

PARENTING STYLES, CONSCIENTIOUSNESS, AND ACADEMIC  
PERFORMANCE IN COLLEGE STUDENTS

by

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## Abstract

The relationship between parenting styles and academic performance has been examined by many previous studies with students in K-12, who are school-aged participants. Only limited studies have examined this relationship in college students, the results contradicted results from studies with school-aged students and were less consistent than results with school-aged students. The present study tries to explain this inconsistency, by assessing the relationship between three types of parenting styles and GPA in college students, using conscientiousness as a mediating variable. Typological analyses and regression analyses are both included in the relationship assessment. The mediating effect of conscientiousness on the relationship between parenting style and GPA is also tested. Results indicate that three parenting styles are not predictive of GPA. Authoritative parenting style and Authoritarian parenting style are predictive of conscientiousness. Students from Authoritative families have higher conscientiousness scores than students from other families. A mediation effect was not found in the present study. These findings reinforce the statement about the advanced academic competence outcome of Authoritative parenting and suggest cumulative GPA may not be a reliable measure of achievement and could lead to inconsistent results in the studies that assess the relationship between parenting styles and academic performance in college students.

Keywords: parenting style, academic performance, conscientiousness, college students

## PURPOSE

Baumrind (1966, 1971) proposed that parenting practices can be described in several parenting styles, and children who were raised under different parenting styles have different developmental outcomes (Baumrind, 1991). Several empirical studies have studied the relationship between these developmental outcomes and parenting style. Academic performance was one of the developmental outcomes that studied by researchers (Dornbusch, Ritter, Leiderman, Roberts, and Fraleigh 1987; Cohen & Rice, 1997; Lamborn, Mounts, Steinberg, and Dornbusch, 1991; Steinberg, Lamborn, Darling, Mounts, and Dornbusch, 1994; Grolnick & Ryan, 1989). These empirical studies in school-age students consistently provided evidence that there is a positive relationship between Authoritative parenting and children's academic performance, and a negative relationship between Permissive parenting, Authoritarian parenting, and academic performance. Results of limited studies with college students have not consistently provided similar evidence.

In these college-level studies, besides the population difference between college students and K-12 students, several reasons could potentially influence these college-level studies and lead to the inconsistent results. Difference in data analysis procedures could be the one reason. Some studies defined the types of parenting that students receive from their parents by assigning them to a "pure parenting group" (Authoritative parenting group, Authoritarian parenting group, and Permissive parenting group), and comparing their academic performance difference (Weiss and Schwarz, 1996; Dornbusch et al., 1987). However, the "parenting defining" processes in K-12 parenting study and college parenting study were different, which could lead to different results. For example, Weiss and Schwarz's (1996) study assigned college participants to a "pure parenting group" based on multiple respondents' (both parents, student, sibling) reported

parents' level of four dimensions in parental control. Their results about the relationship between parenting style and academic performance were different from results in Dornbusch et al.'s (1987) study. In this study of K-12 students, Dornbusch and colleagues assigned participants to "pure parenting group" by assessing three parenting style indices (Authoritative index, Authoritarian index, and Permissive index) of students' parents, and only the students who scored in the top one-third on one parenting index and not on either of the other two indexes were assigned to that types of parenting group. Using the method from Dornbusch et al. (1987) study to control the difference in method and further assess the relationship between parenting styles and academic performance in college populations, seems necessary to explain if it was the method difference leading to the inconsistent results.

The other reason in result difference between K-12 studies and college studies is the difference on compositions of students' GPA, which was used to represent students' academic performance as a dependent variable. The composition difference between college students' GPA is more different than the composition difference in school students' GPA. In college study, students from different majors could have completely different courses, besides the difficulty of courses can be varied. The level of these difference between students in college study is higher than the difference between students in K-12 study.

Are there any other developmental outcomes that are strongly correlated with academic performance, can be used to study the influence of parenting? Conscientiousness is one of the Big Five factor personality and has a strong correlation with academic performance (Raad & Schouwenburg, 1996). Based on the relationship between parenting styles and academic performance which was found in K-12 students, it is possible that conscientiousness is correlated with parenting styles in some way. Heaven and Ciarrochi (2008) demonstrated this hypothesis

with their longitudinal study. They found that parenting style can predict seven grade students' changes in conscientiousness over time and predict their later academic performance.

Additionally, mediation effect of conscientiousness was found in the relationship between parenting style and academic performance. In other words, conscientiousness is an available developmental outcome for this study, providing an alternative way to explore the relationship between parenting style and academic performance in college students.

The purpose of the present study is to replicate prior work with K-12 students, examining the relationship of three types of parenting styles (Authoritative, Authoritarian, and Permissive) with academic performance in college students. Results may help to explain why similar studies with college students have provided inconsistent results. First, I will assess the relationship between parenting and academic performance with linear regression, testing Conscientiousness as a mediator between parenting style and GPA. Then I will use one-way analysis of variance (ANOVA) to test difference in academic performance across three "pure parenting" groups. Conscientiousness will also be compared across three "pure parenting" groups. Including both ANOVA and linear regression analyses, and Conscientiousness as a mediator in the present study, would help researcher to explore the reasons for inconsistent findings between K-12 and college parenting studies.

## LITERATURE REVIEW

Baumrind (1966,1971) suggested parenting practices can be described in two general dimensions: control and responsiveness. Based on the different levels of these two dimensions, parenting style can be described as Authoritative, Authoritarian, Permissive (Nondirective) and neglecting (Uninvolved) parenting. Baumrind's (1991) Family Socialization and Developmental Competence longitudinal program of research (FSP) included comprehensive ratings of parents and children across three-time periods: four-year-olds at Time One (T1), nine-year-olds at Time Two (T2), and 15-year-olds at Time Three (T3). Baumrind (1991) provided the definitions of each parenting style using T3 data from adolescents to do typological analyses. In the typological analyses, she compared adolescents' developmental outcomes across the parenting styles. Authoritative parenting is defined by a high level of assertive control and a high level of responsiveness (supportive control). These parents use firm and consistent discipline and are warm and supportive to their children. Children from Authoritative families are academically competent and achievement oriented. High levels of directive and assertive control, and low levels of parental responsiveness defined Authoritarian parenting. These parents prefer to use firm and consistent discipline, but they tend to show rejection to their kid's needs and thoughts with little consideration. Children from Authoritarian families are lacking in individuation and internal self-motivation, they are less academically competent compared to children from Authoritative families. Permissive parenting is defined by a low level of directive control but a high level of parental support. These parents used to be called Non-directive parents. Permissive parents have lax rules for their children, allow children to decide what to do without parental interference, and are supportive and warm to their children. Children from Permissive families were found to be nonachievement oriented and less self-regulated. To classify the level of



control on each family, “high” and “low” level was assigned to families which scores were at least one-half standard deviation from the total mean Baumrind’s (1991). There were many other studies conducted by different researchers also interested in the difference of developmental outcomes of children from these different parenting style families, numerous studies found the strong relationship between parenting style and children’ academic performance (Dornbusch et al. 1987; Cohen & Rice, 1997; Lamborn, Mounts, Steinberg, and Dornbusch, 1991; Steinberg, Lamborn, Darling, Mounts, and Dornbusch, 1994; Grolnick & Ryan, 1989).

### **Parenting Style and Academic Performance**

Dornbusch et al. (1987) conducted research in 7836 high school students. The researchers assessed students’ academic performance by students’ reported grades they think they usually received. Their parenting style was assessed by a questionnaire that was developed to roughly conform with Baumrind’s definitions of the three parenting styles (Authoritative, Authoritarian, and Permissive). Based on students’ response on the three parenting style indices, students were categorized into pure parenting style groups if their score fell in the top one-third on one parenting style index and in the bottom two-third on both the other two indices. They found that the Authoritarian and Permissive parenting style were significantly negatively correlated with students’ grades, and Authoritative was significantly positively correlated with grades. They also found that the mean grades of students from pure Authoritative families had the greatest score, compared the mean score of students in Authoritarian and Permissive group. Cohen and Rice (1997) studied parenting style and academic achievement in eighth- and ninth- grade students. They found that students’ grades were positively associated with Authoritativeness, and negatively associated with Permissiveness and Authoritarianism. Other studies such as, Lamborn et al. (1991), Steinberg et al. (1994), and Grolnick and Ryan (1989), yield similar conclusions

and evidence in K-12 participants about the relationship between parenting styles and academic performance. All these studies provide evidence about the more favorable academic performance of children from Authoritative parents.

While there were similar studies done with college students, results of these were not as consistent as what was found in the studies mentioned above with school-aged students. In Hickman, Bartholomae, and McKenry's (2000) study with 101 first-year college students, there were not any statistically significant correlations between academic performance (students' self-report GPA) and parenting style dimensions found. However, Turner, Chandler, and Heffer's (2009) study found that Authoritative parenting scores significantly and positively predicted students' academic performance (students' self-reported GPA) in 264 college students. Weiss and Schwarz (1996) conducted a study with first year college students. Their results conflicted with findings from studies with school-aged students. They found that students from Permissive families had the highest SAT scores, and their scores were significantly higher than students from Authoritarian families. Girls from Permissive families in particular had extremely high GPAs compared to other families. Why were the results from studies with college students not as consistent as the results from studies with school-aged students?

One possible reason for the discrepancy in results between studies with college and school-aged participants is that the methodology is different. Weiss and Schwarz (1996) assessed 178 first-year college students from the University of Connecticut. Their intention of assigning participants to pure parenting groups was the same as the study in Dornbusch et al. (1987): to compare the dependent variables (the academic performance) mean differences between parenting style. However, they had different data analysis procedures. In Weiss and Schwarz's (1996) study, each students' parenting style was defined by their parents' level of parental

control in four dimensions (Supportive Control, Assertive Control, Directive Control, and Intrusive Control) based on the definitions of the T3 Family Types from Baumrind (1991). The definitions difference between Weiss and Schwarz's (1996) study and Dornbusch et al.'s (1987) study might be contribute to the conflicting results and conclusions.

Another reason for the difference in results between results from K-12 studies versus results from college studies may be the difference in compositions of students' GPA. In college-level studies, unlike K-12 studies, students' GPA might be comprised by more diverse courses from different content, with different difficulties and standards. Students' cumulative GPA could be high if they select many "easy" courses. The variety compositions of GPA of college students would be different to the GPA compositions from school students. When researchers use GPA as a dependent variable to represent academic performance in college-level parenting studies, results might be inconsistent with school-level studies. Are there any other developmental outcomes that are strongly correlated with academic performance that can be used to the study of the influence of parenting on academic achievement?

### **Parenting Style and Conscientiousness**

Some studies suggested children's personality and temperament play an important role in influencing parents' parenting practices and behaviors. Belsky (1984) proposed that the characteristics of the child, referred to child temperament and the difficulty of taking care of them, have direct influences on parents' parenting behaviors. For example, Egberts, Prinzie, Deković, Haan, and Akker (2015) found that child personality was significantly related to parents' parenting behavior five years later. Additionally, Weiss and Schwarz (1996) found that parental Permissiveness was significantly and negatively correlated with students' conscientiousness.

The strong relationship between conscientiousness and academic achievement has been mentioned by Raad and Schouwenburg (1996) as well Nofle and Robins (2007) found that one of the personality factors is most consistently associated with academic achievement is conscientiousness. Using conscientiousness as a developmental outcome to indirectly assess academic performance could be an alternative way to study the relationship between parenting and academic performance. Based on the findings from research on conscientiousness and the relationship between parenting style and academic performance, it is possible that there are correlations between parenting style, conscientiousness, and academic performance. Heaven and Ciarrochi's (2008) longitudinal study found that Authoritativeness and Permissiveness were correlated with students' conscientiousness. Authoritativeness significantly predicted seventh grade students' conscientiousness increment over one year. After controlling for students' level of conscientiousness and verbal ability, the influence of Authoritativeness on grades was less attenuated, conscientiousness mediated this effect.

The present study assesses the relationship between parenting styles and academic performance in college students using conscientiousness as a mediator variable to assess the relationship between parenting and conscientiousness. Typological analyses and regression analyses are both included in the relationship assessment. The design of the present study directly provides extra evidences about the relation between parenting styles and academic performance in a college students population, and also provides indirect evidence for this relationship using, conscientiousness which has been found to strongly correlated with academic performance. In addition, the result from the present study will help to explain the inconsistent results from college-level parenting study.

## METHODS

### Participants

Participants were 146 undergraduate students from a public university in the Southwestern United States who were recruited from two different undergraduate classes in the Department of Educational Psychology, both of which are same as general education courses. There were five participants removed from the data analysis due to missing data; 141 students remained. There were 38 males and 101 females, with one non-binary student. There were 52 freshmen, 44 sophomores, 30 juniors, and 15 seniors.

### Procedures

The survey used in this study was part of a larger project Attitudes Towards and Behaviors in College Life and College Classes in the ABLE (Attitudes and Behaviors in Learning and Education) Lab.

### Measures

#### **Demographic variables.**

Demographic questions included students' current cumulative GPA, gender, and current year in college.

#### **Measures of parenting style.**

The parenting style scale consisted of 12 items, selected from the Parenting Styles and Dimensions Questionnaire (PSDQ), which was developed by Robinson, Mandleco, Olsen, and Hart (1995). It included questions that assessed three dimensions of parenting: Authoritative, Authoritarian, and Permissive. Students reported about parenting behaviors of their parents. Each of the parenting styles was measured with a five-point Likert scale measuring the students' view about their parent behavior frequency. Items included ranges from "Never" to "Always". An

example question is “Your parents appear to be more concerned with their own feelings rather than yours” (See Appendix). The original questionnaire has four subscales and 27 items on the Authoritative dimension, four subscales and 20 items on the Authoritarian dimension with four subscales and 15 items on the Permissive dimension with three subscales. One item in each subscale per parenting style was selected by researcher based on which item best described that subscale and dimension, with four overall items on each parenting dimension. An average of the total scores in each parenting dimension was calculated to represent the degree of that dimension. The Cronbach’s alpha of the four items in Authoritative dimension was .78, and .62 in Authoritarian dimension, and .46 in Permissive dimension. The overall questions in this project was constructed by several researchers and considering the available time that respondent have for participating the survey, there was limited number of items for each study that under the project.

In the present study, students were assigned to pure parenting groups to compare the group mean GPA, and mean conscientiousness. The procedure of this assigning processes was similar to that of the Dornbusch et al.’s (1987). Only the students who scored in the top one-third on one parenting style and in the bottom two-third on both the other two parenting styles. There were 79 participants assigned to pure parenting groups, 41 students assigned to the Authoritative parenting group, 18 students were assigned to the Authoritarian parenting group, and 20 were assigned to the Permissive parenting group.

### **Measures of conscientiousness.**

To measure students’ conscientiousness, three items were selected from Deyoung and Peterson’s (2007) 10-item Big-Five Personality scale. The original questionnaire measured

students' personality in five dimensions, Extraversion, Agreeableness, Conscientiousness, Emotional Stability, and Intellectual Openness. Each dimension had 10 items administered with five-point Likert scale, measuring agreement to statements, from *Strongly disagree* to *Strongly agree*. Three items in each dimension were selected from the original scale to assess students' personality. The three items assessing the conscientiousness dimension in the survey were "You always follow a schedule", "You pay attention to details", and "You get chores done right away" (See Appendix). The Cronbach's alpha of scores on these three items was .23.

## RESULTS

### Testing the Mediation Effect of Conscientiousness on the Relationship between each Parenting Style and GPA

Conscientiousness was assessed as a mediator of the effect of parenting style on student GPA. To test the mediation effect of conscientiousness, the total effect of each parenting style on GPA was assessed (path c). Then, the effect of parenting style on the mediator (conscientiousness) was assessed (path a). Third, the effect of mediator on GPA was examined. Last, the indirect and direct effects of parenting style on GPA with the mediator (conscientiousness) were calculated. Bootstrapping techniques were used to test the statistical significance of indirect effect. To analyze all these models in each parenting style, R version 3.4.1 (R Core Team, 2017) was used with alpha value of .05.

**Authoritative Parenting style.** Regression analysis was used to investigate the hypothesis that conscientiousness mediates the effect of Authoritative parenting on GPA (Table 1.1). Results indicate that Authoritative parenting was a significant predictor of conscientiousness (path a),  $b = 0.144$ ,  $SE = 0.217$ ,  $p = .015$ . However, conscientiousness was not a significant predictor of GPA (path b),  $b = 0.121$ ,  $SE = 0.217$ ,  $p = .106$ . The total effect of Authoritative parenting on GPA was not significant (path c),  $b = 0.041$ ,  $SE = 0.052$ ,  $p = .426$ . The direct effect of Authoritative parenting on GPA including conscientiousness as mediator (path c') was not significant either,  $b = 0.024$ ,  $SE = 0.052$ ,  $p = .455$ . The indirect effect ( $a * b$ ) was approximately 0.017, larger than zero. Bootstrap estimation was used to test the statistical significance of the indirect effect.



The indirect effect ( $a * b$ ) was tested through a bootstrap estimation approach with 1000 samples (Table 1.2). These results indicated the indirect effect was not significant,  $a * b = 0.017$ , 95% CI = -0.003, 0.051, and zero was included in the confidence interval.

Table 1.1.

*Mediation Effects of Conscientiousness on the Relationship between (a) Authoritative Parenting and (b) GPA (N = 141)*

Regression paths	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>
Mediation a path (Authoritative Parenting on Conscientiousness)	0.144	0.217	2.457	.015
Mediation b path (Conscientiousness on GPA)	0.121	0.074	1.626	.106
Total effect, c path (Authoritative Parenting on GPA)	0.041	0.052	0.799	.426
Direct effect, c' path (Authoritative Parenting on GPA including Conscientiousness as mediator)	0.024	0.052	0.455	.650

*Note.* For Mediation a path model,  $F(1, 139) = 6.037$ ,  $p = .015$ ,  $R^2 = .041$ , Adjusted  $R^2 = .035$ ,  $SEE = 0.640$ . For c path Total effect model,  $F(1, 139) = 0.638$ ,  $p = .426$ ,  $R^2 = .005$ , Adjusted  $R^2 = -.003$ ,  $SEE = 0.565$ . For the complete Mediation model,  $F(2, 138) = 1.645$ ,  $p = .197$ ,  $R^2 = .023$ , Adjusted  $R^2 = .009$ ,  $SEE = 0.561$ .

Table 1.2.

*Bootstrap estimation of Mediation Effects of Conscientiousness on the Relationship between Authoritative Parenting and GPA (N = 141)*

	<i>B</i>	95% CI	<i>p</i>
ACME	0.017	[-0.003, 0.051]	.091
ADE	0.024	[-0.082, 0.149]	.682
Total Effect	0.041	[-0.055, 0.152]	.410
Prop. Mediated	0.422	[-5.099, 4.671]	.485

*Note.* Number of bootstrap resamples: 1000. ACME = The average causal mediation effect. ADE = The average direct effect.

**Authoritarian Parenting style.** Regression analysis was used to investigate the hypothesis that conscientiousness mediates the effect of Authoritarian parenting on GPA (Table 2.1). Result indicated that Authoritarian parenting was a significant predictor of conscientiousness (path a),  $b = -0.186$ ,  $SE = 0.166$ ,  $p = .019$ . Conscientiousness was not a significant predictor of GPA (path b),  $b = 0.112$ ,  $SE = 0.074$ ,  $p = .134$ . The total effect of Authoritarian parenting on GPA was not significant (path c),  $b = -0.098$ ,  $SE = 0.069$ ,  $p = .154$ . The

direct effect of Authoritarian parenting on GPA including conscientiousness as a mediator (path c') was not significant either,  $b = -0.077$ ,  $SE = 0.070$ ,  $p = .268$ . The indirect effect ( $a * b$ ) was approximately  $-0.021$ , smaller than zero. Bootstrap estimation was used to test the statistical significance of the indirect effect.

The indirect effect ( $a * b$ ) was tested using a bootstrap estimation approach with 1000 samples (See Table 2.2). These results indicated the indirect effect was not significant,  $a * b = -0.021$ , 95% CI =  $-0.062, 0.012$ , and zero was included in the confidence interval.

Table 2.1.

*Mediation Effects of Conscientiousness on the Relationship between (a) Authoritarian Parenting and (b) GPA (N = 141)*

Regression paths	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>
Mediation a path (Authoritarian Parenting on Conscientiousness)	-0.186	0.166	-2.382	.019
Mediation b path (Conscientiousness on GPA)	0.112	0.074	1.507	.134
Total effect, c path (Authoritarian Parenting on GPA)	-0.098	0.069	-1.433	.154
Direct effect, c' path (Authoritarian Parenting on GPA including Conscientiousness as mediator)	-0.077	0.070	-1.112	.268

*Note.* For Mediation a path model,  $F(1, 139) = 5.675$ ,  $p = .019$ ,  $R^2 = .039$ , Adjusted  $R^2 = .032$ ,  $SEE = 0.640$ . For c path Total effect model,  $F(1, 139) = 2.052$ ,  $p = .154$ ,  $R^2 = .015$ , Adjusted  $R^2 = .007$ ,  $SEE = 0.562$ . For the complete Mediation model,  $F(2, 138) = 2.171$ ,  $p = .118$ ,  $R^2 = .031$ , Adjusted  $R^2 = .016$ ,  $SEE = 0.559$ .

Table 2.2.

*Bootstrap estimation of Mediation Effects of Conscientiousness on the Relationship between Authoritarian Parenting and GPA (N = 141)*

	<i>B</i>	95% CI	<i>p</i>
ACME	-0.021	[-0.062, 0.012]	.123
ADE	-0.077	[-0.237, 0.078]	.381
Total Effect	-0.098	[-0.246, 0.051]	.228
Prop. Mediated	0.212	[-2.675, 2.783]	.343

*Note.* Number of bootstrap resamples: 1000. ACME = The average causal mediation effect. ADE = The average direct effect.

**Permissive Parenting style.** Regression analysis was used to investigate the hypothesis that conscientiousness mediates the effect of Permissive parenting on GPA (Table 3.1). Results indicate that Permissive parenting was not a significant predictor of conscientiousness (path a),  $b = -0.115$ ,  $SE = 0.082$ ,  $p = .165$ . Conscientiousness was not a significant predictor of GPA (path b),  $b = 0.118$ ,  $SE = 0.073$ ,  $p = .108$ . Total effect of Permissive parenting on GPA was not significant (path c),  $b = -0.095$ ,  $SE = 0.071$ ,  $p = .186$ . And the direct effect of Permissive parenting on GPA including conscientiousness as mediator (path c') was not significant either,  $b = -0.081$ ,  $SE = 0.072$ ,  $p = .258$ . The indirect effect ( $a * b$ ) was approximately  $-.006$ , smaller than zero, Bootstrap estimation was used to test the statistical significance of the indirect effect.

The indirect effect ( $a * b$ ) was tested using a bootstrap estimation approach with 1000 samples (See Table 3.2). These results indicated the indirect effect was not significant,  $a * b = -0.014$ , 95% CI =  $-0.045, 0.011$ , and zero was included in the confidence interval.

Table 3.1.

*Mediation Effects of Conscientiousness on the Relationship between (a) Permissive Parenting and (b) GPA (N = 141)*

<b>Regression paths</b>	<b>B</b>	<b>SE</b>	<b>t</b>	<b>p</b>
Mediation a path (Permissive Parenting on Conscientiousness)	-0.115	0.082	-1.395	.165
Mediation b path (Conscientiousness on GPA)	0.118	0.073	1.617	.108
Total effect, c path (Permissive Parenting on GPA)	-0.095	0.071	-1.328	.186
Direct effect, c' path (Permissive Parenting on GPA including Conscientiousness as mediator)	-0.081	0.072	-1.136	.258

*Note.* For Mediation a path model,  $F(1, 139) = 1.946$ ,  $p = .165$ ,  $R^2 = .014$ , Adjusted  $R^2 = .007$ ,  $SEE = 0.649$ . For c path Total effect model,  $F(1, 139) = 1.763$ ,  $p = .187$ ,  $R^2 = .013$ , Adjusted  $R^2 = .005$ ,  $SEE = 0.563$ . For the complete Mediation model,  $F(2, 138) = 2.199$ ,  $p = .115$ ,  $R^2 = .031$ , Adjusted  $R^2 = .017$ ,  $SEE = 0.559$ .

Table 3.2.

*Bootstrap estimation of Mediation Effects of Conscientiousness on the Relationship between Permissive Parenting and GPA (N = 141)*

	<b>B</b>	<b>95% CI</b>	<b>p</b>
ACME	-0.014	[-0.045, 0.011]	.247
ADE	-0.081	[-0.237, 0.073]	.301
Total Effect	-0.095	[-0.244, 0.048]	.195
Prop. Mediated	0.143	[-1.150, 2.401]	.423

*Note.* Number of bootstrap resamples: 1000. ACME = The average causal mediation effect. ADE = The average direct effect.

### **One-way ANOVA Mean GPA Comparison of Pure Parenting Group**

After defining the pure parenting style, 79 participants were characterized in three types of parenting style out of all the participants ( $N=141$ ). There were 41 students categorized as being from Authoritative families, 18 students from Authoritarian families, and 20 students from Permissive families (Table 4.1).

The descriptive statistics for each parenting group are presented on Table 4.1, and GPA distribution is presented in Figure 4.1.

Table 4.1

*Summary of number of participants, Means, Standard Deviations, Standard Error, Kurtosis, and Skews of GPA in each parenting group*

<b>Parenting</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>	<b>SE</b>	<b>Kurtosis</b>	<b>Skew</b>
Authoritative	41	3.41	0.51	0.08	1.65	-1.27
Authoritarian	18	3.34	0.50	0.12	-1.25	-0.11
Permissive	20	3.19	0.48	0.11	-0.93	-0.11

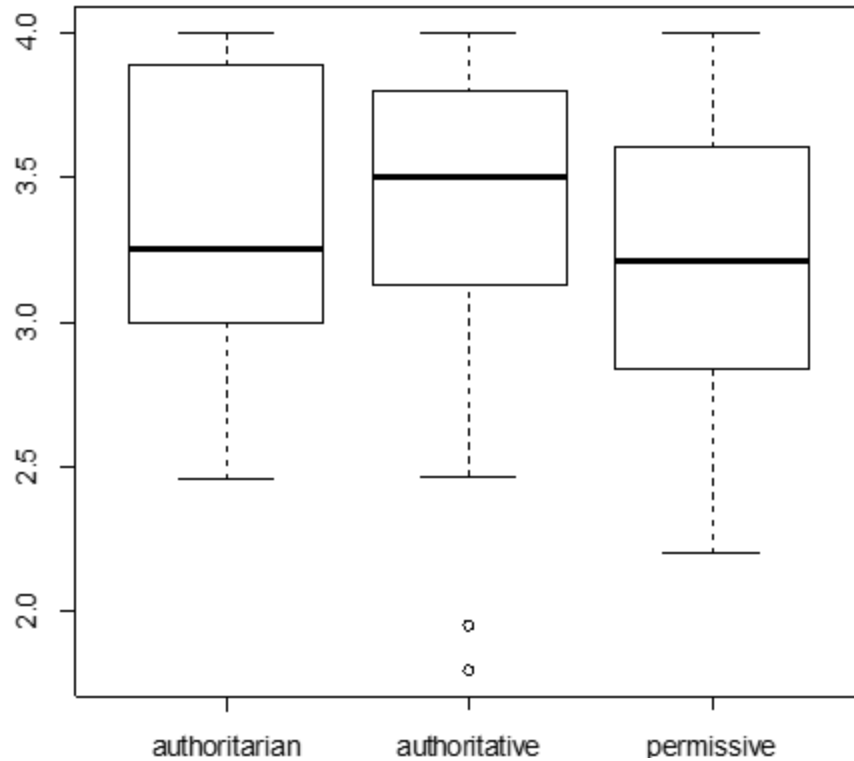


Figure 4.1 The distribution of GPA of each parenting group.

Levene's Test and Bartlett's Test were conducted to check homogeneity of group variances, both test results showed that the three groups had equal variances, therefore one-way analysis of variance (ANOVA) was conducted (see Table 4.3).

Table 4.3  
Homogeneity of Group Variance

Levene's Test for Homogeneity of Variance		Bartlett test of homogeneity of variances	
<i>F</i>	<i>p</i>	<i>K<sup>2</sup></i>	<i>p</i>
0.039	.962	0.129	.937

A one-way between-subjects analysis of variance (ANOVA) indicated GPA did not statistically significantly differ by parenting style,  $F(2, 76) = 1.33$ ,  $MSE = 0.25$ ,  $p = .27$ . If groups did all come from the same population, an F ratio could be expected to get as large as 1.33 or larger 27.00% of the time. In the collected data, eta-squared indicated 3.30% of the variance in GPA was explained by parenting style differences. In the populations of these three parenting groups came from, approximately 0.70% (omega-squared) of the variance in GPA would be

explained by differences between group (population) means. With an average of approximately 26 participants in each of the three parenting groups, at the .05 significance level, there was approximately 27.00% power. (Table 4.4)

Table 4.4  
*One-way Analysis of Variance of GPA across three parenting groups*

<i>Source</i>	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Between groups	2	00.65	0.33	1.33	.27
Within groups	76	19.12	0.25		
Total	78	19.77			

*Note.*  $\eta^2 = 0.033$ ,  $\omega^2 = 0.007$ , power = 0.27 (sig. level = .05)

### **One-way ANOVA Mean Conscientiousness Comparison of Pure Parenting Group**

In Table 5.1, the descriptive statistics of the conscientiousness scores in each parenting group are presented. The mean conscientiousness score of students from Authoritative families was the highest at 11.67. The lowest mean conscientiousness score was from Permissive families, which was 10.00. The distribution of conscientiousness scores for each parenting group are presented in Figure 5.1.

Table 5.1  
*Summary of number of participants, Means, Standard Deviations, Standard Error, Kurtosis, and Skews of Conscientiousness in each parenting group.*

<b>Parenting</b>	<i>N</i>	<i>Mean</i>	<i>SD</i>	<i>SE</i>	<i>Kurtosis</i>	<i>Skew</i>
Authoritative	41	3.83	0.62	0.10	-0.45	-0.57
Authoritarian	18	3.24	0.52	0.12	-0.25	-0.35
Permissive	20	3.37	0.76	0.17	-0.15	-0.17

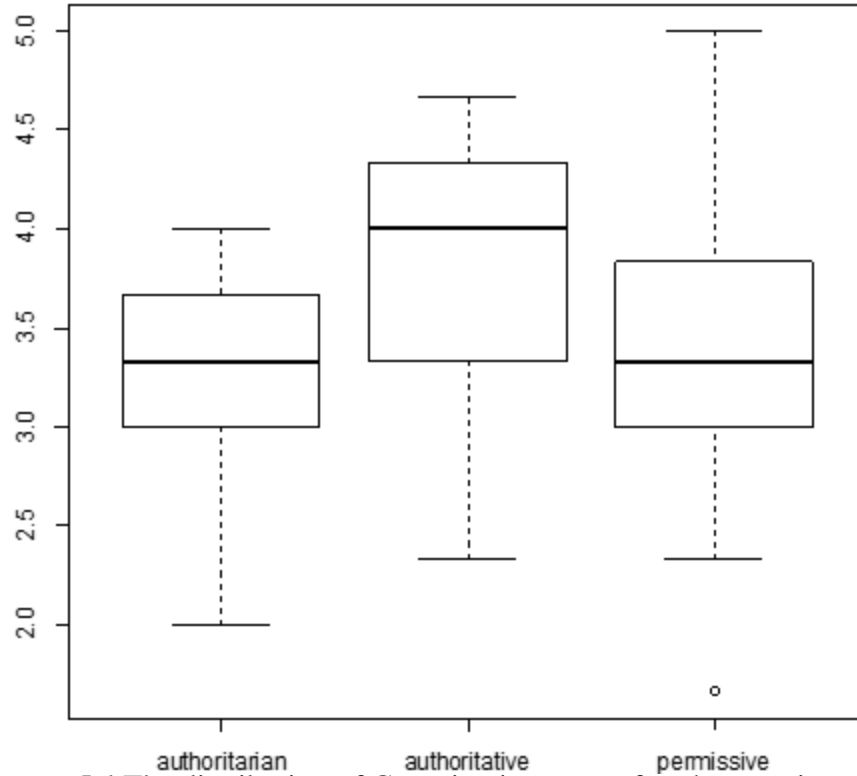


Figure 5.1 The distribution of Conscientiousness of each parenting group.

Levene's Test and Bartlett Test were conducted to check homogeneity of group variance. Both test results show three groups have equal variance, therefore one-way analyses of variance (ANOVA) was conducted. (Table 5.2)

Table 5.2  
Homogeneity of Group Variance

Levene's Test for Homogeneity of Variance		Bartlett test of homogeneity of variances	
<i>F</i>	<i>p</i>	<i>K<sup>2</sup></i>	<i>p</i>
1.030	.362	2.621	.270

A one-way between-subjects analysis of variance (ANOVA) indicated conscientiousness scores did statistically significantly differ by students-reported parenting style,  $F(2, 76) = 6.76$ ,  $MSE = 0.41$ ,  $p = .002$ . If groups did all come from the same population, an F ratio could be expected to get as large as 6.76 or larger 0.20% of the time. In the collected data, eta-squared indicated 15.10% of the variance in conscientiousness was explained by parenting style differences. In the population the sample groups came from, approximately 12.70% (omega-

squared) of the variance in conscientiousness was explained by differences between group (population) means. With an average of approximately 26 participants in each of the three parenting groups, at the .05 significance level, there was approximately 91.00% power. (Table 5.3)

Table 5.3  
One-way Analysis of Variance of Conscientiousness

<i>Source</i>	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Between groups	2	5.53	2.76	6.76	.002
Within groups	76	31.07	0.41		
Total	78				

*Note.*  $\eta^2 = 0.151$ ,  $\omega^2 = 0.127$ , power = 0.91 (sig. level = .05)

The Authoritative group produced the highest mean score ( $M_{\text{authoritative}} = 3.83$ ), and the Permissive group produced the lowest mean score ( $M_{\text{permissive}} = 3.37$ ). The one-way between-subjects analysis of variance indicates at least two of these groups are statistically significantly different. Thus, the Authoritative groups and Permissive groups must come from populations with different means. To determine whether the Authoritarian group differed from the Authoritative and Permissive groups, post-hoc comparisons were conducted (Table 5.4). The results show that the mean conscientiousness score of the Authoritarian groups was statistically different from the Authoritative group, but not statistically different from the Permissive group.

Table 5.4  
*Post-hoc Multiple Comparisons of Conscientiousness in Three Parenting Groups (Protected t-test)*

	<i>Group</i>	<i>Mean</i>	<i>p</i>
1	Authoritative	3.83	0.002
	Authoritarian	3.24	
2	Authoritative	3.83	0.010
	Permissive	3.37	
3	Authoritarian	3.24	0.546
	Permissive	3.37	



## DISCUSSION

The present study used typological analysis (ANOVA) and linear regression to examine the relationship between parenting style and academic performance (GPA) and the relationship between parenting style and conscientiousness. In addition, the mediating effect of conscientiousness on the relationship between parenting style and academic performance (GPA) was also tested.

Unlike the results from most of the previous parenting studies in school-aged students suggested, the present study did not find a statistically significant relationship between parenting styles and GPA (path c). The practical effects of this relationship for each parenting style were also low. A range of 0.5% to 1.5% of variance in GPA was explained the parenting style scores. The results of typological analysis (ANOVA) indicated there were not statistical significant differences between parenting groups in GPA, and only 3.3% of the variance in GPA was explained by parenting style group. Both ANOVA and regression methodologies were derived from school-aged students' studies, but results were inconsistent with the school-aged literature. Thus, the methodological difference between school-aged students' studies and college students' studies would not explain the inconsistent results from college student's studies.

However, the present study did find a relationship between Authoritative parenting and conscientiousness, as well as Authoritarian parenting and conscientiousness. These results are partly consistent with the result from Heaven and Ciarrochi's (2008) study in relation to Authoritative parenting and Permissive parenting predicting students' conscientiousness. The present study did not find a statistically significant relationship between Permissive parenting and conscientiousness. One possible reason is that the Cronbach's alpha of permissive items (which is 0.46) was low. The Permissive items selected for present study may not represent the

concept of Permissive well. For the mean conscientiousness score comparison, the Authoritative parenting group had the highest mean score on conscientiousness, statistically significantly different from the other two parenting groups; the Permissive parenting group had the middle mean score in three parenting groups and was not statistically significantly different from Authoritarian parenting group, which had the lowest mean conscientiousness score. The college students from Authoritative parenting families, have statistically significantly different conscientiousness scores than students from the other two parenting families.

Based on the results of testing the relationship between parenting style and conscientiousness and the evidence of the strong correlation between conscientiousness and academic performance from literature, it is highly possible that there is a correlation between parenting style and academic performance in college students, but due to the design limitation of the present study, the results were unable to support this hypothesis. Using GPA to represent academic performance could be one of the design limitations. In the present study, participants were asked to move an incremental slider in response to the questions “What is your current cumulative GPA?” (Slider with GPA in 0.1 units). Most participants were first year college students (52 first-year students, around 37.0% of the total sample), and the data collection period was in the middle of the fall 2017 semester. It is possible that first-year participants may not have known their exact GPA, meaning the self-reported GPA might not be accurate. What is more important, Heaven and Ciarrochi (2008) provided evidence that the relationship between parenting style and academic performance is course dependent and performance in every course may not be associated with parenting style. College courses are so diverse, students are freer to choose their courses in each semester than school-aged students, it is possible that there were plenty of college courses not associated with parenting style, but their grades constituted the

GPA. Besides, the difficulty of college courses may vary from one to another, cumulative GPA could be high if students select many “easy” courses. These two reasons cause the composition of college students’ GPA to be different to the school-aged students’ GPA. The variety of courses in college study could possibly reduce the reliability of using GPA to represent academic performance, weakening the correlation between parenting style and GPA, contributing to inconsistent results in the present study and other college students parenting and academic performance studies.

The mediation analysis assesses the total effect of the independent variable on the dependent variable (path c) and the direct effect (path c’) of the independent variable on the dependent variable when the effect of mediator is included. Additionally, it tests if the indirect effect is statistically significant. Inconsistent with Heaven and Ciarrochi’s (2008) findings, a significant mediation effect of conscientiousness on the relationship between each parenting style (Authoritative, Authoritarian, and Permissive) and GPA was not found. The indirect effect of present mediation models was constructed by two parts, the effect of parenting style on conscientiousness (mediation path a) and the effect of conscientiousness on GPA (mediation path b). The relationships of “path a” were found statistically significant in Authoritative parenting and Authoritarian parenting, and the “path b” in all parenting styles was not statistically significant. Based on the results, it is highly possible that the unreliable cumulative college GPA reduced the effect of conscientiousness in “path b” and lead to the inability to find the mediation effect of conscientiousness on the relationship between parenting style and academic performance. Based on this evidence, and results from extant literature, the self-reported GPA may not have been reliable and accurate enough to represent the academic achievement in college students parenting studies.

Permissive parenting had no statistical significant relationships with conscientiousness and academic performance in this sample. This contradicts Weiss and Schwarz's (1996) findings about first-year college students from Permissive families who tended to produce advanced academic performance compared to students from other families, the present study was not able to provide any results or evidence about the first-year college students to directly evaluate whether Permissive parenting produce better academic outcomes than other parenting styles due to the limited sample sizes. Each pure parenting group in the present study was a small to moderate size and the sample size of first-year participants in each pure parenting group was too small to run any group comparison analyses. Thus, present study could not provide analysis and results to directly evaluate the argument that Permissive parenting produces better academic performance in first-year college students.

The relationship between Authoritative parenting and conscientiousness found in the present study was coordinated with the results from school-aged parenting literature and supported the argument that children from Authoritative families have at least some advanced competences over families with other parenting styles. However, school-aged students in these studies usually live with and are under the control of their parents, whereas participants from the present study provided evidence about what happens to these children in situations when they have left their parents or when the parental controls are gone. The evidence provided by the present study shows that college students' level of conscientiousness differed by parenting style, which means parenting still has an influence on children's conscientiousness even after students leave their parents' home. This evidence emphasized the long-term influence of parenting on children's development.

For future studies that relate to parenting style and academic performance, several things should be taken into consideration. To measure college students' academic performance, researchers should be careful about using only students self-reported cumulative GPA, as the variety of programs of study contributing to college GPA may reduce the strength of the relationship between parenting and GPA. The present study did not find a significant relationship between conscientiousness and GPA, conscientiousness was supposed to strongly correlated with academic performance. Using other ways to assess academic performance would be more ideal. For example, grades of the course where participants were selected from might be a more appropriate way for present study to assess academic performance, as it has unique standard. With a variable that more accurately represents academic performance, future studies related to parenting style and academic performance in college students would provide additional evidence about whether the inconsistency in results between college students studies and school-aged students studies is due to the more variable composition of GPA in college studies.

Additionally, the Cronbach's alpha of scores on the in Authoritarian and Permissive parenting items in the present study were relatively low. Particularly for Permissive parenting, this could be the reason that there was not any relationship found with GPA. The present study had only four items measuring each parenting dimension, which were selected from several subscales. Each subscale could be unrelated to each other. For example, in the Permissive parenting dimension, there were three subscales, the first subscale assessed the "inconsistency of parenting behaviors", the second subscale assessed the "frequency of ignoring child's misbehavior". The last subscale assessed "parents' confidence about their parenting abilities". Based on these subscales' description, and the original items in each subscale, these three subscales seem independent of each other, and may explain why the Cronbach's alpha for the

score of Permissive parenting items was low. In future studies, including more items in each parenting dimensions is necessary, to increase the reliability of scores. However, relatively low Cronbach's alpha could be acceptable if subscales are independent. In addition, due to the limited number of participants in the present study, comparing the difference between each parenting style in first-year college students was not feasible. There were not any results that could be used to directly evaluate Weiss and Schwarz's (1996) finding about the advanced academic performance of the first-year college students from Permissive families. Future studies with larger sample size of the first-year college students would be able to provide evidence for evaluating whether Permissive parenting provides better academic performance than other parenting styles in the first-year students.

One strength of the present study is that the parenting styles were explored both as groups and as continuous variables and provided consistent results. In general, the present study suggests that either a) self-reported GPA was not a reliable method of representing college students' academic performance in a parenting study, or b) parenting styles influence conscientiousness, but not GPA. Using an unreliable measure of academic achievement could be the reason for the inconsistency of results in studies about the relationship between parenting style and academic performance in college students and results from school-aged students studies. Based on the results of current study, it will be interesting and meaningful to assess the relationship between the four subscales from Authoritative parenting dimension and conscientiousness to see what kind of specific parenting behavior in Authoritative parenting is positively related to conscientiousness. Results will provide practical suggestions for how to better facilitate conscientiousness through parenting.

## Appendix

The survey items of parenting style and conscientiousness

### Parenting styles

Rate how often your parents exhibited each of the following behaviors with you before you entered college. (1=Never, 2=Occasionally, 3=About half of the time, 4=Very often, 5=Always)

#### Authoritative parenting dimension

1. \_\_\_ Your parents told you that they appreciate your efforts and accomplishments.
2. \_\_\_ They help you to understand the impact of your behavior by encouraging you to talk about the consequences of your own actions.
3. \_\_\_ They show patience towards you.
4. \_\_\_ They encourage you to freely express yourself even when disagreeing with them.

#### Authoritarian parenting dimension

1. \_\_\_ They explode with anger towards you.
2. \_\_\_ They use physical punishment as a way of disciplining you
3. \_\_\_ Your parents appear to be more concerned with their own feelings rather than yours.
4. \_\_\_ They scold or criticize you when your behavior doesn't meet their expectations.

#### Permissive parenting dimension

1. \_\_\_ They are responsive to your feelings or needs.
2. \_\_\_ They threaten you with punishment more often than they actually give it.
3. \_\_\_ They ignore your misbehavior.
4. \_\_\_ They carry out discipline after you misbehave.

**Conscientiousness**

Rate your level of disagreement or agreement with each of the following statements. (1=Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly agree)

1. \_\_\_ You always follow a schedule.
2. \_\_\_ You pay attention to details.
3. \_\_\_ You get chores done right away.



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