Journal of Psychological Type®

> Using 9 years of student data across all majors at an undergraduate university, Judging types generally had higher average GPAs than Perceiving types. With the exception of Business students, all Introverted, Feeling, and Judging types had higher than average GPAs.

The Relationship Between MBTI® and Academic Performance: A Study Across Academic Disciplines

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ABSTRACT

Several studies have considered the relationship between personality type and academic performance. These studies were generally narrow, as they considered only student major choice and academic performance in a single course or in a single major. The present study reinvestigated the relationship between the MBTI® instrument, major choice, and performance across all academic disciplines at a medium-sized, private university. Judging types generally had higher average GPAs than Perceiving types, and, with the exception of Business students, all Introverted, Feeling, and Judging types had higher than average GPAs.

Note: For the Myers-Briggs Type Indicator® (MBTI®) instrument, the eight preference categories are the following: Extraversion (E) versus Introversion (I), Sensing (S) versus Intuition (N), Thinking (T) versus Feeling (F), Judging (J) versus Perceiving (P).

INTRODUCTION

Since its inception, the MBTI instrument has been used as a measure of personality type in numerous studies. The majority of these studies have considered whether individuals' personality type, as identified by the MBTI instrument, affects a variety of traits and qualities. Within this literature, researchers have examined whether individuals' MBTI type significantly relates to their academic performance and choice of undergraduate

major. These studies are generally narrow, as they consider student major choice and academic performance in a single course or in a single major (Harasym, Leong, Juschka, Lucier, & Lorscheider, 1995; O'Brien, Bernold, & Akroyd, 1998; Oswick & Barber, 1998; Tharp, 1992). The results of these studies are also limited, as they pertain only to the course or academic major selected for the study.

This study employs 9 years of student data and offers a comprehensive study of the relationship between MBTI type, major choice, and academic performance across all undergraduate majors offered at Elon University, a private school located in North Carolina. In 2007, Elon's total undergraduate student body was approximately 5,000 students, of whom 41% were male, 10% were minority, and 32% were in-state students. Using these data, a series of research questions were explored. Specifically, are some MBTI types found in significantly greater proportions in certain majors compared to others, and do they achieve a higher GPA than other types? Further, do some MBTI types academically outperform others within specific majors? And, at the school level, do some MBTI types academically outperform others across all academic disciplines?

Considering time frame, sample size, and number of majors, a study of this magnitude has not been conducted. The results of this study can provide practical information for academic advisors, as well as faculty at undergraduate schools. For example, if some MBTI types are found to academically outperform others in particular majors, academic advisors can make this information available to their advisees who are undecided in their major and/or provide academic tutoring. Such results can potentially shed light on a variety of relationships between personality type and undergraduate academic work.

DATA DESCRIPTION

To test the relationships between personality type and academic performance at the undergraduate level, this study incorporated 6,280 student observations from Elon University. Each observation included the student's MBTI type, academic major, and grade point average (GPA) at graduation. The data were from students who graduated from Elon between 1998 and 2007 across all majors offered. Of the 6,280 observations, approximately 40% were male and 60% were female, approximately 10% were minority, and approx-

Table 1. Observations by Year.

Year	Number of Observations
1998	488
1999	542
2000	536
2001	535
2002	657
2003	623
2004	673
2005	698
2006	765
2007	763
Total	**6,280**

imately 93% of the students were 24 years old or younger. The students took the MBTI Form G during their freshman orientation at Elon. TABLE 1 shows the number of student observations by year. The increase in the number of observations from year to year can be attributed to the growth in the student body, as well as to the increased availability of the MBTI data over time. Further, TABLE 2 provides a summary of percentages of each personality type found in the Elon population.

ANALYSIS AND RESULTS

Three primary research questions were tested: (1) Are some MBTI types found in significantly greater proportions in some majors than in others, and do they achieve a higher GPA than other types? (2) Do some MBTI types academically outperform others within specific majors? (3) At the school level, do some MBTI types academically outperform others across all academic disciplines?

In order to test question 2; we performed 16 different tests of means for each major. Given that this study considered 40 different majors and some of these majors had relatively small sample sizes, the majors were grouped into different academic areas to increase the sample sizes and make the number of tests conducted manageable. However, there is no accepted convention for creating these academic areas, and slight differences depend on the academic institution. For example, although economics is generally considered a social science, when an economics department is housed in a

Table 2. Percentage of MBTI® Types at Elon University (1998–2007).

The Sixteen Complete Types

ISTJ	ISFJ	INFJ	INTJ
n = 412	n = 408	n = 180	n = 92
(6.56%)	(6.50%)	(2.87%)	(1.46%)
+ + + + +	+ + + + +	+ + +	+
+ +	+ +		

ISTP	ISFP	INFP	INTP
n = 224	n = 228	n = 304	n = 169
(3.57%)	(3.63%)	(4.84%)	(2.69%)
+ + + +	+ + + +	+ + + + +	+ + +

ESTP	ESFP	ENFP	ENTP
n = 416	n = 520	n = 968	n = 452
(6.62%)	(8.28%)	(15.41%)	(7.20%)
+ + + + +	+ + + + +	+ + + + +	+ + + + +
+ +	+ + +	+ + + + +	+ +
		+ + + + +	

ESTJ	ESFJ	ENFJ	ENTJ
n = 577	n = 748	n = 406	n = 176
(9.19%)	(11.91%)	(6.46%)	(2.80%)
+ + + + +	+ + + + +	+ + + + +	+ + +
+ + + +	+ + + + +	+	
	+ +		

Dichotomous Preferences

E	n = 4,263	(67.88%)
I	n = 2,017	(32.12%)
S	n = 3,533	(56.26%)
N	n = 2,747	(43.74%)
T	n = 2,518	(40.10%)
F	n = 3,762	(59.90%)
J	n = 2,999	(47.75%)
P	n = 3,281	(52.25%)

Pairs and Temperaments

IJ	n = 1,092	(17.39%)
IP	n = 925	(14.73%)
EP	n = 2,356	(37.52%)
EJ	n = 1,907	(30.37%)
ST	n = 1,629	(25.94%)
SF	n = 1,904	(30.32%)
NF	n = 1,858	(29.59%)
NT	n = 889	(14.16%)
SJ	n = 2,145	(34.16%)
SP	n = 1,388	(22.10%)
NP	n = 1,893	(30.14%)
NJ	n = 854	(13.60%)
TJ	n = 1,257	(20.02%)
TP	n = 1,261	(20.08%)
FP	n = 2,020	(32.17%)
FJ	n = 1,742	(27.74%)
IN	n = 745	(11.86%)
EN	n = 2,002	(31.88%)
IS	n = 1,272	(20.25%)
ES	n = 2,261	(36.00%)
ET	n = 1,621	(25.81%)
EF	n = 2,642	(42.07%)
IF	n = 1,120	(17.83%)
IT	n = 897	(14.28%)

Jungian Types (E)

	n	%
E–TJ	753	11.99
E–FJ	1154	18.38
ES–P	936	14.90
EN–P	1420	22.61

Jungian Types (I)

	n	%
I–TP	393	6.26
I–FP	532	8.47
IS–J	820	13.06
IN–J	272	4.33

Dominant Types

	n	%
Dt. T	1146	18.25
Dt. F	1686	26.85
Dt. S	1756	27.96
Dt. N	1692	26.94

N = 6,280

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business school, the attitudes of academic advisors, faculty, and students can be affected such that economics is perceived as "one of the business school majors" and not a major traditionally found in the arts and sciences. Given that this study examined the relationship between personality type and academic performance at Elon University, it is important that the majors be grouped in a way that is consistent with the university's attitudes and perceptions. With guidance from Elon's academic advising office, the 40 majors were assigned to six academic areas that Elon has traditionally used: Communication, Business, Education, Fine Arts, Social Sciences, and Hard Sciences. A list of the majors included in each area is provided in TABLE 3. If a student had double majored in the same academic area (e.g., accounting and business), the student's data were considered part of the data for that academic area. However, if a student double majored in different academic areas (for example, history and business), that student's data were removed from the data set.

For each of the six academic areas considered, the percentage and number of students reporting each MBTI type, as well as the average graduating GPA by MBTI type are provided in TABLES 4–9. To test questions 1 and 2, a series of t-tests were conducted. Specifically, t-tests were used to determine if the percentage of any of the MBTI types was significantly higher or lower in the six different academic areas compared to the population percentages in TABLE 2. Further, a series of t-tests was used to test if any of the MBTI types had a significantly higher or lower average GPA compared to the average GPA of the remaining 15 MBTI types within each of the six academic areas. For both of these tests, the t-tests significance at the 95% and the 99% confidence levels are noted.

Communication. A statistically greater percentage of ENFPs were found in Communication compared to the Elon student body; however, this type had a significantly lower average GPA than other MBTI types. Further, three out of the four Feeling and Judging types

Table 3. Majors by Area of Academic Study.

Communication
• Journalism
• Communications

Business
• Business Administration
• Economics
• Accounting

Education
• Social Science Education
• Math Education
• Physical Education
• Leisure Sports Management
• Elementary Education
• Middle Grades Education
• Sports Medicine
• Health Education
• Music Education
• Athletic Training
• Science Education

Fine Arts
• Art
• Dance
• English
• French
• Music
• Music Performance
• Music Theatre
• Philosophy
• Religious Studies
• Spanish
• Theater Arts
• Theater Studies
• Theater Design and Production

Social Sciences
• Political Science
• Psychology
• Sociology
• History

Hard Sciences
• Engineering
• Math
• Chemistry
• Biology
• Computer Sciences

Table 4. Communication Results.

The Sixteen Complete Types

ISTJ	ISFJ	INFJ	INTJ
n = 39	n = 46	n = 30	n = 17
(3.27%)	(3.86%)	(2.51%)	(1.42%)
GPA = 3.20*	GPA = 3.24**	GPA = 3.37**	GPA = 3.24
+ + +	+ + + +	+ + +	+

ISTP	ISFP	INFP	INTP
n = 30	n = 31	n = 60	n = 30
(2.51%)	(2.60%)	(5.03%)	(2.51%)
GPA = 3.08	GPA = 3.00	GPA = 3.07	GPA = 3.01
+ + +	+ + +	+ + + + +	+ + +

ESTP	ESFP	ENFP+	ENTP
n = 60	n = 104	n = 259	n = 101
(5.03%)	(8.72%)	(21.71%)	(8.47%)
GPA = 2.90°°	GPA = 2.95°°	GPA = 3.02°	GPA = 2.98°
+ + + + +	+ + + + +	+ + + + +	+ + + + +
	+ + + +	+ + + + +	+ + +
		+ + + + +	
		+ + + + +	
		+ +	

ESTJ	ESFJ	ENFJ	ENTJ
n = 114	n = 129	n = 97	n = 46
(9.56%)	(10.81%)	(8.13%)	(3.86%)
GPA = 3.09	GPA = 3.12	GPA = 3.19**	GPA = 3.04
+ + + + +	+ + + + +	+ + + + +	+ + + +
+ + + + +	+ + + + +	+ + +	
	+		

†   Type is overrepresented relative to population at 95% confidence
°   Type is underrepresented relative to population at 95% confidence
‡   Type is overrepresented relative to population at 99% confidence
*   Type has a significantly greater average GPA than the average GPA of the academic area at 95% confidence
◊   Type has a significantly lower average GPA than the average GPA of the academic area at 95% confidence
** Type has a significantly greater average GPA than the average GPA of the academic area at 99% confidence
◊◊ Type has a significantly lower average GPA than the average GPA of the academic area at 99% confidence

Dichotomous Preferences

E	n = 910	(76.28%)
I	n = 283	(23.72%)
S	n = 553	(46.35%)
N	n = 640	(53.65%)
T	n = 437	(36.63%)
F	n = 756	(63.37%)
J	n = 518	(43.42%)
P	n = 675	(56.58%)

Pairs and Temperaments

IJ	n = 132	(11.06%)
IP	n = 151	(12.66%)
EP	n = 524	(43.92%)
EJ	n = 386	(32.36%)
ST	n = 243	(20.37%)
SF	n = 310	(25.98%)
NF	n = 446	(37.38%)
NT	n = 194	(16.26%)
SJ	n = 328	(27.49%)
SP	n = 225	(18.86%)
NP	n = 450	(37.72%)
NJ	n = 190	(15.93%)
TJ	n = 216	(18.11%)
TP	n = 221	(18.52%)
FP	n = 454	(38.06%)
FJ	n = 302	(25.31%)
IN	n = 137	(11.48%)
EN	n = 503	(42.16%)
IS	n = 146	(12.24%)
ES	n = 407	(34.12%)
ET	n = 321	(26.91%)
EF	n = 589	(49.37%)
IF	n = 167	(14.00%)
IT	n = 116	(9.72%)

Jungian Types (E)

	n	%
E–TJ	160	13.41
E–FJ	226	18.94
ES–P	164	13.75
EN–P	360	30.18

Jungian Types (I)

	n	%
I–TP	60	5.03
I–FP	91	7.63
IS–J	85	7.12
IN–J	47	3.94

Dominant Types

	n	%
Dt. T	220	18.44
Dt. F	317	26.57
Dt. S	249	20.87
Dt. N	407	34.12

N = 1,193

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Table 5. Business Results.

The Sixteen Complete Types

ISTJ	ISFJ	INFJ	INTJ
n = 137	*n* = 96	*n* = 20	*n* = 14
(8.72%)	(6.11%)	(1.27%)	(0.89%)
GPA = 3.15**	GPA = 3.18**	GPA = 3.14	GPA = 3.12
+ + + + +	+ + + + +	+	+
+ + + +	+		

ISTP	ISFP	INFP	INTP
n = 84	*n* = 58	*n* = 39	*n* = 43
(5.35%)	(3.69%)	(2.48%)	(2.74%)
GPA = 2.95°°	GPA = 3.06	GPA = 2.89°°	GPA = 3.01
+ + + + +	+ + + +	+ +	+ + +

ESTP†	ESFP	ENFP°	ENTP
n = 175	*n* = 152	*n* = 147	*n* = 121
(11.14%)	(9.68%)	(9.36%)	(7.70%)
GPA = 2.90°°	GPA = 3.03	GPA = 3.02	GPA = 2.91°°
+ + + + +	+ + + + +	+ + + + +	+ + + + +
+ + + + +	+ + + + +	+ + + +	+ + +
+			

ESTJ†	ESFJ	ENFJ	ENTJ
n = 221	*n* = 158	*n* = 63	*n* = 43
(14.07%)	(10.06%)	(4.01%)	(2.74%)
GPA = 3.16**	GPA = 3.21**	GPA = 3.16*	GPA = 3.07
+ + + + +	+ + + + +	+ + + +	+ + +
+ + + + +	+ + + + +		
+ + + +			

† Type is overrepresented relative to population at 95% confidence
° Type is underrepresented relative to population at 95% confidence
+ Type is overrepresented relative to population at 99% confidence
* Type has a significantly greater average GPA than the average GPA of the academic area at 95% confidence
◊ Type has a significantly lower average GPA than the average GPA of the academic area at 95% confidence
** Type has a significantly greater average GPA than the average GPA of the academic area at 99% confidence
◊◊ Type has a significantly lower average GPA than the average GPA of the academic area at 99% confidence

Dichotomous Preferences

E	*n* = 1,080	(68.75%)
I	*n* = 491	(31.25%)
S	*n* = 1,081	(68.81%)
N	*n* = 490	(31.19%)
T	*n* = 838	(53.34%)
F	*n* = 733	(46.66%)
J	*n* = 752	(47.87%)
P	*n* = 819	(52.13%)

Pairs and Temperaments

IJ	*n* = 267	(17.00%)
IP	*n* = 224	(14.26%)
EP	*n* = 595	(37.87%)
EJ	*n* = 485	(30.87%)
ST	*n* = 617	(39.27%)
SF	*n* = 464	(29.54%)
NF	*n* = 269	(17.12%)
NT	*n* = 221	(14.07%)
SJ	*n* = 612	(38.96%)
SP	*n* = 469	(29.85%)
NP	*n* = 350	(22.28%)
NJ	*n* = 140	(8.91%)
TJ	*n* = 415	(26.42%)
TP	*n* = 423	(26.93%)
FP	*n* = 396	(25.21%)
FJ	*n* = 337	(21.45%)
IN	*n* = 116	(7.38%)
EN	*n* = 374	(23.81%)
IS	*n* = 375	(23.87%)
ES	*n* = 706	(44.94%)
ET	*n* = 560	(35.65%)
EF	*n* = 520	(33.10%)
IF	*n* = 213	(13.56%)
IT	*n* = 278	(17.70%)

Jungian Types (E)

	n	%
E–TJ	264	16.80
E–FJ	221	14.07
ES–P	327	20.81
EN–P	268	17.06

Jungian Types (I)

	n	%
I–TP	127	8.08
I–FP	97	6.17
IS–J	233	14.83
IN–J	34	2.16

Dominant Types

	n	%
Dt. T	391	24.89
Dt. F	318	20.24
Dt. S	560	35.65
Dt. N	302	19.22

N = 1,571

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Table 6. Education Results.

The Sixteen Complete Types

ISTJ	ISFJ	INFJ	INTJ
n = 94	*n* = 124	*n* = 27	*n* = 9
(7.76%)	(10.23%)	(2.23%)	(0.74%)
GPA = 3.26	GPA = 3.40**	GPA = 3.47**	GPA = 3.20
+ + + + +	+ + + + +	+ +	+
+ + +	+ + + + +		

ISTP	ISFP	INFP	INTP
n = 24	*n* = 60	*n* = 46	*n* = 16
(1.98%)	(4.95%)	(3.80%)	(1.32%)
GPA = 3.06	GPA = 3.17	GPA = 3.25	GPA = 2.99°
+ +	+ + + + +	+ + + +	+

ESTP	ESFP	ENFP	ENTP
n = 67	*n* = 123	*n* = 157	*n* = 44
(5.53%)	(10.15%)	(12.95%)	(3.63%)
GPA = 3.01°°	GPA = 3.06°°	GPA = 3.14°	GPA = 3.00°°
+ + + + +	+ + + + +	+ + + + +	+ + + +
+	+ + + + +	+ + + + +	
		+ + +	

ESTJ	ESFJ[‡]	ENFJ	ENTJ
n = 86	*n* = 223	*n* = 86	*n* = 26
(7.10%)	(18.40%)	(7.10%)	(2.15%)
GPA = 3.18	GPA = 3.28**	GPA = 3.34**	GPA = 3.08
+ + + + +	+ + + + +	+ + + + +	+ +
+ +	+ + + + +	+ +	
	+ + + + +		
	+ + +		

† Type is overrepresented relative to population at 95% confidence
° Type is underrepresented relative to population at 95% confidence
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* Type has a significantly greater average GPA than the average GPA of the academic area at 95% confidence
◊ Type has a significantly lower average GPA than the average GPA of the academic area at 95% confidence
** Type has a significantly greater average GPA than the average GPA of the academic area at 99% confidence
◊◊ Type has a significantly lower average GPA than the average GPA of the academic area at 99% confidence

Dichotomous Preferences

E	*n* = 812	(67.00%)
I	*n* = 400	(33.00%)
S	*n* = 801	(66.09%)
N	*n* = 411	(33.91%)
T	*n* = 366	(30.20%)
F	*n* = 846	(69.80%)
J	*n* = 675	(55.69%)
P	*n* = 537	(44.31%)

Pairs and Temperaments

IJ	*n* = 254	(20.96%)
IP	*n* = 146	(12.05%)
EP	*n* = 391	(32.26%)
EJ	*n* = 421	(34.74%)
ST	*n* = 271	(22.36%)
SF	*n* = 530	(43.73%)
NF	*n* = 316	(26.07%)
NT	*n* = 95	(7.84%)
SJ	*n* = 527	(43.48%)
SP	*n* = 274	(22.61%)
NP	*n* = 263	(21.70%)
NJ	*n* = 148	(12.21%)
TJ	*n* = 215	(17.74%)
TP	*n* = 151	(12.46%)
FP	*n* = 386	(31.85%)
FJ	*n* = 460	(37.95%)
IN	*n* = 98	(8.09%)
EN	*n* = 313	(25.83%)
IS	*n* = 302	(24.92%)
ES	*n* = 499	(41.17%)
ET	*n* = 223	(18.40%)
EF	*n* = 589	(48.60%)
IF	*n* = 257	(21.20%)
IT	*n* = 143	(11.80%)

Jungian Types (E)

	n	%
E–TJ	112	9.24
E–FJ	309	25.50
ES–P	190	15.68
EN–P	201	16.58

Jungian Types (I)

	n	%
I–TP	40	3.30
I–FP	106	8.75
IS–J	218	17.99
IN–J	36	2.97

Dominant Types

	n	%
Dt. T	152	12.54
Dt. F	415	34.24
Dt. S	408	33.66
Dt. N	237	19.55

N = 1,212

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Table 7. Fine Arts Results.

The Sixteen Complete Types

ISTJ	ISFJ	INFJ	INTJ
$n = 28$	$n = 34$	$n = 37$	$n = 18$
(4.08%)	(4.96%)	(5.39%)	(2.62%)
GPA = 3.18	GPA = 3.36*	GPA = 3.38*	GPA = 3.28
+ + + +	+ + + + +	+ + + + +	+ + +

ISTP	ISFP	INFP[†]	INTP
$n = 13$	$n = 13$	$n = 76$	$n = 27$
(1.90%)	(1.90%)	(11.08%)	(3.94%)
GPA = 3.22	GPA = 3.04	GPA = 3.14	GPA = 3.15
+ +	+ +	+ + + + +	+ + + +
		+ + + + +	
		+	

ESTP	ESFP	ENFP[‡]	ENTP
$n = 23$	$n = 22$	$n = 180$	$n = 54$
(3.35%)	(3.21%)	(26.24%)	(7.87%)
GPA = 3.04°	GPA = 3.15	GPA = 3.19	GPA = 3.14
+ + +	+ + +	+ + + + +	+ + + + +
		+ + + + +	+ + +
		+ + + + +	
		+ + + + +	
		+ + + + +	
		+	

ESTJ	ESFJ	ENFJ	ENTJ
$n = 15$	$n = 60$	$n = 64$	$n = 22$
(2.19%)	(8.75%)	(9.33%)	(3.21%)
GPA = 3.19	GPA = 3.25	GPA = 3.44**	GPA = 3.27
+ +	+ + + + +	+ + + + +	+ + +
	+ + + +	+ + + +	

† Type is overrepresented relative to population at 95% confidence
° Type is underrepresented relative to population at 95% confidence
‡ Type is overrepresented relative to population at 99% confidence
* Type has a significantly greater average GPA than the average GPA of the academic area at 95% confidence
◊ Type has a significantly lower average GPA than the average GPA of the academic area at 95% confidence
** Type has a significantly greater average GPA than the average GPA of the academic area at 99% confidence
◊◊ Type has a significantly lower average GPA than the average GPA of the academic area at 99% confidence

Dichotomous Preferences

E	$n = 440$	(64.14%)
I	$n = 246$	(35.86%)
S	$n = 208$	(30.32%)
N	$n = 478$	(69.68%)
T	$n = 200$	(29.15%)
F	$n = 486$	(70.85%)
J	$n = 278$	(40.52%)
P	$n = 408$	(59.48%)

Pairs and Temperaments

IJ	$n = 117$	(17.06%)
IP	$n = 129$	(18.80%)
EP	$n = 279$	(40.67%)
EJ	$n = 161$	(23.47%)
ST	$n = 79$	(11.52%)
SF	$n = 129$	(18.80%)
NF	$n = 357$	(52.04%)
NT	$n = 121$	(17.64%)
SJ	$n = 137$	(19.97%)
SP	$n = 71$	(10.35%)
NP	$n = 337$	(49.13%)
NJ	$n = 141$	(20.55%)
TJ	$n = 83$	(12.10%)
TP	$n = 117$	(17.06%)
FP	$n = 291$	(42.42%)
FJ	$n = 195$	(28.43%)
IN	$n = 158$	(23.03%)
EN	$n = 320$	(46.65%)
IS	$n = 88$	(12.83%)
ES	$n = 120$	(17.49%)
ET	$n = 114$	(16.62%)
EF	$n = 326$	(47.52%)
IF	$n = 160$	(23.32%)
IT	$n = 86$	(12.54%)

Jungian Types (E)

	n	%
E–TJ	37	5.39
E–FJ	124	18.08
ES–P	45	6.56
EN–P	234	34.11

Jungian Types (I)

	n	%
I–TP	40	5.83
I–FP	89	12.97
IS–J	62	9.04
IN–J	55	8.02

Dominant Types

	n	%
Dt. T	77	11.22
Dt. F	213	31.05
Dt. S	107	15.60
Dt. N	289	42.13

N = 686

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Table 8. Social Science Results.

The Sixteen Complete Types

ISTJ	ISFJ	INFJ	INTJ
n = 72	*n* = 79	*n* = 49	*n* = 19
(5.84%)	(6.41%)	(3.98%)	(1.54%)
GPA = 3.10	GPA = 3.21*	GPA = 3.42**	GPA = 3.25
+ + + + +	+ + + + +	+ + + +	+ +
+	+		

ISTP	ISFP	INFP	INTP
n = 43	*n* = 51	*n* = 68	*n* = 33
(3.49%)	(4.14%)	(5.52%)	(2.68%)
GPA = 3.06	GPA = 3.06	GPA = 3.09	GPA = 3.05
+ + +	+ + + +	+ + + + +	+ + +
		+	

ESTP	ESFP	ENFP	ENTP
n = 73	*n* = 101	*n* = 190	*n* = 99
(5.93%)	(8.20%)	(15.42%)	(8.04%)
GPA = 2.97°°	GPA = 3.06	GPA = 3.08	GPA = 3.00°°
+ + + + +	+ + + + +	+ + + + +	+ + + + +
+	+ + +	+ + + +	+ + +
		+ + + + +	

ESTJ	ESFJ	ENFJ	ENTJ
n = 105	*n* = 139	*n* = 85	*n* = 26
(8.52%)	(11.28%)	(6.90%)	(2.11%)
GPA = 3.08	GPA = 3.21*	GPA = 3.29**	GPA = 3.20
+ + + + +	+ + + + +	+ + + + +	+ +
+ + + +	+ + + + +	+ +	
	+		

† Type is overrepresented relative to population at 95% confidence
° Type is underrepresented relative to population at 95% confidence
+ Type is overrepresented relative to population at 99% confidence
* Type has a significantly greater average GPA than the average GPA of the academic area at 95% confidence
◊ Type has a significantly lower average GPA than the average GPA of the academic area at 95% confidence
** Type has a significantly greater average GPA than the average GPA of the academic area at 99% confidence
◊◊ Type has a significantly lower average GPA than the average GPA of the academic area at 99% confidence

Dichotomous Preferences

E	*n* = 818	(66.40%)
I	*n* = 414	(33.60%)
S	*n* = 663	(53.81%)
N	*n* = 569	(46.19%)
T	*n* = 470	(38.15%)
F	*n* = 762	(61.85%)
J	*n* = 574	(46.59%)
P	*n* = 658	(53.41%)

Pairs and Temperaments

IJ	*n* = 219	(17.78%)
IP	*n* = 195	(15.83%)
EP	*n* = 463	(37.58%)
EJ	*n* = 355	(28.81%)
ST	*n* = 293	(23.78%)
SF	*n* = 370	(30.03%)
NF	*n* = 392	(31.82%)
NT	*n* = 177	(14.37%)
SJ	*n* = 395	(32.06%)
SP	*n* = 268	(21.75%)
NP	*n* = 390	(31.66%)
NJ	*n* = 179	(14.53%)
TJ	*n* = 222	(18.02%)
TP	*n* = 248	(20.13%)
FP	*n* = 410	(33.28%)
FJ	*n* = 352	(28.57%)
IN	*n* = 169	(13.72%)
EN	*n* = 400	(32.47%)
IS	*n* = 245	(19.89%)
ES	*n* = 418	(33.93%)
ET	*n* = 303	(24.59%)
EF	*n* = 515	(41.80%)
IF	*n* = 247	(20.05%)
IT	*n* = 167	(13.56%)

Jungian Types (E)

	n	*%*
E–TJ	131	10.63
E–FJ	224	18.18
ES–P	174	14.12
EN–P	289	23.46

Jungian Types (I)

	n	*%*
I–TP	76	6.17
I–FP	119	9.66
IS–J	151	12.26
IN–J	68	5.52

Dominant Types

	n	*%*
Dt. T	207	16.80
Dt. F	343	27.84
Dt. S	325	26.38
Dt. N	357	28.98

N = 1,232

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Table 9. Hard Science Results.

The Sixteen Complete Types

ISTJ	ISFJ	INFJ	INTJ
n = 42	n = 29	n = 17	n = 15
(10.88%)	(7.51%)	(4.40%)	(3.89%)
GPA = 3.31	GPA = 3.41*	GPA = 3.53**	GPA = 3.25
+ + + + +	+ + + + +	+ + + +	+ + + +
+ + + + +	+ + +		
+			

ISTP	ISFP	INFP	INTP
n = 30	n = 15	n = 15	n = 20
(7.77%)	(3.89%)	(3.89%)	(5.18%)
GPA = 3.27	GPA = 3.18	GPA = 3.07	GPA = 3.01°°
+ + + + +	+ + + +	+ + + +	+ + + + +
+ + +			

ESTP	ESFP	ENFP	ENTP
n = 18	n = 18	n = 35	n = 33
(4.66%)	(4.66%)	(9.07%)	(8.55%)
GPA = 3.11	GPA = 3.28	GPA = 3.16	GPA = 3.18
+ + + + +	+ + + + +	+ + + + +	+ + + + +
		+ + +	+ + + +

ESTJ	ESFJ	ENFJ	ENTJ
n = 36	n = 39	n = 11	n = 13
(9.33%)	(10.10%)	(2.85%)	(3.37%)
GPA = 3.11°	GPA = 3.37*	GPA = 3.27	GPA = 3.28
+ + + +	+ + + + +	+ + +	+ +
+ + + +	+ + + + +		

† Type is overrepresented relative to population at 95% confidence
° Type is underrepresented relative to population at 95% confidence
+ Type is overrepresented relative to population at 99% confidence
* Type has a significantly greater average GPA than the average GPA of the academic area at 95% confidence
◊ Type has a significantly lower average GPA than the average GPA of the academic area at 95% confidence
** Type has a significantly greater average GPA than the average GPA of the academic area at 99% confidence
◊◊ Type has a significantly lower average GPA than the average GPA of the academic area at 99% confidence

Dichotomous Preferences

E	n = 203	(52.59%)
I	n = 183	(47.41%)
S	n = 227	(58.81%)
N	n = 159	(41.19%)
T	n = 207	(53.63%)
F	n = 179	(46.37%)
J	n = 202	(52.33%)
P	n = 184	(47.67%)

Pairs and Temperaments

IJ	n = 103	(26.68%)
IP	n = 80	(20.73%)
EP	n = 104	(26.94%)
EJ	n = 99	(25.65%)
ST	n = 126	(32.64%)
SF	n = 101	(26.17%)
NF	n = 78	(20.21%)
NT	n = 81	(20.98%)
SJ	n = 146	(37.82%)
SP	n = 81	(20.98%)
NP	n = 103	(26.68%)
NJ	n = 56	(14.51%)
TJ	n = 106	(27.46%)
TP	n = 101	(26.17%)
FP	n = 83	(21.50%)
FJ	n = 96	(24.87%)
IN	n = 67	(17.36%)
EN	n = 92	(23.83%)
IS	n = 116	(30.05%)
ES	n = 111	(28.76%)
ET	n = 100	(25.91%)
EF	n = 103	(26.68%)
IF	n = 76	(19.69%)
IT	n = 107	(27.72%)

Jungian Types (E)

	n	%
E–TJ	49	12.69
E–FJ	50	12.95
ES–P	36	9.33
EN–P	68	17.62

Jungian Types (I)

	n	%
I–TP	50	12.95
I–FP	30	7.77
IS–J	71	18.39
IN–J	32	8.29

Dominant Types

	n	%
Dt. T	99	25.65
Dt. F	80	20.73
Dt. S	107	27.72
Dt. N	100	25.91

N = 386

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had a higher average GPA, and all four of the Extraverted and Perceiving types had a significantly lower average GPA. Finally, with one exception, Introverted and Judging types had significantly higher average GPAs.

Business. A significantly greater percentage of ESTJs and ESTPs and a significantly lower percentage of ENFPs were found in the Business area. In academic performance, ESTJs had a significantly higher average GPA, but ESTPs had a significantly lower GPA. The GPA of the ENFPs did not differ significantly from the average. Further, all four of the SJ types had statistically higher average GPAs, and all of the Thinking and Perceiving types had a lower average GPA, three of the four to a statistically significant degree.

Education. The percentage of ESFJs was significantly higher in Education, and this type had a statistically higher average GPA. Additionally, all Feeling and Judging types had a significantly higher average GPA and all Perceiving types had a lower average GPA, with five out of eight Perceiving types having a significantly lower average.

Fine Arts. A significantly greater percentage of ENFPs and INFPs were found in Fine Arts, but neither type performed significantly differently from the average GPA. However, all four of the Feeling and Judging types had higher average GPAs, with three of the four types having a significantly higher average. Further, approximately 52% of the students were Intuitive and Feeling types, which agrees with Stephens (1973), who found that approximately 55% of senior art students at Memphis State University had the same personality preferences.

Social Sciences and Hard Sciences. In the Hard Sciences and Social Sciences, no dominant types were found. However, the two Sensing, Feeling, and Judging types had statistically higher average GPAs. In the Social Sciences, all four Feeling and Judging types had significantly higher average GPAs, and all Thinking and Perceiving types had lower average GPAs, two of which were statistically lower.

School-Level Results. Finally, a series of tests were conducted to test the third research question: Specifically, do any of the MBTI types outperform others at the school level? In other words, do some MBTI types have a higher average GPA across all majors and academic areas? To explore this question, *t*-tests were employed to test if any of the MBTI types had a significantly higher or lower average GPA at the school level. TABLE 10 summarizes these tests.

At the school level, all four Introverted and Judging types and all four Feeling and Judging types had statistically higher average GPAs. Further, six of the eight Perceiving types had significantly lower average GPAs, and all Extraverted and Perceiving types had significantly lower average GPAs.

DISCUSSION

The results suggest several significant relationships between personality type, undergraduate major choice, and academic performance. The broad results indicate that the students with Intuitive, Feeling, and Perceiving preferences were more attracted to the fine arts and students with preferences for Extraversion, Sensing, and Thinking were drawn to the majors offered in the business school. Although some MBTI types were significantly more or less attracted to particular academic areas, these types did not necessarily achieve higher average GPAs. In other words, an MBTI type that was drawn to a particular academic area did not necessarily perform better than other types.

In academic performance, the findings at the school level were similar to the results by academic area. At both levels, Judging types generally had higher average GPAs. With the exception of Business students, all Introverted, Feeling, and Judging types outperformed others at both levels. The Perceiving types generally had lower average GPAs at both levels. Similar results have been found in past research, as Swope and Schmitt (2006) found that Judging types performed significantly better than Perceiving types in the economics major, and Tharp (1992) concluded that Judging types earned higher grades and Perceiving types lower grades in an introductory physiology course. Further, Schurr and Ruble (1988) stated that the evaluation of achievement is most strongly related to the Judging–Perceiving preference scale.

TABLE 11 provides a summary of the major findings in this study by MBTI type. The objective of TABLE 11 is to provide general, reference information for academic advisors and faculty about the different MBTI types and academic performance at the undergraduate level.

Two limitations to this study should be noted. First, the GPA data represent the graduating, cumulative average GPA across not only a student's major, but also his or her general studies requirements. At Elon, a student's graduating GPA represents approximately half of his or her major coursework and half of the student's general studies coursework. As a result, the average GPAs

Table 10. GPA Tests by Type: School Level.

The Sixteen Complete Types

ISTJ	ISFJ	INFJ	INTJ
n = 412	*n* = 408	*n* = 180	*n* = 92
(6.65%)	(6.50%)	(2.87%)	(1.46%)
GPA = 3.19**	GPA = 3.29**	GPA = 3.39**	GPA = 3.23*
+ + + + +	+ + + + +	+ + +	+
+ +	+ +		

ISTP	ISFP	INFP	INTP
n = 224	*n* = 228	*n* = 304	*n* = 169
(3.57%)	(3.63%)	(4.84%)	(2.69%)
GPA = 3.06°°	GPA = 3.09	GPA = 3.10	GPA = 3.04°°
+ + + +	+ + + +	+ + + + +	+ + +

ESTP	ESFP	ENFP	ENTP
n = 416	*n* = 520	*n* = 968	*n* = 452
(6.62%)	(8.28%)	(15.41%)	(7.20%)
GPA = 2.95°°	GPA = 3.04°°	GPA = 3.09°°	GPA = 3.00°°
+ + + + +	+ + + + +	+ + + + +	+ + + + +
+ +	+ + +	+ + + + +	+ +
		+ + + + +	

ESTJ	ESFJ	ENFJ	ENTJ
n = 577	*n* = 748	*n* = 406	*n* = 176
(9.19%)	(11.91%)	(6.46%)	(2.80%)
GPA = 3.13	GPA = 3.23*	GPA = 3.28*	GPA = 3.12
+ + + + +	+ + + + +	+ + + + +	+ + +
+ + + +	+ + + + +	+	
	+ +		

† Type is overrepresented relative to population at 95% confidence
° Type is underrepresented relative to population at 95% confidence
‡ Type is overrepresented relative to population at 99% confidence
* Type has a significantly greater average GPA than the average GPA of the academic area at 95% confidence
◇ Type has a significantly lower average GPA than the average GPA of the academic area at 95% confidence
** Type has a significantly greater average GPA than the average GPA of the academic area at 99% confidence
◇◇ Type has a significantly lower average GPA than the average GPA of the academic area at 99% confidence

Dichotomous Preferences

E	*n* = 4,263	(67.88%)
I	*n* = 2,017	(32.12%)
S	*n* = 3,533	(56.26%)
N	*n* = 2,747	(43.74%)
T	*n* = 2,518	(40.10%)
F	*n* = 3,762	(59.90%)
J	*n* = 2,999	(47.75%)
P	*n* = 3,281	(52.25%)

Pairs and Temperaments

IJ	*n* = 1,092	(17.39%)
IP	*n* = 925	(14.73%)
EP	*n* = 2,356	(37.52%)
EJ	*n* = 1,907	(30.37%)
ST	*n* = 1,629	(25.94%)
SF	*n* = 1,904	(30.32%)
NF	*n* = 1,858	(29.59%)
NT	*n* = 889	(14.16%)
SJ	*n* = 2,145	(34.16%)
SP	*n* = 1,388	(22.10%)
NP	*n* = 1,893	(30.14%)
NJ	*n* = 854	(13.60%)
TJ	*n* = 1,257	(20.02%)
TP	*n* = 1,261	(20.08%)
FP	*n* = 2,020	(32.17%)
FJ	*n* = 1,742	(27.74%)
IN	*n* = 745	(11.86%)
EN	*n* = 2,002	(31.88%)
IS	*n* = 1,272	(20.25%)
ES	*n* = 2,261	(36.00%)
ET	*n* = 1,621	(25.81%)
EF	*n* = 2,642	(42.07%)
IF	*n* = 1,120	(17.83%)
IT	*n* = 897	(14.28%)

Jungian Types (E)

	n	%
E–TJ	753	11.99
E–FJ	1154	18.38
ES–P	936	14.90
EN–P	1420	22.61

Jungian Types (I)

	n	%
I–TP	393	6.26
I–FP	532	8.47
IS–J	820	13.06
IN–J	272	4.33

Dominant Types

	n	%
Dt. T	1146	18.25
Dt. F	1686	26.85
Dt. S	1756	27.96
Dt. N	1692	26.94

N = 6,280

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Table 11. Summary of Findings by MBTI® Type.

ISTJ	This type has a significantly higher GPA as a Business Major and Communication Major.
ISFJ	This type has a significantly higher GPA in all six academic areas: Business Major, Communication Major, Education Major, Fine Arts Major, Social Science Major, and Hard Science Major.
INFJ	This type has a significantly higher GPA in five of the six academic areas: Business Major, Education Major, Fine Arts Major, Social Science Major, and Hard Science Major.
INTJ	This type was not associated with choice of major or academic achievement.
ISTP	This type has a significantly lower GPA as a Communication Major.
ISFP	This type was not associated with choice of major or academic achievement.
INFP	A significantly larger percentage of INFP types are attracted to the Fine Arts Major.
INTP	This type has a significantly lower GPA as an Education Major and Hard Science Major.
ESTP	There is a significantly larger percentage of ESTP types with a Business Major; however, their GPA within that major is significantly lower. This type has a significantly lower GPA as a Communication Major, Education Major, Fine Arts Major, and Social Science Major.
ESFP	This type has a significantly lower GPA as a Communication Major and Education Major.
ENFP	There is a significantly larger percentage of ENFP types with a Communication Major, however, their GPA within that major is significantly lower. There is a significantly smaller percentage of ENFP types with a Business Major. This type has a significantly lower GPA as an Education Major. There is a significantly larger group of ENFP types with a Fine Arts Major.
ENTP	This type has a significantly lower GPA as a Communication Major, Business Major, Education Major and Social Science Major.
ESTJ	There is a significantly larger percentage of ESTJ types with a Business Major, and their GPA is significantly higher. This type has a significantly lower GPA as a Hard Science Major.
ESFJ	This type has a significantly higher GPA as a Business Major, Social Science Major, and Hard Science Major. There is a significantly larger group of ESFJ types with an Education Major, and their GPA is significantly higher.
ENFJ	This type has a significantly higher GPA as a Communication Major, Business Major, Education Major, Fine Arts Major, and Social Science Major.
ENTJ	This type was not associated with choice of major or academic achievement.

in this study are reflective of student performance in both areas. Second, academic advisors need to recognize that although high GPAs are valuable to graduates in work and graduate school applications, an MBTI type that earns a higher average GPA in a particular major does not necessarily enjoy that major more than others. Also, academic advisors should recognize that strong academic performance does not necessarily signal a deeper passion for the coursework when making recommendations.

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