The Effects of Birth Order on Academic Success

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ABSTRACT

This study examines the relationship between birth order and college GPA, high school GPA, SAT scores, anxiety level, and self-esteem. We hypothesized that eldest children would have higher college and high school GPAs, higher SAT scores, lower anxiety levels, and higher self-esteem compared to middle, youngest, and only children. The sample consisted of 127 students from General Psychology and Gateways (freshmen orientation) classes who completed a demographic survey, academic performance survey, the Rosenberg Self-Esteem Scale, and the Beck Anxiety Inventory. Results of a one-way ANOVA demonstrated a statistically significant relationship between birth order and college GPA. However, the analyses for high school GPA, SAT scores, anxiety level, and self-esteem yielded statistically insignificant results.

1 INTRODUCTION

Researchers have found that the eldest children in a family achieve greater academic success compared to the middle and youngest children. In particular, one study found that the eldest children had greater success in academic settings while the youngest children had greater success with popularity and social acceptance (Steelman & Powell, 1985). Another study found that when comparing the eldest and middle children of a family, the eldest children achieved higher academic success (Black et al., 2005).

In another study by Oberlander et al., the relationship between birth order and GPA was examined. The researchers found a significant relationship between birth order and GPA; Eldest children of a family had higher GPAs compared to the middle and youngest children. The study also found that the eldest children had higher IQ scores compared to the middle and youngest children.

Researchers have also found a significant relationship between birth order and SAT scores. In particular, a study found that the eldest children achieved superior SAT scores compared to their younger siblings. The study also found that, not only did the eldest children obtain higher total SAT scores, but they also achieved greater success in the math and verbal sections of the SAT (LeMay, 1970).

To explain, why the eldest children obtained greater academic success, higher GPAs, and higher SAT scores, some researchers have looked at how certain personality traits may factor into the success in academia that the eldest children demonstrate. Morales (1994) found that the eldest children obtained higher ratings of self-esteem, a stronger self-image, and higher confidence ratings when compared to the middle and youngest children. Another study found the same result that the eldest children of families possessed higher self-esteem ratings compared to their younger siblings. Another personality trait researched was anxiety. One study found that when comparing anxiety levels of eldest and youngest children, the eldest child exhibited significantly lower levels (Gates et al, 1988).

The goal of the current study was to replicate the results of the previous studies investigating the relationship between birth order and academic success, as well as personality traits that may affect this relationship. Our study had four hypotheses: (1) Eldest children will have higher collegiate GPAs compared to the middle and youngest children. (2) Eldest children will achieve higher total SAT scores. (3) Eldest children will have higher rates of self-esteem compared to the middle and youngest children of a family. (4) Eldest children will have lower levels of anxiety.

2 METHOD

Participants

The participants in the study were 127 students from The University of Tampa. They were recruited from General Psychology and Gateways (freshmen orientation) classes. Of the total number of participants, 106 were freshman, 11 were sophomores, 6 were juniors, and 4 were seniors. In terms of birth order, 38 were the eldest children, 22 were the middle children, 48 were the youngest children, and 19 were only children. When conducting the study, APA ethical guidelines were followed, and no harm came to the participants.

Materials, Design, and Procedure

The first step of the study was to have each participant complete a brief demographic survey. The survey included items on age, ethnicity, class standing, and birth order. Next, the participants disclosed their high school GPA, their current collegiate GPA, and their total SAT score. Next, the participants completed the Rosenberg Self-Esteem Scale (Rosenberg, 1965). This is a ten-item Likert Scale that is used to measure participants self-esteem by having them answer the questions based on a 4-point scale. Participants could respond with "strongly agree", "agree", "disagree", or "strongly disagree". To obtain the total score, items 1, 3, 4, 7, and 10 are scored as follows: strongly agree=3; agree=2; disagree= 1; strongly disagree=0. For items 2, 5, 6, 8, and 9, reversed scoring is used: strongly agree=0; agree=1; disagree= 2; strongly disagree=3. Then the sum of questions 1 through 10 is taken to obtain the total score. Next, the participants took the Beck Anxiety Inventory (Beck & Steer, 1993). This measurement is comprised of 21 multiple choice questions that assess the severity of a persons anxiety. Participants could respond to the questions with "not at all", "mildly, but it didnt bother me much", "moderately, it wasnt pleasant at times", or "severely, it bothered me a lot". In order to obtain the total score take the sum of each column and the total is written at the bottom. Then the total scores for all 4 columns are added together. If the total score is between 0 and 21, this indicates very low anxiety. If the total score is between 22 and 35, this indicates moderate anxiety. And if the total score is exceeds 36 then this indicates persistent and high anxiety.

3 RESULTS

The purpose of the study was to determine if birth order was related to academic success. There were five analyses that were conducted in order to determine if there was an effect. The first analysis conducted was to determine whether there was a relationship between high school GPA and birth order. The second analysis was to determine if there was a relationship between participants current collegiate GPA and birth order. The third analysis was to determine if there was a relationship between birth order and participants total SAT score. Then, the fourth analysis was to determine if there was a relationship between self-esteem scores and birth order. The final analysis performed was to determine if there was a relationship between anxiety levels and birth order. (See Table 1)

Table 1. This table illustrates all of the means and standard deviations for all conditions in each ANOVA.

ANOVA	Mean	Standard Deviation
High School GPA and Birth Order		
Youngest	3.59	0.55
Middle	3.55	0.41
Eldest	3.49	0.38
College GPA and Birth Order		
Youngest	3.36	0.46
Middle	3.46	0.38
Eldest	3.15	0.54
Total SAT Score and Birth Order		
Youngest	1554.55	155.43
Middle	1580.00	126.60
Eldest	1566.71	158.69
Self-Esteem and Birth Order		
Youngest	21.63	5.10
Middle	23.50	3.11
Eldest	23.16	4.10
Anxiety and Birth Order		
Youngest	14.63	9.99
Middle	10.55	8.53
Eldest	15.18	11.27

High School GPA and Birth Order

The first analysis showed that the youngest children had the highest overall mean GPA (M = 3.59). To determine if there was a relationship a one way ANOVA was performed. However, no statically significant relationship was found between high school GPA and birth order, $F_{(3,123)} = .55$, MSe =.12 p = .65, η^2 =.01 . The percent of missing data for this analysis totaled 2.36%.

College GPA and Birth Order

Another analysis focused on college GPA and birth order. Descriptive statistics showed that the middle child had the highest college GPA (M = 3.46) when compared to eldest, youngest, and only children. To determine if there was a significant relationship a one way ANOVA was performed. The ANOVA found that there was a significant relationship between college GPA and birth order, $F_{(3,114)} = 2.91$, MSe = .74, p = .04, $\eta^2 = .07$. Since a statistically significant relationship was found a LSD post hoc test was performed. The post hoc test found that there was a significant difference between eldest and middle children (p = .04), middle and only children (p = .02), and youngest and only children (p = .04). The percent of missing data for this analysis totaled 9.45%. (See Figure 1)
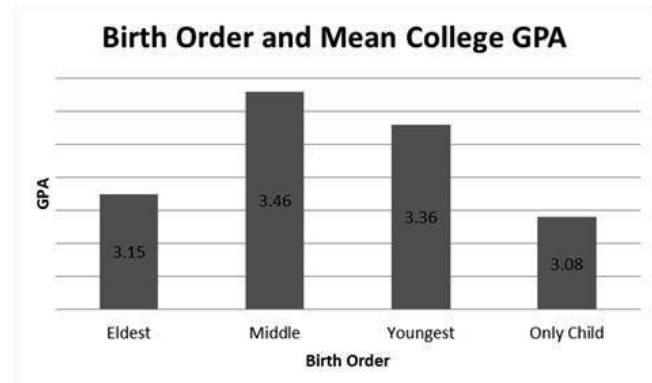

Fig. 1: This figure illustrates the average college GPAs between the different birth orders.

Total SAT Score and Birth Order

The third analysis performed examined the relationship between participants total SAT score and birth order. This showed that the middle children had the highest total mean SAT score (M = 1580). In order to determine if there was a significant relationship, a one way ANOVA was performed. However, there was no significant relationship found, $F_{(3,87)} = .27$, MSe = 7486.31, p = .85, $\eta^2 = .01$. The percent of missing data for this analysis totaled 30.71%.

Self-Esteem and Birth Order

Then to assess if personality traits are related to academic success and birth order, the relationship between self-esteem and birth order was examined. For this analysis it was found that the middle children had the highest level of self-esteem (M = 23.50). To determine if there was a significant relationship a one way ANOVA was performed, however no significant relationship was found, $F_{(3,126)} = 1.81$, MSe = 43.66, p = .15, $\eta^2 = .04$. For this analysis there was no missing data.

Anxiety and Birth Order

Lastly, the relationship between anxiety levels and birth order was assessed to determine if this variable could affect academic success. It was found that only children had the highest mean anxiety level (M = 18) and middle children had the lowest mean anxiety level (M = 10.55). To determine if there was a significant relationship a one way ANOVA was performed, however no significant relationship was found, $F_{(3,126)} = 1.73$, MSe = 198.10, p = .17, $\eta^2 = .04$. For this analysis there was no missing data.

4   DISCUSSION

The purpose of this study was to determine if birth order was related to academic success. Within the study there were five hypotheses being tested.

The first hypothesis stated that the eldest children would have higher high school GPAs compared to middle and youngest children. After running the test, it was found that the results did not support the hypothesis and suggested that there was no significant relationship between birth order and high school GPA. The finding indicates that there is a low probability that the relationship between these two variables exists and that these variables have a weak relationship.

The next hypothesis stated that the eldest child would achieve a higher collegiate GPA compared to the other sibling types. After running the analysis, the hypothesis was not supported. However, there was a significant difference found, suggesting that middle children had higher collegiate GPAs compared to the other sibling types. This finding is different than the results reported by previous literature, which found that the eldest children had higher GPAs compared to the middle and youngest children (Oberlander et al., 1970).

The third hypothesis which stated that the eldest children would achieve higher total SAT scores compared to the other sibling types, was not supported either. After running the test, no significant difference was found. The finding indicates that there is a low probability that the relationship between these two variables exists and that these variables have a weak relationship. This outcome is in contrast to previous research, which found that the eldest children achieved superior SAT scores when compared to the youngest and middle children (LeMay, 1970).

The fourth hypothesis stated that the eldest children would receive higher ratings on the self-esteem scale. After running the analysis, the finding did not support our hypothesis. The finding indicates that there is a low probability that the relationship between these two variables exists and that these variables have a weak relationship. This conclusion contrasts previous literature which stated that the eldest child would display higher self-esteem ratings compared to the middle child (Morales, 1994).

Lastly, the final hypothesis stated that the eldest children would achieve lower ratings of anxiety. After running the test, the findings did not support the hypothesis. The finding indicates that there is a low probability that the relationship between these two variables exists and that these variables have a weak relationship. This outcome is different than the results of previous research which found that the eldest children displayed significantly lower levels of anxiety compared to those who were the third sibling in a family (Gates et al, 1988).

Although this study did find one significant finding, there were several weaknesses to this study. The first limitation was that there were a low number of participants, and each sibling type did not have an equal number of participants. For instance, the youngest children had 43 participants, the eldest had 33, the middle had 20, and only children had 19 participants. Another limitation of the study was that there was missing data for three of the analyses. For example, there was 2.36% missing data for the high school GPA analysis, 9.45% for the college GPA analysis, and 30.7% missing data for the total SAT score analysis. The missing data resulted from participants not remembering their SAT scores and GPAs. This could have affected the results of this study. In addition, the college GPA that participants reported was not their final (senior) GPA, but their current GPA. For example, freshmen participants reported their GPA after just 1 semester of college, and the majority of participants were freshmen.

In order to improve the current study, possible future research studies that can be conducted are as follows. One possibility would be to look at the students study habits; This would allow researchers to determine if this variable would impact the results of obtaining higher GPAs and SAT scores. Another proposal would be to ask the students how often they seek out their professors help to also see if this would impact academic success. Researchers could also observe the prevalence of disorders such as ADHD, as this too could impact students' academic success. In conclusion, there are many variables other than birth order to be examined that could impact academic success.

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