted to examine whether parental involvement has any effect on the academic success by comparing responses from GATE and non-GATE students at the fifth and sixth grade level.

According to the California Department of Education, the Gifted and Talented Education program known as GATE for short is described as a state funded district controlled program providing unique learning opportunities to high achieving and underachieving pupils in categories such as

intellectual, creative, specific academic or leadership ability through California's public elementary and secondary schools (California Department of Education, 2005). There are many models in determining placement of gifted students. One common model is the Munich Model of Giftedness or MMG (Heller, 2004). The MMG is multidimensional and considers several factors in qualifying students for advance placement. These multiple factors consider performance areas such as specific subject mastery, non-cognitive personality traits such as exhibiting emotional intelligence, talent factors such as multiple intelligences and environmental conditions such as influences from social settings of family, school, and peers (Heller, 2005).

Several distinct contributions are made to the existing literature. First, a comparison is made between GATE and Non-GATE students in examining whether there is an association between parental involvement and academic success. The comparison is made between fifth and sixth grade students. The comparison involves several subjects

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to determine if there is consistency. Consequently, math, science and ELA scores are analyzed to determine if students' academic success per parental involvement is unidirectional in all of the three subjects.

The findings show in general that all GATE students do better in math and science without parental support, while all non-GATE students' ELA grades are higher without parental support. The average grades between the male and female students are very close to each other in all subjects. However, female students tend to have slightly higher grades than the male students in all subjects. For all students, grades in all subjects are not spread apart whether they have parental support or not.

The remainder of this study is structured as follows: presentation of the conceptual background, description of the data and methodology, findings and finally conclusion.

CONCEPTUAL BACKGROUND

Many studies examine the postulated association between parental involvement and academic success in the extant literature. Elementary academic assessment foresees future student academic attainment and socioeconomic status whether it is by way of teacher evaluation or standardized test (Rimfeld, 2019; Herrera, 2019). While measuring academic success is relatively stable, the measurement to which parental involvement is assessed contains various settings. However, research suggest that homework participation appears to have association with academic outcome and does not appear to differ amongst racial groups and participants of school lunch programs (Lee-Bowmen, 2006). In addition to the academic benefits of homework support in school age children, these trends can be observed in the influence of tutoring center participation for undergraduate college students. Tutoring participation by undergraduate college students demonstrate trends in student success measured by increased passing rates and continued enrollment (Gabriel-Millette, 2016; Cooper, 2010).

Degol et al. (2017) examine the impact of parent involvement on math achievement and college enrollment in 7th through 12th grades. The results present that parental academic involvement (e.g. help with homework) decreased steadily from junior high throughout senior high, while parental school involvement (e.g. communicating with the teachers) has increased and math achievement increased.

Wei et al. (2019) investigate why parents' involvement varies across elementary, middle and high school. The study indicates that parents' assistance with homework and test preparations are greater in elementary school than middle school. When the students are in high school, they get less help from their parents with their homework. The study concludes that youth's invitation plays a significant role in parental involvement which is explained

with the youth's desire for more independence and feeling more competent.

Socioeconomic status is an important factor affecting academic success along with neighborhood location, and state allocated budget. The evidence appears to be strong and international. Poon (2020) finds that Chinese children from lower socioeconomic status tend to experience lower academic achievement. Subsequently children who experience lower academic achievement tend to experience lower socioeconomic status as adults. Even as gifted programs such GATE intend to serve all socioeconomic levels, enrollment and test scores in such programs are disproportionate. Grissom (2019) concludes that an increase in a student's socioeconomic status substantially increases the probability that the student will receive gifted services.

In this study, we keep other factors constant and focus on the bivariate association between parental involvement and academic success only. The following hypotheses are tested in investigating the postulated association between parental involvement and academic success. First hypothesis states that Math, Science and ELA grades are higher with parental involvement than without parental involvement for GATE students. Second hypothesis of null statement is that Math, Science and ELA grades are higher with parental involvement than without parental involvement for non-GATE students. Third hypothesis focuses on gender and conjectures that Math, Science and ELA grades are the same regardless of gender. Fourth hypothesis is a test of the dispersion around the mean of Math, Science and ELA grades being greater for GATE students with parental involvement than GATE students without parental involvement. Last hypothesis of null statement is that the dispersion around the mean of Math, Science and ELA grades is greater for non-GATE students with parental involvement than non-GATE students without parental involvement. Lastly, an examination of the study hours during weekends is conducted between fifth and sixth grades to infer whether six grade students spend more hours of studying than fifth grade students during weekends to reflect development in self-discipline and maturity level.

DATA AND METHODOLOGY

The survey was constructed using quantifiable questions. Thus, open ended questions were avoided. Surveys were administered anonymously. Surveys were printed and distributed by hand to fifth and sixth grade student population enrolled at Julien Elementary School. Survey Monkey software was used to enter survey data in digital format. Google spreadsheet was used to conduct statistical analysis to measure responses such as how self-reported student grades in Math, Science and ELA subjects are associated with parental involvement and

without parental involvement in projects and homework. The dependent variables were math grades, ELA grades and Science grades. Independent Variables were parental involvement, gender, hours spent, GATE and non-GATE distinction. Among 277 surveys that were printed, 238 surveys were collected and entered on the spreadsheet.

EMPIRICAL FINDINGS

GATE students who reported receiving parental involvement constituted 78% of the entire GATE student cohort. However, non-gate students who reported receiving parental involvement constituted 84% of the entire non-gate student cohort. Thus, a higher percentage of non-gate students reported receiving more parental involvement than gate students. This finding is in line with the view that gate students perhaps need less parental involvement to achieve academic success than non-gate students and is line with the idea suggesting students who are of academic risk obtain more homework support than students who are not at risk.

Table 1 shows parental involvement in math, science and ELA grade for fifth and sixth grade GATE students. The responses show that both 5th and 6th grade GATE students have higher self-reported math and science grades without parental involvement. However, 6th grade GATE students have higher ELA grades when they get parental involvement.

Table 2 shows parental involvement and math, science and ELA grade for fifth and sixth grade NON-GATE students. The results show that 5th and 6th non-GATE students get higher math grades when they get parental support. The results for science grades are mixed. Fifth grade non-GATE students get higher science grades with parental support, while sixth grade non-GATE students get a higher science grade without parental support. As for ELA, both fifth and sixth grade students have higher grades without parental support.

Table 3 shows results based on gender. The female students appear to have higher grades in all subjects (math, science and ELA) than male students. However, the difference in grades is not statistically significant at the five percent level of significance.

Table 4 shows the dispersion around the mean of all subjects for GATE students' grades whether they receive parental support or not. The difference in the mean does not appear to be statistically significant at the conventional significance levels (Wonnacott and Wonnacott, 1990). Therefore, the difference in grades is not statistically significant.

Table 5 shows the dispersion around the mean of all subjects for non-GATE students' grades whether they receive parental support or not. The difference in the mean also does not appear to be statistically significant at the conventional significance levels for non-GATE student, pointing to a more uniform distribution.

Table 6 shows weekend study time for fifth grade students for both GATE and non-GATE students. Fifth grade students appear to study mostly up to one hour during the weekends, making up 78.7% of the sample. About 10.6% of the sample study more, up to two hours during the weekends.

Table 7 shows weekend study time for sixth grade students for both GATE and non-GATE students. When compared with the fifth grade students, one can see the difference in pattern. Sixth grade students appear to study longer hours during weekends, mostly up to one and a half hour during the weekends, making up 91.2% of the sample. About 1.8% of the sample study more, up to two hours during the weekends.

Table 8 shows ordinary least squares regression results for Non-GATE students. The dependent variable is truncated Math, Science and ELA grades and the independent variable is binary parental involvement, for which a value of 1 represent parental involvement and zero represents no parental involvement. After eliminating invalid observations, the results show that parental involvement is associated with higher likelihood of academic success. Both the intercept and the parental involvement coefficients are statistically significant at the conventional significance levels.

Table 9 shows the ordinary least squares regression results for GATE students. The dependent variable is truncated Math, Science and ELA grades and the independent variable is binary parental involvement, for which a value of 1 represent parental involvement and zero represents no parental involvement. After eliminating invalid observations, the results show that parental involvement here also is associated with higher likelihood of academic success. Both the intercept and the parental involvement coefficients are statistically significant at the conventional significance levels. However, the coefficient of parental involvement for GATE students is 0.43, whereas for Non-Gate students the same coefficient value is 0.49. The discrepancy is in line with the view that GATE student are more able to study on their own and therefore need less parental involvement. This assertion is agreement with other findings in that a greater number of Non-GATE students report parental involvement than do GATE students.

Conclusions

A higher percentage of students reported receiving parental involvement in the non-GATE cohort than the GATE cohort. We keep other relevant factors such as socioeconomic status constant in this analysis and focus on the bivariate association only. In general, GATE students appear to do marginally better in math and science without parental support, while non-GATE students' ELA grades appear to be marginally higher without parental support. This may be due to the difference

Table 1: Parental involvement and GATE students grade out of 4.0 scale.

	Math	Science	ELA
With			
5th grade GATE	3.40	3.64	3.20
6th grade GATE	3.15	3.31	3.37
Without			
5th grade GATE	3.60	4.00	4.00
6th grade GATE	3.42	3.39	3.22

Table 2: Parental involvement and Non-GATE students grade out of 4.0 scale.

	Math	Science	ELA
With			
5th grade non- GATE	2.90	2.76	2.80
6th grade non-GATE	2.71	3.06	2.75
Without			
5th grade GATE	2.41	2.51	3.50
6th grade GATE	2.63	3.14	3.20

Table 3: Students performance by gender.

	Math	Science	ELA
Female			
5 th & 6 th Grade non- GATE	3.78	3.04	3.11
Male			
5 th and 6 th Grade GATE	3.12	3.02	2.97

Table 4: Dispersion around the mean: Parental involvement GATE students.

	Math	Science	ELA
5th grade GATE	0.51	0.57	0.66
6th grade GATE	0.78	0.67	0.76

Table 5: Standard deviation: Parental involvement GATE students.

	Math	Science	ELA
5th grade non-GATE	0.79	0.74	0.85
6th grade non-GATE	0.99	0.58	0.87

Table 6: 5th grade weekend study time.

0-30 min	34.8%
30 min -1 hour	43.9%
1 - 1 and a half hour	6.1%
1 and a half hour - 2 hours	4.5%
2 hours - 2 and a half hours	1.9%
2 and a half hours - 3 hours	5.7%
3 hours or more	3.1%

Table 7: 6th grade weekend study time.

0-30 min	45.6%
30 min -1 hour	28.1%
1 - 1 and a half hour	17.5%
1 and a half hour - 2 hours	1.8%
2 hours - 2 and a half hours	1.9%
2 and a half hours - 3 hours	3.5%
3 hours or more	1.6%

Table 8: Non-Gate all subjects and parental involvement.

Dependent Variable: ALL_SUBJECTS_NON_GATE				
Method: Least Squares				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.771930	0.070209	39.48100	0.0000
PARENTAL	0.499257	0.076693	6.509827	0.0000
R-squared	0.108003			
F-statistic	42.37785			
Prob(F-statistic)	0.000000			

Table 9: Gate all subjects and parental involvement.

Dependent variable: ALL_SUBJECTS_GATE				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.050000	0.125922	24.22142	0.0000
PARENTAL	0.431752	0.134800	3.202907	0.0017
R-squared	0.062076			
F-statistic	10.25862			
Prob(F-statistic)	0.001651			

in personal characteristics of GATE students than non-GATE students. The average grades between the male and female students are very close to each other in all subjects. However, the female students tend to have slightly higher grades than the male students in all subjects. For all students, their grades in all subjects are not spread apart whether they have parental support or not. Sixth grades tend to spend more time studying than fifth grades during weekends. This is in line with the view that sixth grade students are more mature and focused towards their school work than fifth grade students.

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APPENDIX**5th and 6th Grade Anonymous Student Survey**

Please DO NOT state your name, the survey is intended to be filled anonymously

1. Does your Parent/Guardian/Other Family Member help you with your school work, homework or project? (if you get help only sometimes, please choose "Yes")

- a. Yes
- b No

2. If you answered Yes to question 1, state those days your work together with your Parent/Guardian/Other Family Member?

- a. Monday
- b. Tuesday
- c. Wednesday
- d. Thursday
- e. Friday
- f. Saturday
- g. Sunday

3. If you answered Yes to question 1, please state the length of the time on average per day spend for school work/homework/project? Please estimate.

- a. 0 to 10 minutes
- b. 10 to 20 minutes
- c. 20 to 30 minutes
- d. 30 to 45 minutes
- e. 45 minutes to 1 hour
- f. 1 hour to 1 and half hours
- g. 1 and a half hours to 2 hours
- h. 2 hours to 2 and a half hours
- i. 2 and a half hours to 3 hours
- j. 3 hours to 3 and a half hours
- k. 3 and a half hours to 4 hours
- l. Greater than 4 hours
- m. If you wish to do so, you can write the more precise time here below in terms of minutes or hours _____

4. Current grade in Mathematics:

- a. 1
- b. 2
- c. 3
- d. 4

5. Current grade in Science:

- a. 1
- b. 2
- c. 3
- d. 4

6. Current grade in ELA:

- a. 1
- b. 2
- c. 3
- d. 4

7. Gender:

- a. Male
- b. Female

8. Name of school you are attending:

- a. Dennis Earl
- b. Julien
- c. Medeiros
- d. Osborne
- e. Other (please specify) _____

9. Are you a student enrolled in the GATE program at your school?

- a. Yes
- b. No

10. Do you spend additional hours during the weekends for schoolwork/homework/project?

- a. Yes
- b. No

11. If you answered Yes to question 10, please state the weekend days spent for this purpose:

- a. Saturday
- b. Sunday
- c. Both Saturday and Sunday

12. If you answered Yes to question 10, please state the average time spent per day during weekends.

- a. 0 to 10 minutes
- b. 10 to 20 minutes
- c. 20 to 30 minutes
- d. 30 to 45 minutes
- e. 45 minutes to 1 hour
- f. 1 hour to 1 and half hours
- g. 1 and a half hours to 2 hours
- h. 2 hours to 2 and a half hours
- i. 2 and a half hours to 3 hours
- j. 3 hours to 3 and a half hours
- k. 3 and a half hours to 4 hours
- l. Greater than 4 hours
- m. If you wish to do so, you can write the more precise time here below in terms of minutes or hours _____

13. Do you receive tutoring services from a paid individual/s?

- a. Yes
- b. No

14. If you answered Yes to question 13, please state the average time spent per day on paid tutoring by a separate individual:

- a. 0 to 30 minutes
- b. 30 minutes to 1 hour
- c. 1 hour to 1 and half hours
- d. 1 and a half hours to 2 hours
- e. 2 hours to 2 and a half hours
- f. Greater than 2 and a half hours.