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Program Selection among Pre-Service Teachers: MBTI Profiles within a College of Education

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This study examined the relationship College of Education programs selected by pre-service teachers and their personality traits. Using the Myers-Briggs Type Indicator (MBTI) 368, pre-service teachers in 5 different programs were assessed. Twenty-eight percent of Elementary program students favored the Sensing, Feeling, Judging typology with a mental function SF. While ECE pre-service students were inclined toward Sensing, Feeling and Judging (SFJ) typology they also favored Extraversion, Intuition, Feeling, Judging (ENFJ). Alternatively, Special Education pre-service students preferred Introversion, Intuition, Thinking, and Judging (INTJ). Graduate students in the Education Leadership program had a strong preference for Extraversion, Sensing, Thinking and Judging (ESTJ), while students in the Masters of Arts in Teaching program had no significant type. These findings suggest that at least four groups of teacher education students self-select to a particular program depending upon their type. Implications for the results for teacher-training are discussed.

Keywords: Personality; Myers-Briggs; Pre-Service Students; College of Education

Introduction

Research studies have identified correlations between teacher effectiveness and student achievement (e.g., Copple & Bredekamp, 2010; Darling-Hammond, 1999; Rivkin, Hanushek, & Kain, 2005; Rockoff, 2004; Sanders & Horn, 1995). Although these studies demonstrate some mixed findings, correlations were found to exist between student achievement and, teachers' dispositions, articulation and classroom management skills, content matter preparation, and the number of years of teaching. In each of their own ways, these factors contribute to teacher effectiveness and greater student learning. The importance of the classroom teacher for enhancing student achievement was highlighted by Sanders and Horn (1998) using the Tennessee Value-Added Assessment System and later replicated using databases from Dallas, Texas. In summary, studies find teaching effectiveness to be a major determinant of student learning. It appears as though students who are assigned to ineffective teachers have significantly lower gains in achievement compared to those students assigned to highly effective teachers (Sanders & Rivers, 1996, p. 21).

But what makes for a highly effective teacher? Certainly, as Brandsford & Darling-Hammond (2006) note, teaching effectiveness can be enhanced through improved teacher education, certification status, and years of experience. However, in this paper, we examine the personality traits that student teachers bring to their programs before they set out on any formal training. Knowledge of students' personality traits is important for teacher-educators.

Studies over the past forty years relating to teachers' personality traits have produced generally positive results (Rushton, Jackson, & Richard, 2007). However, there is consistent evidence that a positive relationship exists between student learning and teachers who display such strengths as *flexibility*, *creativity* and *adaptability* (Berliner & Biddle, 1995; Rushton Smith & Knoop, 2006). Results of one study demonstrated that educators awarded the honor of "Teacher of the Year" by their school boards were viewed as being *perceptive*, *open to new ideas*, *intuitive*, and embodying a range of teaching strategies and interactive styles (Rushton et al., 2006). These findings are consistent with other research on effective teaching, suggesting successful teachers are able to adjust their teaching to suit the varying needs of different students and the demands of different instructional goals, topics and methods (Marzano, Pickering, & Pollock, 2001).

In this paper we will explore the Myers-Briggs "Types" of students entering one College of Education (COE). Our purpose was to determine how pre-service teachers' personality traits differ by their choice of program. We first provide a context for the study by reviewing the relevant research on psychological type theory and its application to career choices and the field of education. We then discuss our methodology and findings and conclude with a discussion of the implications of this study in the broader context of teacher preparation.

Psychological Type Theory

Psychological type theory has been found to support the connection between individual differences in personality profiles and particular professional career choices. Rooted in the work of Jung (1971), the Myers-Briggs Type Indicator (MBTI) is a 166 item self-report inventory (G Form) based on four bipolar dimensions. Each scale represents a continuum of a particular trait. Once scored, a four-by-four matrix describes 16 individual *Types*, each differentiated with unique characteristics and understanding of how: 1) we are either oriented to the outer world of people, or, are oriented internally by ideas, thoughts and feelings (Extraversion-Introversion); 2) we either gather information from the world around us using our five senses, or understand the world from a more intuitive self (Sensing-Intui-

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tion); 3) we make decisions based on global impersonal truths or the feelings and values of others (Thinking- Feeling); and 4) we either connect with the outside world through a more highly organized and decisive manner, or, are open to seeing what life's events brings us (Judging-Perceiving). In summary, the Myers-Briggs Type Indicator reveals a person's *psychological preference for consistency and enduring patterns of how the world is viewed*, *how information is collected and interpreted*, *how decisions are made*, *and how individuals interact with the world* (Rushton et al., 2007, p. 433).

Kent and Fisher (1997) indicate that the MBTI is uniquely suited to applications in teaching and learning in the field of education when examining personality self-description. Martin (1997) postulates that each of the four preferences "interact(s) in dynamic and complex ways that can tell you much about who you are and how you approach the world" (p. 7). Fairhurst and Fairhurst (1995) suggest that understanding one's own personality Type is an important part of the student teacher learning process. They indicate that understanding the difference between the teacher's own personality characteristics and their students' personality can be beneficial when attempting to improve students' learning and achievement scores.

Although criticisms have been made by Costa and McRae (1982) and others that the four MBTI measure four of the five major dimensions of the Five-Factor Model, McCrae and Costa (1989) concluded "that the results are generalizable from the FFI to the MBTI within a broader, more commonly shared conceptual framework" (p. 17). Until recently, no study using the Five Factor model has been completed on student teachers' personality traits. Decker and Rimm-Kaufman (2005), however, did view the beliefs of 379 pre-service students at the University of Virginia regarding teaching and concluded that those individuals who reported themselves as being "open and/or less conscientious" were more likely to be concerned with their student's sense of autonomy and not as concerned with maintaining classroom discipline.

Myers-Briggs and Teacher Education

The Myers-Briggs Type Indicator has been used extensively in recent years in the field of education. Rushton et al. (2006; 2007) examined quality teachers as defined as those exceptional educators who had been awarded either *Teacher of the Year* and/or were members of the "Florida League of Teachers." Both groups of teachers had higher scores on the Extraverted, Intuitive, Feelings and Perceivers types (ENFP). This countered Lawrence's pioneering work (1979, 2009), in which he examined more than 5000 American teachers and discovered that their modal type was ESFJ. ESFJ types tend to be patient, loyal and highly dedicated. They are not noted for their originality or willingness to be risk-takers. They are not necessarily creative teachers, preferring to follow the establishment, keep order and maintain a sense of warmth. The ENFP *Teacher of the Year* profile suggests someone who is outgoing, enjoys connecting with people, is intuitive, flexible, open-minded, and often looking for ways to improve the system. Lawrence's (1979) original work unfortunately did not consider the grade level or the particular program that the teachers had graduated from (i.e., Elementary Education, Special Education, Early Childhood Educaiton, Educational Leadership etc.).

Others purported that close to 50% of elementary teachers they examined had a preference for both Sensing (S) and Judging (J). They also noted that there was a higher preference for the SF characteristics, leaning toward the ISFJ elementary education profile (Macdaid, McCaulley, & Kainz, 1986). Sears, Kennedy, Kaye, & Gail (1997) explored differences in elementary and high school pre-service teachers. After examining 1281 teachers, they noted that although both groups had preferences toward SFJ, high-school pre-service teachers leaned toward Extraversion (E) and the elementary pre-service educators had a tendency toward introversion (I).

Other work in education using the MBTI has been concerned with the exploration of how the pre-service mentor relationship can be enhanced (Grindler & Straton, 1990; Sprague, 1997), how the classroom learning environment is configured depending upon the Myers-Briggs typology (Meisgeier & Richardson, 1996), and the effect of teachers' specific teaching styles on students' learning styles (Fairhurst & Fairhurst, 1995; Pankratius, 1997).

This study examines the Myers-Briggs Types of pre-service teachers entering five different programs within one college of education. It thereby by implication sought to learn about these students' personality characteristics as measured by the MBTI. Through this case study we sought to gain a greater understanding of the personalities of students who are attracted to different programs and to thereby identify the strengths and needs of students in this one college. The question addressed is, are there differences in the Types (MBTI) of students entering: 1) early childhood education; 2) elementary education; 3) special education; 4) educational leadership; and 5) Master of Arts teaching certification programs? In considering the results, we then discuss implication of these findings for the strengths and weakness of a particular student Type attending different programs.

Method

Participants

Participants were 368 students drawn from five different program areas at a college of education in a small university in the southeastern United States. All students were asked to volunteer their time to complete the 166 forced choice items on the MBTI Form G. The undergraduate students pursuing degrees fell into one of five categories: 1) early childhood education (8.9%; n = 33); 2) the elementary education program (37.2%; n = 137), and 3) the special education program (11.4%; n = 42). The graduate students were enrolled in either the educational leadership program (10%; n = 37) or in a consecutive Masters of Arts in Teaching certification program (32.3%; n = 119). Undergraduate participants ranged in age between approximately 21 and 45 years with most between the ages of 21 and 29 years. The groups were predominately female (97%) and White (98%) with English as their home language (98%).

Procedure and Measures

Based on Jungian psychological principles, the Myers Briggs Type Inventory (MBTI) is a self-report assessment, which measure four aspects of an individual's personality along four bi-polar dimensions. The dimensions indicate preferences as to how the world is viewed, how information is collected and interpreted, how decisions are made, and how lifestyle choices are lived out (Martin, 1997). The scales are: Extraversion versus Introversion, Sensing versus Intuition, Thinking versus Feeling, and Judging versus Perceiving. Each function pair (i.e.,

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I-E) is continuous in nature and although an individual may score toward one end of the scale this does not preclude them from acting in ways that support the opposite mental function. There are, therefore, 16 possible combinations of the four dimensions that represent different personality inclinations. Dimensions can be further delineated into functions pairs sensing and thinking (ST), sensing and feeling (SF), intuition and feeling (NF), and intuition and thinking (NT). As reported in a meta-analytic reliability generalization study on the MBTI by Capraro & Capraro (2005), test-retest and internal consistency reliability estimates are described as acceptable to strong across studies, and have varied by context. The mean Cronbach alpha coefficient for the full scale across the studies they reviewed is .816 (SD = .082), while the mean test-retest reliability coefficient is .813 (SD = .098). Construct validity of the MBTI has been studied by Devito (1985) and by Myers and McCauley (1989), who found correlations among MBTI ratings, self-assessment of participants' own MBTI type, and behaviors reflective of MBTI constructs. Factor analysis conducted on the MBTI by Thompson and Borrello (1986) show discrete factors.

Over the past 6 years the MBTI was often administered as part of the course content. Specifically, as part of a classroom management course, all students were asked to take the MBTI as part of the course content. In those cases where students were not enrolled in courses taught by the instructors, other faculty would approach us, as in the case with the special education students, or we approached them (i.e., as in the case with the educational leadership students) to give a presentation on Type Theory. All students, after completing the questionnaire, were given a 3-hour seminar on Type Theory and classroom practices.

Analyses and Results

The MBTI results were analyzed using PASW 18.0 and Quantitative Skills statistical software. The data included the frequency and percentages of responses for the full sample (N = 368) and by each program for each MBTI main type (of 16 possible types), for each sub type function pairs (ST, SF, NF or NT), and for Extraversion or Introversion sub-type. A set of χ^2 tests of independence generated were examined differences in participants' main MBTI types by program, mental cognitive sub-types by program, and extraversion/introversion sub-types by program.

Seven of the tests of main MBTI type by program were significant: ISTP (χ^2 = 18.831, p = .001), ESTJ (χ^2 = 23.292, p = .000), ISFJ (χ = 19.324, p = .001), ESFJ (χ^2 = 10.498, p = .033), ENFJ (χ^2 = 10.861, p = .028), INTJ (χ^2 = 37.096, p = .000), ENTJ (χ^2 = 12.343, p = .015). Three of the mental cognition type-by-program tests were significant: ST (Sensing/Thinking (χ^2 = 24.598, p = .000)[1], SF (Sensing/Feeling χ^2 = 22.912, p = .000), NT (Intuiting/Thinking χ^2 = 15.627, p = .004) (see **Table 1**). There were no program differences by extraversion/introversion.

Table 1.
Percent of MBTI main types and sub-types by program samples.

Type	Program					
	Eled	Spec	Edld	Echd	Mat	Percentage
	N = 137	N = 42	N = 37	N = 33	N = 119	of full sample
ISTJ	4.37	2.38	16.22	0.00	3.36	4.62
ISTP**	0.72	9.53	0.00	9.09	0.84	2.45
ESTP	0.72	0.00	0.00	0.00	1.68	0.82
ESTJ***	1.46	19.04	16.22	0.00	8.40	7.07
ISFJ**	20.44	4.76	0.00	27.28	10.93	14.13
ISFP	2.92	0.00	0.00	0.00	0.00	1.08
ESFP	4.37	9.53	8.10	9.09	10.93	7.88
ESFJ*	18.97	9.53	0.00	9.09	15.97	14.13
INFJ	6.56	7.14	0.00	9.09	5.04	5.71
INFP	2.92	0.00	0.00	0.00	7.56	3.53
ENFP	13.86	2.38	16.22	9.09	13.45	12.23
ENFJ*	13.13	7.14	13.51	18.18	3.36	9.78
INTJ***	0.72	21.43	0.00	0.00	5.04	4.35
INTP	2.92	0.00	10.81	0.00	2.52	2.98
ENTP	2.19	4.76	0.00	0.00	1.68	1.90
ENTJ*	3.64	2.38	18.92	9.09	9.24	7.34
Total	100.00	100.00	100.00	100.00	100.00	100.00
E	58.39	54.76	72.97	54.55	64.71	68.14
I	41.61	45.24	27.03	45.45	35.29	38.86
Total	100.00	100.00	100.00	100.00	100.00	100.00
ST**	7.30	30.95	32.43	9.09	14.28	14.94
SF***	46.72	23.81	8.11	45.46	37.81	37.23
NF	36.49	16.67	29.73	36.36	29.42	31.25
NT**	9.49	28.57	29.73	9.09	18.49	16.58
Total	100.00	100.00	100.00	100.000	100.00	100.00

Note: Eled = Elementary Education. Spec = Special Education. Edld = Educational Leadership. Echd = Early Childhood Education. Mat = Master of Arts in Teaching. ST = Sensing/Thinking. SF = Sensing/Feeling. NF = Intuition/Feeling. NT = Intuition/Thinking. E = Extrovert. I = Introvert. Statistics are percentage of program sample unless otherwise specified. *p < .05, **p < .01, ***p < .001.

[1]Some researchers may prefer exact tests over chi-square in some of these analyses. Simulation studies show that chi-square performs well regardless of the observed frequency however (Roscoe & Byars, 1971), and our study does not fulfill the assumption of fixed marginal values used by the exact tests. For the reader's interest however, exact tests did not change the interpretation of the results. df = 4, N = 368.

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Post-Hoc Analyses

Where χ^2 tests were significant, a "stopping procedure" (Markowski & Markowski, 2009) was used to test the relative contribution of each program to the χ^2 statistic for each type. In this method, the independent variables (in this case, program type) are manually removed (i.e., by conducting a new test without that variable) one by one, beginning with the variable with the largest differences between observed and expected counts.[2] As each largest-contributing variable is removed, the χ^2 statistic is re-examined. The procedure is complete when the final iteration shows no significant χ^2 statistic. Remaining variables are therefore not significant contributors to the model. This method is an objective way of identifying cells that are important for further analysis (Markowski & Markowski, 2009). **Tables 2** and **3** show iterations for the significant tests. Our interpretation of results utilizes Bonferroni adjustments to control for the risk of Type I error.

Discussion

The first theoretically interesting finding is that more than twenty-eight percent of participants in the full (N = 368) sample were allocated to either ISFJ (14.13%) or ESFJ (14.13%) main types—a finding that supports conclusions about the preferences of the typical profile of American school teachers (Lawrence, 1979, 2009; Macdaid et al., 1986; and Sears et al., 1997). The post-hoc tests confirmed this trend. Students enrolled in the elementary education program contributed most to the ISFJ type and the ESFJ type (28.26%). We found that when the other group of teachers of younger children (the early childhood education majors) were also removed from the model for ISFJ, it was no longer significant.

Another interesting finding, however, is that early childhood education and elementary education majors also contributed most to the ENFJ type preference. No other research was found on Early Childhood pre-service teachers with which to compare these findings.

A third interesting finding is what appears to be diversity among special education majors and educational leadership majors for MBTI preferences across personality quadrants. In one case, special education majors grouped with early childhood majors in contributing to an ISTP chi-square model—or a preference for that type. In another instance, we found special education majors preferring the ESTJ type in a model with educational leadership students. In a third instance, special education majors were the only group to contribute positively, and significantly, to the INTJ preference type (**Table 2**). This last finding supports a similar finding by Mills (2003) who examined 63 gifted teachers and found the majority of them to have NT as their primary mental functions. In contrast, educational leadership majors are distinguished, along with special education students, by significant contribution to the ESTJ type model in the current sample. Alternately, however, they also had the largest contribution to the ENTJ type (**Table 2**).

Table 2.
Chi-square models (main MBTI type X program).

Type	ISTP		ESTJ			ISFJ	
Iteration	1	2	1	2	3	1	2
	Eled	Eled	Eled	Eled	Eled	Eled	Spec
	–1.3	–.08	–2.5	–2.0	–3.7	8.6	–2.4
	Spec	Edld	Spec	Edld	Echd	Spec	Edld
	2.9	–.08	2.9	2.8	–1.2	–3.9	–3.8
	Edld	Echd	Edld	Echd	Mat	Edld	Echd
	–1.0	3.5	2.1	–1.3	5.1	–5.2	5.6
	Echd	Mat	Echd	Mat		Echd	Mat
	2.5	–.08	–1.5	1.3		4.3	0.6
	Mat		Mat			Mat	
	–1.1		0.5			–3.8	
df, n	4, 368	3, 326	4, 368	3, 326	2, 289	4, 368	3, 231
χ^2	18.831	14.021	23.292	16.268	9.329	19.324	15.585
p	.002	.003	.000	.001	.009	.001	.001

Type	ESFJ		ENFJ		INTJ		ENTJ	
Iteration	1	2	1	2	1	2	1	2
	Eled	Spec	Eled	Eled	Eled	Eled	Eled	Eled
	1.5	–.3	1.3	5.7	–2.0	–1.1	–1.6	–1.1
	Spec		Spec	Spec	Spec		Spec	Spec
	–.08	–2.0	–.05	–.8	5.3	–.9	–1.2	–1.0
	Edld	Echd	Edld	Edld	Edld	Echd	Edld	Echd
	–2.3	–.4	.7	1.7	–1.3	–.8	2.6	0.7
	Echd	Mat	Echd	Mat	Echd	Mat	Echd	Mat
	–.08	1.5	1.5	–6.7	–1.2	2.2	.4	1.4
	Mat		Mat		Mat		Mat	
	.05		–2.2		.4		.8	
df, n	–	3, 231	4, 368	3, 335	4, 368	3, 326	4, 368	3, 331
χ^2	10.498	7.618	10.861	8.620	37.096	7.592	12.343	5.062
p	.033	.055	.028	.035	.000	.055	.015	.167

Note: Standardized residuals are below program variables, and indicate the extent to which each program contribute to the model. p is initially significant at .05 level and at .025 and at .016 levels for second and third iterations, respectively. Eled = Elementary Education. Spec = Special Education. Edld = Educational Leadership; Echd = Early Childhood Education. Mat = Master of Arts in Teaching.

[2]In this case we used standardized residuals.

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Analysis of mental cognition sub-types shows that special education was the major contributor to the NT (Intuiting/Thinking) chi-square model, and grouped together with educational leadership students under ST (Sensing/Thinking) (see **Table 3**). The other three programs contributed to the SF (Sensing/Feeling) model.

These findings suggest that three separate groups of teacher education students self-select to a particular program depending upon their Type. The largest group of students chose elementary education and scored higher on the Introverted, Sensing, Feeling and Judging (ISFJ) scales with the mental functions being SF. Those students who were more interested in working in special education in general scored higher on the Introverted, Intuitive, Thinking and Judging scales (INTJ) and had mental functions of NT. Further, the education leadership candidates leaned toward the Extroverted, Sensing, Thinking and Judging (ESTJ) Myers-Brigg's typology and preferred Sensing-Thinking (ST) as their dominant mental functions, with Intuitive Thinking (NT) as a close second. Finally, the scores for the Early Childhood pre-service candidates suggest a preference for the Extroverted, Intuitive, Feeling, and Judging (ENFJ) as well as the ISFJ shared with the elementary education students. Early childhood teachers have their own unique mental functions (NF). The four different groups of students in education resulted in four different typologies. Interestingly, the Masters of Arts in Teaching students that is, graduates whose first degree were in a separate program and then later decided to become a teacher, showed type preference but were scattered among all 16 types.

Before embarking on a discussion of the three dominant Types reflected in this study (ISFJ, INTJ, and ESTJ) a discussion of shared attributes among the groups is warranted. In each case, a preference for Judging was found. This last dichotomous function reflects an individual's "attitude" toward how he or she perceives the outer world (Lawrence, 2009). Judging types have a preference to live their lives in a planned, orderly manner. In general, they want things presented in a linear, organized, and decisive way. Lawrence (2009) suggests that individuals with a Judging preference work towards an end result and require closure on one task before beginning another. It is necessary for today's educators to make hundreds of decisions daily, be well organized and be able to plan effectively. It would seem a natural extension that both teachers and administrators would have a preference for this attitude, as indicated in this study. On the other hand, Rushton et al., (2006) and Rushton et al., (2007) research on both Teacher of the Year recipients and the Florida League of Teachers, deemed to be the "best" educators in the field, showed that these teachers had a preference for P over J. Perceptive types tend to be more willing to look at new ideas, be creative and flexible in their teaching, and look to change the status quo. Judging types, in general, do not like change and prefer to keep things as they are. Other than the works mentioned above, the majority of studies relating to teachers (i.e., Lawrence, 2009; Reid, 1999; Sears et al, 1997), as well as the findings in this study, show that Judging is the primary preference for teachers.

Both the elementary education and childhood education pre-service students shared the Feeling (F) function, whereas, special education students and educational leadership graduate students preferred Thinking (T) as a means of decision making. In general Feeling Types prefer to base their decisions on subjective, people-centered values, and aim for harmony, mutual appreciation, tact, persuasion, and humane sympathy (Quenk, 2009). According to Myers & McCaulley's (1985) Manual, *A Guide to the Development and Use of the Myers-Briggs Type Indicator*, 68% of females prefer the Feeling function as a means of decision making. In the process of making decisions Feeling types will select for harmony within the group first and foremost. They are often deemed to have a passionate quest for meaning that appreciates human qualities with warmth (Berens, Cooper, Linda, & Martin, 2002). In contrast, those individuals who utilize Thinking (T) as a preference for decision making are often seen as being objective, impersonal, analytical, and logical (Lawrence, 2009). Thinking types aim to understand cause- and-effect relationships, seek for clarity, fairness, firmness, and truth. Sixty-one percent of men prefer the Thinking function (Myers & McCaully, 1985). Thinking is a detached process, which focuses on objective expression of "what's right". They require order to function effectively. Instead of sorting information for the harmony of the group, they prefer to sort for honesty and truth over harmony.

Table 3.
Chi-square models (MBTI mental cognition type X program).

Type	ST			SF				NT		
Iteration	1	2	3	1	2	3	4	1	2	3
	Eled	Eled	Eled	Eled	Spec	Spec	Spec	Eled	Eled	Eled
	–2.3	–1.8	–1.1	1.8	–.9	–.7	1.2	–2.0	–1.7	–1.2
	Spec	Spec	Echd	Spec	Edld	Edld	Edld	Spec	Edld	Echd
	2.7	3.2	–.02	–1.4	–2.5	–2.4	–1.3	1.9	2.3	–.6
	Edld	Echd	Mat	Edld	Echd	Mat		Edld	Echd	Mat
	2.8	–.6	1.3	–2.9	1.4	1.7		2.0	–2.0	1.6
	Echd	Mat		Echd	Mat			Echd	Mat	
	–.9	.4		.8	1.2			–1.1	1.0	
	Mat			Mat				Mat		
	–.02			.1				.5		
df, n	4, 368	3, 331	2, 289	4, 368	3, 231	2, 198	1, 79	4, 368	3, 326	2, 198
χ^2	24.598	16.534	3.408	22.912	15.683	12.800	3.528	15.627	11.579	5.053
p	.000	.001	.182	.000	.001	.002	.060	.004	.009	.082

Note: Standardized residuals are below program variables, and indicate the extent to which each program contributes to the model. *p* is initially significant at the .05 level and at .025 and at .016 levels for second and third iterations, respectively. Eled = Elementary Education. Spec = Special Education. Edld = Educational Leadership. Echd = Early Childhood Education. Mat = Master of Arts in Teaching.

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It is clear that Feeling and Thinking types have distinct styles in making decisions. Generally, classroom teaching requires being thoughtful of group dynamics and making decisions that involve many individuals. Both the early childhood and elementary education pre-service students had a preference for the Feeling function in their decision making. Principals are often required to make large scale, system-wide decisions that affect the operation of many individuals. When planning schedules for buses, lunch rotations, teacher breaks and class rotations, a clear analytical decision making process may be a better match. The special education pre-service teachers also leaned toward the Thinking function. Perhaps the need to be somewhat detached from the particulars of working with special education students requires a more analytical perspective. These findings supported Mills (2003) study which examined 63 gifted teachers and discovered that they had preferences for combined NT mental functions. Mills suggest that the combination of mental functions (NT) seek "abstract themes and concepts, are open and flexible, and value logical analysis and objectivity" (p. 285).

The remainder of the discussion will look at each of the three distinct types: Pre-service elementary and child-hood education students (ISFJ); pre-service special education students (INTJ); and graduate students in the education leadership and supervision program (ESTJ). The students in the Masters of Arts in Teaching programs showed no significant type preference.

The ISFJ Elementary Teacher

Twenty-eight percent of the students in this study had a preference for ISFJ and consisted primarily of elementary and early-childhood pre-service students. Our results support findings by Lawrence (2009), who indicates that the SFJ profile represents over 32% of elementary school teachers and 30% of early childhood teachers. Martin (1997) states that the ISFJ teacher personality is someone who has a deep respect for working in harmony with others and desires to complete tasks one at a time. ISFJs are known to have an organized and realistic approach to life. Further, they have a keen respect and command for facts and enjoy focusing on details in order to complete a specific task.

Fairhurst and Fairhurst (1995) outline the personality preferences of the ISFJ teacher as being considerate, dedicated and service minded. Further, they suggest that the ISFJ teacher seeks to establish a calm atmosphere at work leaning toward being pragmatic, highly conscientious, and works well when rules are clearly established (p. 97). The ISFJ educator does not lean toward a free-flowing, spontaneous classroom. Such educators have a propensity to use workbook assignments via pencil and paper drills, with a "quiet desk work approach" to learning as their main means of teaching (Hirsh & Kummerow, 1997). Finally, the ISTJ educator is known to create a protective learning environment, one that stays constant and where change is kept to a minimum. They have a strong need to keep things in order.

The INTJ Special Education Educator

According to Lawrence (2009) only 4 percent of elementary education teachers are considered INTJ's. Lawrence's study provides no percentages for special education teachers who are of this type. However, over 10 percent of university professors fall into this category. Fairhur stand Fairhurst (1995) suggest that this is due, in part, to the NT's desire to master specific areas of study. At the college level they prefer to teach one or two subjects in which they are highly competent. They can be single minded and use this strength to understand complex systems. They have an internal desire to understand truth. In many ways this would fit the special education teacher profile. Within the field of special education are separate and unique fields of interest (e.g., gifted education, specific learning disabilities). Elementary education teachers are required to learn all content areas whereas the special education student can focus on a unique, often complex discipline.

The intuitive-Thinking (NT) educator is considered to be the *rational teacher* and prefers autonomy and encourages individualism among their students. The INTJ educator is also thought to be among the "most directive of all types", is highly self-motivated, often visionary, and is persistent in the desire to refine and improve knowledge. Lawrence (2009, p. A-8) suggests that INTJ types in general, who find a career that appeals to them, are highly motivated and can be skeptical, critical, and independent. Special education teachers are often seen as separate from the main body of teachers within a school and require a certain level of autonomy. They often have complicated student profiles that may require complex individual educational plans.

The ESTJ Education Leadership Educator

The ESTJ profile is distinctively different than the previous two Myers-Briggs Types. Hirsh & Kummerow (1997) indicate that some characteristics that define this Type are: industrious, matter-of-fact, responsible, and efficient. Fairhurst and Fairhurst (1995) suggest that the ESTJ teacher is found more in the middle and high school levels and less in the primary grades where students are dependent upon the teacher and require more nurturing. These types are known for their ability to economically manage resources well, logistically be able to plan efficiently by setting realistic goals, and, enjoying making decisions (Lawrence, 2009). Given their unique strengths, ESTJ's often become school administrators at all levels (i.e., in elementary and secondary schools, colleges, and technical intuitions). It is not surprising that 32% of the students in this study who are returning to graduate studies in Administration and Supervision follow the STJ profile. There does not seem to be a preference for either Introversion or Extraversion with this group of graduate students.

Limitations of the Study and Future Directions

A number of interesting questions arise from this study. The variety of Type preferences within this group warrants further investigation of the characteristics of special education and educational leadership students, for example. Our specific demographic data on the current sample were limited, so further comparison by gender, age, or other demographic variables was not possible. Future research should aim to address this issue.

A few other features of the study limit the conclusions that can be drawn. The participants were not randomly selected (they were selected from the particular courses they took), nor were they representative of teachers-in-training in general. Thus the nature of the sample, including its size, affects generalization of the results. Another limitation is that data on more detailed characteristics of the individuals were not collected, such as socio-economic status, prior education, or prior employment

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experience. For the graduate students in particular, a more extensive knowledge of prior background might provide a deeper understanding of reasons for their program choices.

Finally, our measures of personality traits merit more extensive measurement and triangulation of data sources to gain a broader picture of these variables. Comparison of findings with use of the McCrae and Costa's (1989) five factor model, for instance, could yield valuable comparative results on the research questions studied. This study addresses two succinct research questions about phenomena that occur along the pathway to teacher effectiveness, but a multitude of individual factors along that pathway that conceive of personality in a broader way merit examination.

Conclusion

Today's teachers face some formidable challenges to effective practices. These include adjusting to a change in the demographic characteristics of the students they teach and to heightened performance goals required by policy makers. A key way in which teachers can respond to these challenges is through the way they interact with students. Learning to understand one's unique qualities, temperament, and attitudes is an important part of the education process, yet it is one that is not generally part of pre-service training. Because the teachers' personalities have an impact on how they interact with students, and thus on student achievement, much more attention should be given to them.

Knowledge of students' personality traits is important for teacher-educators. Just as school teachers' knowledge of their students' personalities helps them to teach them more effectively, teacher educators are well equipped when they understand the strengths that their own students (i.e., pre-service teachers) are bringing to the table. Colleges of education will similarly benefit by knowing the types of students who are attracted to their teacher education programs: They can then better design programs in accordance with students' needs, and consider how to attract a diversity of students to the profession.

It would serve those of us working in teacher education programs to better understand our own unique personality traits, because they impact our style of teaching. As with students, different professors of education (i.e., those teaching in Early-childhood, Elementary, MAT, and Educational Leadership programs) are attracted to a particular field, so more diversity may be required in teaching our pre-service students. This may have implications for how we organize our colleges of education. More research could be conducted looking at professors of education and their Types and the programs they serve. Also, implications regarding such programs could be addressed at the district and school level. Schools are grouping children with similar ranges of abilities and preferences. Knowing one's type might further aid this learning process. Working with comparable Types might be more productive in that, those who interpret the world and process information in the same manner may find working together more stimulating. On the other hand, placing different types together can also be most supportive in teaching for diversity of thinking.

In all cases, becoming an outstanding educator does require the ability to reflect on one's teaching and thinking. How we make decisions, based upon what facts we perceive, can influence how we organize a room, what curriculum we choose, and ultimately, how we teach. Knowing one's Type helps support educators as a first step toward this goal.

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