

Theory and Evidence on
Extraversion and Undergraduate Academic
Performance at Stern

by

Sweta Gangopadhyay

An honors thesis submitted in partial fulfillment

of the requirements for the degree of

Bachelor of Science

Undergraduate College

Leonard N. Stern School of Business

New York University

May 2019

Professor Marti G. Subrahmanyam

Faculty Adviser

Professor Joseph Foudy

Thesis Adviser

Abstract

Previous research has found a significant link between our personality traits and our academic performance, measured in terms of GPA. Specifically, the trait of extraversion has been found to affect GPA both positively and negatively depending on the academic environment. In academic environments of high-stimulation, extroverts tend to perform better than introverts, but in environments of low-stimulation, the results are reversed. Research has also found that business schools, which were environments of high stimulation, consist of students who are more extroverted than their non-business school counterparts.

Given these findings, this thesis paper tries to find whether there is any true difference in extraversion levels between Stern and the College of Arts and Sciences, and specifically, whether extroverts perform better than introverts in the context of NYU Stern. Ultimately, this paper finds that there is no difference in extraversion levels between schools. This paper also finds a slight negative relationship between extraversion and GPA in Stern, showing us that students do not need to be extroverted to get high grades. Additionally, the trait of extroversion had no relationship with the number of leadership positions a student held, concluding that leadership ability is not correlated with how outgoing a student is. Furthermore, this paper concludes that, to a certain extent, extraversion levels do not affect GPAs in NYU Stern. This spells good news for the university as it shows that there is no specific 'type' of personality that it actively looks for to boost its score average.

Acknowledgements

I would like to thank **Professor Joseph Foudy** for his insight, guidance, and feedback that have helped make this thesis possible. Whether it was taking additional tests to approve my research for the IRB or sending my survey out to all of your classes so that I could collect data, your help has been an invaluable part of my thesis writing process. I'd also like to thank **Professor Taylor Phillips** for guiding me through the IRB approval process without which I would not have been able to collect data.

Additionally, I would like to thank **Professor Marti Subrahmanyam** for organizing this thesis program and the weekly seminars that were integral to developing my research skills. Thank you for checking in with me on the state of my thesis throughout the year.

Finally, I'd like to thank all my friends and students who participated in my survey and provided me with much needed data for my thesis, as well as my family for supporting me through this program for the year. I would not have been able to do it without your support.

Table of Contents

I.	Introduction.....	5
II.	Literature Review.....	6
III.	Hypotheses.....	10
IV.	Methodology.....	11
V.	Data Set.....	12
VI.	Results.....	14
	a. Regressions.....	14
	b. ANOVAs.....	19
VII.	Implications & Future Considerations.....	19
VIII.	Limitations of this study.....	22
IX.	Conclusion.....	22
X.	Bibliography.....	24
XI.	Appendix.....	25

I. Introduction

How much does going to college shape someone's personality? Are there some personalities that are better suited to success in higher education than others? Does being more extroverted in business school make or break your post-graduation career? These are all questions that are pondered by parents, students and educators alike, especially as education gets increasingly competitive every year. Parents all over the world invest thousands into education, ensuring their children always at the top of their class, always involved in multiple extracurriculars and always have a long-term career plan. On the other end, educators celebrate those students who make great contributions to their classes, become class leaders and excel in both studies and extracurriculars. Susan Cain, author of "Quiet" even goes as far as to say that society values extroverts the most, with schools and workplaces designed to be places of very high stimulation which are ideal for extroverts (Cain, 2013). In the midst of this, the quieter students are either overlooked, or told to be more like their extroverted colleagues. But what Susan Cain is arguing for is that introverted people have just as many valuable skills as extroverts, and they may even excel in some fields when compared to extroverts (Cain, 2013).

Given that our education systems and workplaces are very focused on team work and constant networking, do introverted people perform poorly overall? Not necessarily – in fact, Cain highlights many examples in her book of introverted people going on to be leaders in their field, CEOs of companies and celebrated professors around the world. When looking at business schools in particular, we notice that majority of classes are group-work based (more so than non-business schools), and grading is partly fulfilled by peer evaluations that in most cases favor the more outgoing members of the group. Given the highly stimulated environments in business schools, are introverts less suited to them? This paper finds support for Cain's thesis that extroversion is not predictive of success in school or the workplace, and tries to find out whether

there is any difference in success levels between extroverts and introverts in high-energy environments like business schools. Specifically, this thesis paper is going to try to find if there truly are any differences between the performance of extroverts and introverts at Stern, and what that could imply for the institution as a whole, in the context of NYU Stern. This would tell us whether business schools like NYU Stern favor a certain type of personality over another. For the purpose of this paper, ‘success’ is measured in terms of GPA, and other metrics like club involvement, leadership positions and social involvement are also measured. These additional metrics are measured to not only explain differences in GPA, but also explore the factors that would make a person an all-rounded student – the type, as Cain explains, is an extrovert ideal in the current Western society (Cain, 2013).

II. Literature Review

Interest in the relationship between personal attributes and academic success has existed for many years and has been researched as far back as the early 1900s. During this period, researchers were interested in determining the relationship between intelligence and academic success, with works from Binet and Simon (1916) aimed at measuring students’ intelligence as a proxy of their academic potential (Vedel & Poropat, 2017). Running parallel to these were another set of studies focused on personal aspects besides intelligence like “character” (Webb, 1915) and these studies often focused on how we motivated ourselves to do better (Vedel & Poropat, 2017). However, during these studies, researchers happened to find more correlations with personality and academic success, and hence started expanding into this area of research. After analyzing previous research in this field and running their own study on this subject area, researchers Vedel and Poropat found that 1) most of the personality-based research relied on the

use of the Big Five Personality index to determine the aspects of personality to be measured against academic success and 2) most studies used GPA (or the relevant academic grading system) as a measure of academic success (Vedel & Poropat, 2017). In their paper, Vedel and Poropat determined that of the five personality traits, *conscientiousness* was the most significant predictor of academic success across primary, secondary and tertiary education (Vedel & Poropat, 2017). They found that the more conscientiousness a student was, the more self-regulatory behavior he displayed - like keeping on task, goal-attainment and retaining information, which led to better academic success (Vedel & Poropat, 2017). More interestingly, these associations were stronger when rated by other people like parents or teachers about the students. *Neuroticism* only had a significant negative correlation in primary education; students with higher emotional stability tended to have more stable personalities but had lower fear of doing badly in school. Those who had lower emotional stability were more anxious, and high anxiety generally had negative effects on GPA. However, a low level of anxiety actually boosted academic performance as students showed a desire not to fail their classes. Other personality factors like *openness to new experiences* and *agreeableness* had positive correlations with academic success, especially in primary and secondary education. This indicates that those students who are better to get along with and inherently curious perform better in school. However, this relationship weakens when looking at university-level students, perhaps because there is less of a need to make a good impression on professors (increased class size, lower face-to-face interactions etc.). When looking at *extraversion*, there is no clear relationship that Vedel and Poropat could determine as this factor had the lowest number of significant correlations. The mixed responses led them to believe that places where learning involved a lot of peer-to-peer interactions were places extroverts would do better, because they are more noticeable and are

more likely to ask for help. This is especially helpful for students in primary education where a lot of the grades are based on the students' temperament rather than the actual activities they take part in. But Vedel and Poropat also proposed the idea that more extroverted students could possibly spend more time socializing than studying, and this may be a reason for lower GPAs as students continue progressing in their education.

The findings from Vedel & Poropat's study confirm some findings from previous studies on this subject. Vedel also looks specifically at the relationship between personality and tertiary academic performance using the Five Factor Model (FFM) indicators and GPA in university students. In her meta-analysis of previous studies, Vedel finds that what they have in common is that *conscientiousness* is the leading predictor of GPA with significant positive correlations (Vedel, 2017). However, the remaining four factors are a little more unstable over the multiple studies and aren't always significant. *Agreeableness* and *openness* were factors that were mostly positively correlated, and *neuroticism* was always negatively correlated, but these findings were not always significant (Vedel, 2017). *Extraversion*, our trait of interest, was the only factor that had no clear positive or negative correlations with academic performance (Vedel, 2017). What was novel about Vedel's approach with this meta-analysis was that this paper also broke the results down by major and looked at whether the major choice had any moderating effect on the findings. Since the studies were conducted by mostly psychology researchers, the majors were grouped into 'psychology' and 'other' majors. They found that conscientiousness was an even stronger predictor for GPA with psychology students, but this was not the case when considering the 'other' major (Vedel, 2017). This gives us some indication that the relationship between the five personality factors and measures of academic success (namely GPA) may also be dependent on major choice. What we can take away from this study is that even though conscientiousness

was an overall significant predictor of GPA, this relationship strengthens/weakens depending on major. So, when considering business undergraduate students, it would be interesting to see whether any other trait apart from conscientiousness has a significant relationship with academic success.

The link between personality and academic performance driven by major choice is something that is explicitly researched in Balsamo, Lauriola and Saggino's paper "Personality and College Major Choice: Which Come First?". Balsamo et al. found that of the five personality traits, *extraversion* and *conscientiousness* had an impact on college major choice (Balsamo et al., 2012). In this study, pre-university students were asked which academic field of study they would most likely pursue in college along with their personality traits. The researchers found significant predictive relationships between these two personality traits and the ultimate college major the student selected (Balsamo et al., 2012). An interesting finding was that groups that were more conscientious happened to be more introverted, while majority of groups that ranked high on extraversion ranked low in conscientiousness. Those students who were more conscientious broadly chose subject areas like humanities, applied and natural sciences, whereas groups who were more extroverted tended to choose subjects like economics/law, military studies and sports-sciences (Balsamo et al., 2012). Groups doing social sciences were lower on conscientiousness but ranked in the middle for extraversion, showing no clear trend in that trait (Balsamo et al., 2012). These results, while not robust enough to generalize for every single major and student in university, indicate that there is some relationship between personality and major choice. This suggests that some majors and academic programs may be predisposed to attracting students of a certain type of personality – and vice versa, with students being pre-

disposed to choose a field of study dependent on their personality (among many other important factors).

Now that we know different majors may be pre-disposed to attract students who have a certain set of personalities, is there a fundamental difference between these traits in students in business school when compared to non-business school students? Among other things, Lounsbury et al.'s paper looks at the relationship between the Big Five personality factors in undergraduate business students and compares that with undergraduate non-business students. In it they find that undergraduate business majors scored much higher on conscientiousness, extraversion and emotional stability (lower on neuroticism) when compared to non-business majors (Lounsbury et al., 2009). The paper's reasoning is that students do well in environments that closely match their personalities, and so students who are slightly more extroverted, more conscientious and more emotionally stable will do better in business schools than those who are not. While this study's results aren't a way of generalizing these attributes to all business undergraduate students around the world, this implies that the nature of business schools is different to that of non-business schools, and hence, so are the students they attract.

III. Hypothesis

Given the findings from the literature in this field, we can conclude a few things. We know that there is a link between some of our personality traits and how well we perform in school. We also know that there seems to be a difference in personality profiles depending on major choice. And when we combine those two findings, it suggests that some part of the differences in academic performance between students could be attributed to their personality traits.

What this paper is interested in is whether there is significant difference in academic performance between business and non-business students (due to their personality traits). Since the literature has found that business school students tend to be more extroverted, would we also find this pattern at NYU Stern when compared to the non-business schools in NYU? Moreover, would being more extroverted result in better academic performance in Stern than outside Stern? The main hypotheses for this paper are that 1) students are more extroverted in Stern than they are in the College of Arts and Science and 2) more extroverted students tend to perform better in Stern than less extroverted students. In order to test the proposed hypotheses, this paper is going to look at associations between extraversion level and a variety of measures like GPA, club involvement, leadership positions etc. Specifically, the paper will be looking at:

- Associations between extraversion and higher GPAs
- Associations between extraversion and higher number of leadership positions
- Associations between extraversion and higher campus involvement (like # of social club events they attend, involvement in Greek life etc.)
- Associations between extraversion and higher academic/professional-focused campus involvement (like research projects, leadership camps, professional development groups etc.)

Lastly, it would also be interesting to see whether students become more extroverted the longer they spend in business school, as a result of being in constant group settings in classes and projects throughout the year.

IV. Methodology

In order to collect data, a survey was distributed to students outlining questions on GPA, campus involvement and school affiliation. Participants were asked to provide their class year,

school, major, GPA range, the number of clubs they were a part of, the type of clubs they were a part of (social vs. academic/professional vs. hobby-based), and the number of leadership positions they held. Participants were also asked a set of questions that measured their personality. Personality data was recorded using the Big Five Inventory (BFI) measurement handbook from the International Personality Item Pool (IPIP) database of personality scales.¹ Specifically, I used the 20-item scale of surgency (or extraversion) from Goldberg's (1992) Big Five Factor Markers study, which was scored using a Likert scale of 1 to 5. Only attributes measuring extraversion were used for the purpose of this study. Statements measuring extraversion were added, while statements measuring introversion were reverse-scored to result in a score between 0 (lowest extraversion score) to 80 (highest extraversion score). This range also includes a base score of 40 was added to the raw scores to ensure the range did not include any negative numbers. The data set was analyzed and regressions on extraversion predicting GPA and other variables were run for both Stern and Non-Stern samples.

V. Data Set

A total of 136 responses to the survey were collected, and after cleaning the data about 122 responses could be used for analysis. The 14 responses were discarded due to incomplete survey responses or if the respondent had not given their consent to use their data. Majority of the respondents ($n = 95$) were from Stern, while those outside the business school only made up a fifth of the total population ($n = 27$). This distribution is important to keep in mind when looking at the data analysis as the Non-Stern sample is $n < 30$, which means there is a chance it

¹ <https://ipip.ori.org/newBigFive5broadKey.htm>

won't be normally distributed. Responses were segregated by school with categories of 'Stern' and 'Non-Stern'.

The overall distribution of both the GPA data and the extraversion scores were normal, though GPA data was skewed to the left, indicating majority of the scores were between 3.50 and 4.00. This was the same pattern for the Stern GPA and extraversion distribution (Figure 1 & 2).² However, the Non-Stern distribution for both GPA and extraversion, when plotted, don't look normal (as $n < 30$) (Figure 3 & 4). To see whether this sample was actually different from a normal distribution, I ran Shapiro-Wilk tests of normality on GPA and extraversion. The p-value for extraversion was > 0.05 (p-value = 0.24), and so we can assume normality in its distribution. The p-value for GPA was significant < 0.05 (p-value = 0.03) which meant that it was not normally distributed (something to keep in mind during the data analysis). Variances between both Stern and Non-Stern groups for extraversion were equal but were not equal for GPA. To bring out the differences for the relatively marginal effects in the regressions, variables like GPA, extraversions, number of clubs, leadership positions, and club-type membership were measured in log form.

Wanting to look at the differences between schools for the variables of interest, I ran independent two sample t-tests for extraversion and GPA. Interestingly, I found that the p-value for extraversion was 0.1 (p-value > 0.05) which meant that there was no true difference between extraversion means between Stern and Non-Stern. While this could be a sample-based error due to the relatively small number of Non-Stern responses, it still points to a difference from the literature research which found students in business school to be significantly more extroverted than their non-business counterparts, and goes against my second hypothesis. The p-value for

² See Appendix for all following graphs and tables

GPA was 0.01 ($p\text{-value} < 0.05$) which meant that there was a significant difference in GPA scores between schools, with GPAs being higher in Stern than outside Stern.

VI. Results

a. Regressions

i. *GPA x Extraversion*

Figure 5

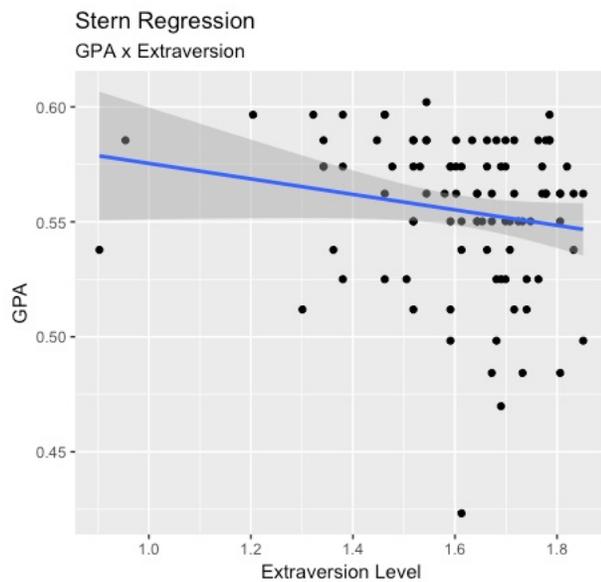
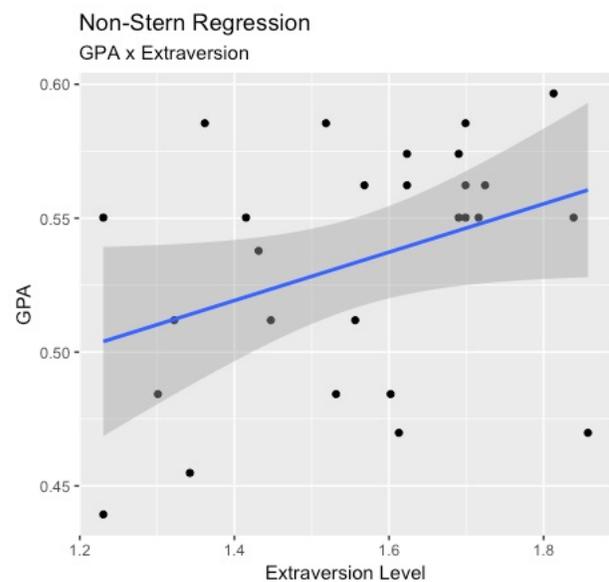


Figure 6



Regressions measuring the effect of extraversion on GPA were run for the overall population, as well as for the Stern and Non-Stern samples. Overall, there was no significant relationship between GPA and extraversion (Adj. R-squared = 0), but when breaking it down by school, this result changes. In the Stern sample, extraversion significantly affects GPA on a 10% significance level ($p\text{-value} = 0.08$). However, this relationship is negative (coef. = -0.03) – the opposite of what was hypothesized at the beginning of this paper. This means that higher extraversion scores result in lower GPA scores. I found the opposite for the Non-Stern sample; the regression

analysis showed that there is a significant relationship at the 10% level (p -value = 0.06), but this relationship is positive (coef. = 0.09). So higher the extraversion score, the higher the GPA outside Stern. The adjusted R-squared value was 0.02 and 0.1 respectively, indicating a stronger positive relationship in the Non-Stern sample than the negative relationship in the Stern sample.

ii. *Clubs x Extraversion*

Figure 7

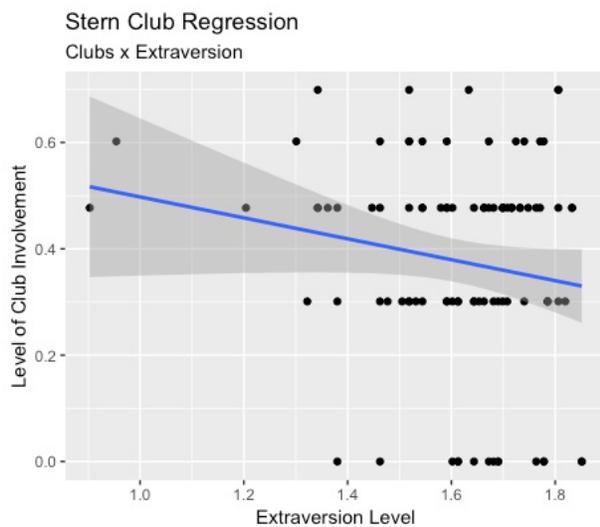
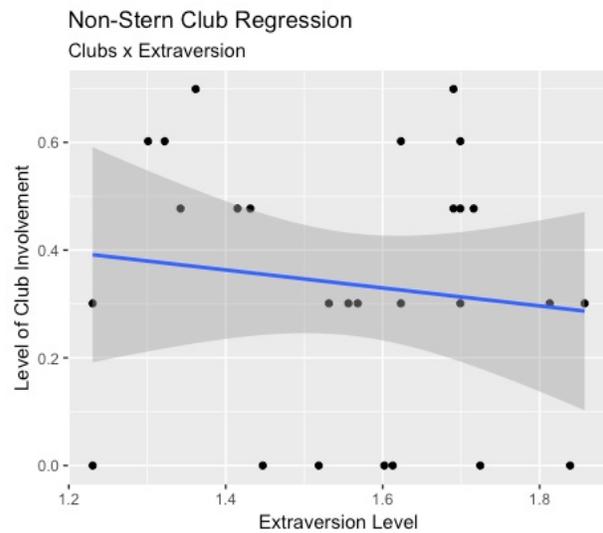


Figure 8



I was also interested in seeing how the extraversion aspect of personality affected our campus involvement, and whether more extroverted students tended to join more clubs. Given that club involvement is a large part of student life at Stern (if not across NYU) and that campus involvement is often used as a measure of success, I thought it would be useful to test this relationship. Overall, there was no significant relationship between the extraversion variable and the number of clubs a student joined, which I found surprising. When breaking it down by school, extraversion's effects on the number of clubs at Stern was significant at the 10% level (p -value = 0.09), but the relationship is negative (coef. = -0.2) (Figure 9 & 10). Hence, it suggests

that more extroverted people join fewer clubs, which I found a little unusual. It's useful to note that the adjusted R-squared value was about 0.02, suggesting a very weak relationship. In the Non-Stern sample, the negative relationship still persisted, although the p-value was not significant.

iii. *Leadership x Extraversion*

Looking at the number of leadership positions held by students (often another success metric), I ran a regression using extraversion as the independent variable. Overall, there were no significant results, although the relationship was positive. This positive relationship was present in both the Stern and Non-Stern samples, with the extraversion coefficient being higher for the Non-Stern sample. However, with negative R-square values, none of these regressions are apt to describe the relationship – which is better explained with a horizontal line (no correlation).

iv. *Social Involvement x Extraversion*

Breaking down club involvement further into the types of clubs students are part of, I looked at social clubs like fraternities and sororities. Overall, there was no significant relationship between social club involvement and extraversion, showing that membership to these clubs may be motivated by other factors and is not dependent on how outgoing we are. However, the relationship was positive, so in a significant sample higher extraversion levels would have led to higher social club memberships.

v. *Academic/Professional Involvement x Extraversion*

Figure 9

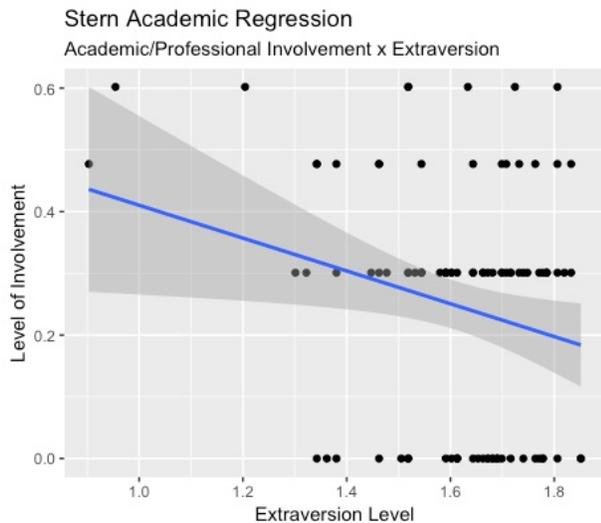
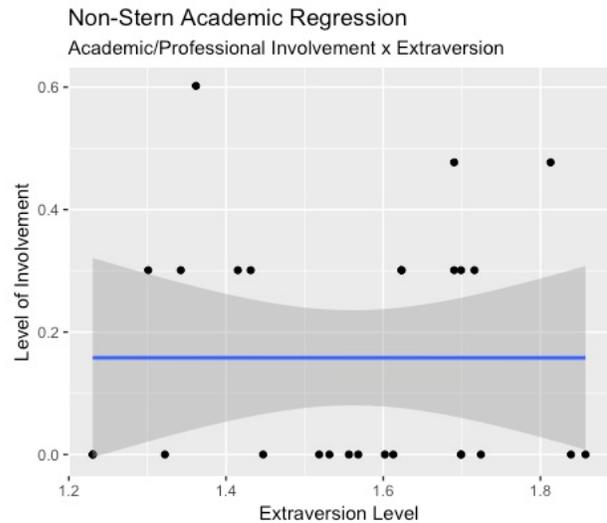


Figure 10



Next, I looked at academic and professional development club involvement against extraversion. Overall, there was a significant negative (coef. = $-.017$) relationship on the 10% level (p-value = 0.08) between these club memberships and extraversion. This relationship strengthens in the Stern sample (coef. = -0.27) – and the significance increases to the 5% level (p-value = 0.02) (Figure 11). This relationship was not present in the Non-Stern sample. What this suggests is that lower extraversion levels in students correspond to higher involvement in academic/professional development clubs in Stern.

vi. *Controlling for Club Involvement***Table 1: Regression Analysis for GPA x Extraversion with Control Variables**

Regression Analysis for GPA x Extraversion with Control Variables

Dependent variable:			
GPA x Extraversion Controlled Regressions			
	Overall Log GPA (1)	Stern Log GPA (2)	Non-Stern Log GPA (3)
Log Extraversion	0.016 (0.018)	-0.017 (0.019)	0.096** (0.045)
Leadership Positions	0.002 (0.017)	0.005 (0.017)	-0.028 (0.047)
Social Involvement	-0.053** (0.021)	-0.069*** (0.022)	-0.021 (0.057)
Academic/Professional Involvement	0.056*** (0.018)	0.025 (0.018)	0.120* (0.065)
Constant	0.517*** (0.030)	0.582*** (0.032)	0.374*** (0.071)
Observations	122	95	27
R2	0.144	0.172	0.279
Adjusted R2	0.115	0.135	0.148
Residual Std. Error	0.035 (df = 117)	0.031 (df = 90)	0.041 (df = 22)
F Statistic	4.917*** (df = 4; 117)	4.668*** (df = 4; 90)	2.131 (df = 4; 22)

Note: *p<0.1; **p<0.05; ***p<0.01

Now that I've seen the individual effects of extraversion on these club variables, I wanted to control for club involvement and see if the relationship between extraversion and GPA was significant. My reasoning behind this is that with more club involvement, students may have less time to focus on their studies which may alter the effects of the regression I ran earlier. So, running the regression again but controlling for leadership positions, social activity and academic/professional involvement, I found that overall, extraversion was not a significant predictor of GPA. However, both social involvement and academic involvement were significant

at the 5% and 1% levels respectively. Social activity was negatively correlated with GPA (coef. = -0.05) while academic involvement was positively correlated with GPA (coef. = 0.06). In Stern, only social activity was a significant (1% level) predictor of GPA and was also negatively correlated. However, in the Non-Stern sample, extraversion was a significant predictor (5% level), positively correlated with GPA (coef. ~ 0.1), so higher extraversion levels lead to higher GPAs. In this sample, academic involvement was also significant at the 10% level, and positively correlated with GPA.

b. ANOVAs

i. *Class-year differences in extraversion*

I was also curious to see whether there was any difference between the four class years in terms of their extraversion levels – especially if students happened to become more extroverted the longer they spent in college. I ran a one-way ANOVA for the overall population, as well as the Stern and Non-Stern samples. However, none of the results were significant, showing that there was no real difference in extraversion levels between the four class years.

VII. Implications & Future Considerations

The most interesting finding has been that in Stern, undergraduate students are not only as extroverted as students outside the business school, but they also perform worse the more extroverted they are. This is the exact opposite of the initial hypothesis suggested earlier in the paper – I had expected Stern students to be more extroverted in general, and the more extroverted to do better in classes that were heavily focused on group work, collaboration and peer evaluation. One possible explanation is that the more social students are, the less time they

have to focus on their studies, hence resulting in the negative correlation between extraversion and GPA. It could also be that the undergraduate program at Stern mimics the liberal arts program throughout NYU far more than the MBA program at Stern, and so doing the same tests on the MBA population may result in the hypothesized trend.

Another possible explanation could be that Stern students may prioritize other things like club involvement over keeping their GPAs very high, if that gives them a competitive advantage when it comes to recruiting for jobs and internships. In that case, more extroverted students could end up joining more clubs, leading to lower GPAs. However, we know from the data analysis that students who are more extroverted in Stern actually end up joining fewer clubs – as weak as the relationship may be. That seems surprising given that we'd expect more outgoing people to naturally be part of more clubs. The only explanation that could possibly explain this trend is that more extroverted students may spend more time with their existing social circles outside a club setting and may not feel the need to join clubs. However, more introverted students may be pushed to use clubs as a way of expanding their network.

Either way, what we can take away from this result is that the extraversion factor does not seem to be a deciding factor in one's success at Stern. Holding other factors (like ability and conscientiousness, among others) constant, both introverts and extroverts are almost equally propped up for success. This is a great take away for the university in general, signaling that there is a healthy competitive atmosphere in its business school, and its system does not favor one personality type over the other. This is also the case when it comes to leadership, as the results support the idea that you don't have to be more extroverted to necessarily be a leader. This is good news for all students, as their level of extraversion does not impact their ability to

be a leader, as well as for the university, as it improves its image if everyone from the quietest to the loudest student in the room have an equal opportunity to be a student leader.

Unlike expectations, there was no significant relationship between social involvement and extraversion levels. However, the significant relationship between extraversion and academic/professional involvement was an unusual find. Introverted students are more likely to join clubs that are lighter on social interaction, unlike their extroverted counterparts. The significance of this is that introverted students also do better in terms of GPA, either because they spend less time socializing (and hence have more time to study) or because they get more academic help from the types of clubs they join. This is also the trend we see in our original regression of extraversion and GPA showing that higher levels of extraversion lead to lower GPAs.

What is interesting is that outside Stern, the opposite is true in that higher extraversion actually correlates with higher GPAs. It seems that from the collected sample, those who were more extroverted tended to have better grades. Initially, this was attributed to class sizes outside Stern, as they tend to be much larger. I thought that larger classes would reward those who were more noticeable in class for participation (i.e. extroverts), and so they would have better grades – but this reasoning was too weak. With a closer examination of the sample, I found that there is split between humanities/social sciences and STEM majors, with humanities majors being more extroverted overall when compared to STEM majors. A possible explanation could be that it is more difficult to score in STEM classes when compared to humanities subjects, hence majority of the introvert sample has a lower GPA score than the more extroverted humanities sample.

VIII. Limitations of this study

There were several issues with this study that may have affected the results. Most significantly, the overall data set was skewed towards Stern respondents, and so the results are only really reflective of Stern student personalities. There were not enough respondents in the Non-Stern group (with fewer than 30 responses) and so the distribution of the group's GPA and extraversion were not normal. This also meant that it was not a good enough control variable against the Stern sample. Other issues include possible biases in the extraversion data due to self-assessment errors. There is always an issue with any self-assessment tool, as respondents could always over/underestimate their extraversion if they want to portray themselves in a certain way that seems acceptable by others. A way to get around this would have been to use peer evaluations of personality; however, that would not have been possible to do on such a large scale in a university setting. Similarly, there is also an issue of social desirability bias affecting responses in the survey, especially for things like GPA and club involvement. For example, respondents may be tempted to put higher GPAs than they currently have, or higher leadership positions to make themselves look better overall. Even though measures were taken to make the survey completely anonymous, questions about campus involvement or GPA may have still made respondents uncomfortable to answer truthfully. If this had any effect, some fields like GPA may have been overestimated.

IX. Conclusion

Overall, there seems to be no difference in the extraversion levels between the business and non-business schools here at NYU. Unlike what the literature review suggested, the students in Stern actually do worse the more extroverted they are. The opposite was true for the liberal

arts school, but we found that it was due to the nature of the students' majors that caused the difference. As the liberal arts school is far more diverse in terms of majors, perhaps it would be difficult to find trends even if there was enough data from the school. In that case, results for the Stern sample are a little more robust, as most students do very similar classes throughout their 4 years. Ultimately, the most important take away from the results has been that students do not need to go above and beyond to become more extroverted in order to do well in school, despite society's favorable view of the more outgoing. Other aspects like ability and conscientiousness are far better at predicting academic and extracurricular success than extraversion, and this should be good news for those concerned that they aren't extroverted enough. For the university, this is also good news because its admissions team is clearly not singling out a specific type of personality that they would like to have, and could boost its reputation as being a diverse educational institution.

X. Bibliography

- a. Vedel & Poropat (2017); Personality and Academic Performance; *Encyclopedia of Personality and Individual Differences*; DOI: [10.1007/978-3-319-28099-8_989-1](https://doi.org/10.1007/978-3-319-28099-8_989-1)
- b. Vedel, A. (2017), The Big Five and tertiary academic performance: A systematic review and meta-analysis; *Personality and Individual Differences*; DOI/Link: [10.1016/j.paid.2014.07.011](https://doi.org/10.1016/j.paid.2014.07.011)
- c. Balsamo, Michela, et al (2012), “Personality and College Major Choice: Which Come First?” *Psychology*, vol. 03, no. 05, pp. 399–405., doi:10.4236/psych.2012.35056.
- d. John W. Lounsbury, Ryan M. Smith, Jacob J. Levy, Frederick T. Leong & Lucy W. Gibson (2009) Personality Characteristics of Business Majors as Defined by the Big Five and Narrow Personality Traits, *Journal of Education for Business*, 84:4, 200-205, DOI: [10.3200/JOEB.84.4.200-205](https://doi.org/10.3200/JOEB.84.4.200-205)
- e. Cain, S. (2013). *Quiet: The power of introverts in a world that can't stop talking*. London: Penguin Books.
- f. Webb, E. (1915). *Character and intelligence: An attempt at an exact study of character*. Cambridge: University Press.
- g. Binet, A., & Simon, T. (1916). The development of intelligence in children (The Binet-Simon Scale) (E. S. Kite, Trans.). Baltimore, MD, US: Williams & Wilkins Co.
<http://dx.doi.org/10.1037/11069-000>
- h. Goldberg, L. R. (1992). The development of markers for the Big-Five factor structure. *Psychological Assessment*, 4(1), 26-42. <http://dx.doi.org/10.1037/1040-3590.4.1.26>
- i. <https://ipip.ori.org/newMultipleconstructs.htm>
- j. <https://ipip.ori.org/newBigFive5broadKey.htm>

XI. Appendix

Figure 1 & 2: Stern Data Set Distributions of GPA and Extraversion

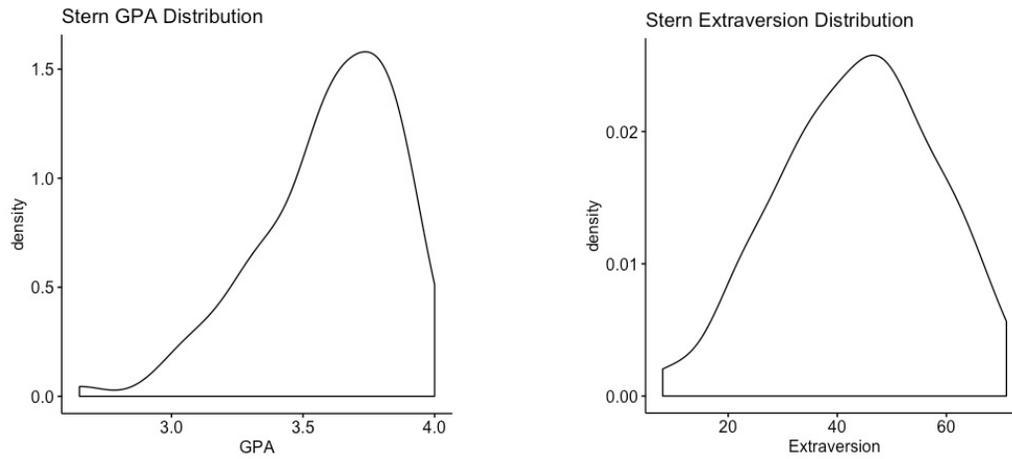


Figure 3 & 4: Non-Stern Data Set Distributions of GPA and Extraversion

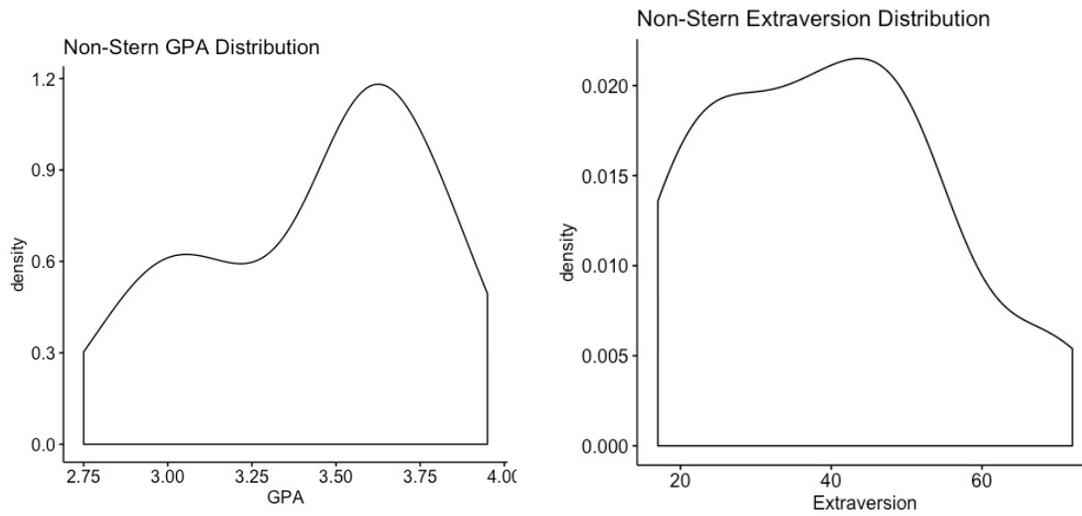


Table 2: Regression Analysis for GPA x Extraversion

Regression Analysis for GPA x Extraversion			
Dependent variable:			
GPA x Extraversion Regressions			
	Overall Log GPA (1)	Stern Log GPA (2)	Non-Stern Log GPA (3)
Log Extraversion	0.001 (0.019)	-0.034* (0.019)	0.090* (0.046)
Constant	0.548*** (0.031)	0.609*** (0.031)	0.393*** (0.072)
Observations	122	95	27
R2	0.00003	0.032	0.135
Adjusted R2	-0.008	0.021	0.101
Residual Std. Error	0.037 (df = 120)	0.033 (df = 93)	0.042 (df = 25)
F Statistic	0.003 (df = 1; 120)	3.041* (df = 1; 93)	3.911* (df = 1; 25)

Note: *p<0.1; **p<0.05; ***p<0.01

Table 3: Regression Analysis for Stern Club Involvement x Extraversion

Regression Analysis for Stern Club Involvement x Extraversion

	Dependent variable:			
	Stern Club Involvement x Extraversion Regressions Overall Club Involvement (1)	LOGLEAD Leadership Positions (2)	LOGSOC Social Involvement (3)	LOGACAD Academic/Professional Involvement (4)
Log Extraversion	-0.197* (0.117)	0.078 (0.121)	0.145 (0.091)	-0.266** (0.115)
Constant	0.694*** (0.190)	0.089 (0.196)	-0.134 (0.147)	0.676*** (0.186)
Observations	95	95	95	95
R2	0.029	0.004	0.027	0.055
Adjusted R2	0.019	-0.006	0.016	0.045
Residual Std. Error (df = 93)	0.198	0.205	0.153	0.194
F Statistic (df = 1; 93)	2.814*	0.419	2.567	5.379**

Note:

*p<0.1; **p<0.05; ***p<0.01

Survey Questions

1. Which school in NYU do you go to?
2. What is your class year?
3. For the question below, rank each statement on the scale of 1 to 5, with 1 = disagree and 5 = agree, based on how much you identify with the statement.

I am the life of the party	I generally have little to say	I make friends easily	I generally keep my feelings to myself
I don't talk a lot	I talk to a lot of different people at parties	I find it difficult to approach others	I take charge
I feel comfortable around people I've never met before	I don't like to draw attention to myself	I know how to captivate people	I am a very private person
I keep in the background	I don't mind being the center of attention	I often feel uncomfortable around others	I feel at ease with people
I am generally the one to start conversations	I am generally quiet around strangers	I am skilled at handling social situations	I wait for others to lead the way

4. What is your GPA?
5. What is your major? If you have more than one, please list the one most important to you.
6. If you are involved in any clubs/extracurricular groups on campus, how many are you involved in?
7. How many leadership positions do you hold?
8. Out of the groups you are part of, how many of them have to do with purely social activities (eg. getting involved in Greek life or a cultural groups)?
9. Out of the groups you are part of, how many of them have to do with purely academic/professional development activities (eg. research, academic clubs, casing clubs, networking clubs etc.)?