

A Comparative Study of Myers-Briggs Personality Type and Academic Achievement of Humanities and Science Prospective Teachers

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ABSTRACT

Introduction: People differ from one another depending on the way they perceive the world. In fact, our personality affects the way we learn. A significant challenge facing educators today is aligning teaching methodology with personality types of students to increase student satisfaction throughout the learning process. **Aims & Objectives:** The current study aims at discovering the relationship, if any, between prospective teachers' MBTI personality types (Introvert/Extrovert, Sensing/Intuitive, Thinking/Feeling and Judging/Perceiving) and their academic achievement, taking into consideration, academic streams (Science and Humanities). **Materials & Methods:** The Myers-Briggs Type Indicator (MBTI), form M, was used to identify 500 prospective teachers' personality types. The percentage of marks obtained in graduation i.e. B.A./B.Sc.-III was taken as the academic achievement. t tests were employed to explore potential significant differences in academic achievement in the course related to differences in personality types or cognitive styles as determined by the MBTI and the interaction between achievement and four bipolar domains of MBTI. **Results:** The prospective teachers from humanities and science streams did not differ on scores obtained E-I, S-N, T-F and J-P dimensions of MBTI. Intuitors (N) from humanities stream had higher academic achievement as compared to the sensors(S). Intuitors and Judgers from science stream outperformed sensors and perceivers (P). ESTJ type was found to be the dominant one in the prospective teachers' population followed by ISTJ type.

Key words: Academic achievement; personality types; Myers-Briggs Type Indicator; MBTI; prospective teachers.

INTRODUCTION

Over the past two decades, the focus in teaching for effective learning has been on the recognition of the individual qualities of learners that must be understood and accounted for within the educational environment. Individual qualities between

learners can be illustrated by differences in their preferred learning style & personality type. Alongside this focus on recognition of individual difference, educators are now paying real attention to the need of curriculum planning and delivery to articulate a range of specific learning outcomes. This attention to teaching and to learning outcomes in terms of academic achievement raises the question of how to best achieve these outcomes. Educators are being made aware of a range of approaches that may influence effective learning and appear to need guidance about the scope and range of individual differences among learners and how best to provide appropriate experiences. Pre-service education therefore calls for remarkable versatility as well as mastery of a very extensive range of capacities on the part

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of prospective teachers, probably the most important of which is the capacity to judge which teaching learning approach applies in any particular context. Teacher education courses are designed to prepare professionals for employment in educational institutions including primary and secondary schools. This dynamic discipline involves preparation of prospective teachers who are to be engaged in teaching diverse population of students on actually adopting teaching careers in near future. As part of this evolution, it is crucial that faculty within teacher education programs continually prepare prospective teachers to meet educational needs of students while delivering quality instructions to ensure students' satisfaction and retention. Research has demonstrated that it is equally important for educators to recognize that students have different learning styles and personality preference

People differ from one another depending on the way they perceive the world. In fact, our personality affects the way we learn. Practitioners have proposed an understanding of personality type (how we interact with the world and where we direct our energy, the kind of information we naturally notice, how we make decisions) can help explain why we learn differently (Ehrman and Oxford, 1990; Wilz, 2000). According to Ehrman and Oxford (1990), studies investigating psychological types are promising in that they offer an accessible conceptual framework for language trainers and learners, greater self-regulation and better learning performance. Learners can actually move out of their "comfort zone" and try other preferences, like hand preferences. Tharp (1992) examined the relationship between personality type and achievement in an undergraduate physiology course using Myers-Briggs Type Indicator for students at a large state university. The results revealed that high grades were earned by students stronger in the traits of introversion (I) and judgment (J), whereas the extraverted (E) and perceptive (P) types had the lowest grades and dropped out of the course in the largest numbers. Felder et. al (1993) assessed MBTI profiles of students enrolled in an introductory chemical engineering course. The results indicated that

intuitors tended to get higher grades than sensors. Numerous other studies (e.g. Rollins, 1990; Schroeder, 1993; Fish & Mckeen, 1995) have used either the Myers-Briggs test or the Keirsey test to study the relationship between personality and achievement in a variety of educational settings. Wilz (2000) expresses the dire need for personality type understanding on the part of the teachers. Getz and Sefcik (2009) studied relationship between the MBTI mental-function pairs and student performance on Level 2-CE of COMLEX-USA by osteopathic medical students at Midwestern University/Chicago College of Osteopathic Medicine. The results revealed that information gained from the MBTI can be used to enhance student learning and improve academic performance in osteopathic medical school. A close perusal of these studies indicates that various MBTI personality profiles and dimensions bear some relationship with academic achievement. However no such parallel study is reported in the Indian context. Inspired by these earlier studies that underscore investigation into learners' characteristics, the present study examines the relationship between psychological types as measured by MBTI to the academic achievement. This study will discuss what the findings might suggest about these students as future teachers but more immediately what the implications of these findings are for those working in teacher education and teacher development programme.

PURPOSE OF THE STUDY

The purpose of the study was to investigate patterns in psychological type among students enrolled in a teacher education i.e. Bachelor Of Education (B.Ed) course and differences in the academic performance of those students to investigate the extent to which variation in student achievement in the course might be associated with variables related to the realm of learning; specifically personality types or cognitive styles. This study included the following objectives:

1. To study the pattern of personality types as manifested among the prospective teachers.

2. To compare the personality types of the prospective teachers from humanities and science streams.
3. To investigate into the relationship between academic achievement and the personality types of the prospective teachers from humanities and science streams.

HYPOTHESES

The null hypotheses, formulated for the study are stated as under:-

1. There is no significant difference in the personality types of the prospective teachers from humanities and science streams.
2. There is no significant relationship between academic achievement and personality types of the prospective teachers from humanities and science streams

RESEARCH METHODOLOGY AND DATA SOURCES

Prior to the start of the study, the researcher contacted the Principal instructors for the Education course requesting permission to participate in the study. After Principal instructors' agreement, students enrolled within the B.Ed (Bachelor in Education) course were invited to participate through letter. Included in the letter was a description of the study and a survey. Informed consent to participate in the research study was indicated by the completed survey. The instructor utilized the MBTI and followed ethical administration requirements by providing students with a feedback interpretation session accompanying the results.

The Myers-Briggs Type Indicator was administered to 500 students enrolled in undergraduate teacher education course in various colleges of education at Haryana (North India) during 2007-08 and 2008-09. Data were collected during aforementioned two consecutive academic sessions. Demographic information was collected, as well as final student percentage marks in the

graduation i.e.B.A/B.Sc.). Basic descriptive statistics were utilized to assess data relevant to the first and second research objectives; patterns in personality types, and variation in academic achievement .t tests were employed to explore potential significant differences in academic achievement in the course related to differences in personality types or cognitive styles as determined by the MBTI and the interaction between achievement and four bipolar domains of MBTI. The preferred type on each of the four indices served as the independent variables, while percentage of marks in graduation functioned as the dependent variable in the analysis of variance. The prospective teachers (n=500) were selected on the basis of 'purposive and random sampling technique'. The subject specialisms of the prospective teachers were identified in two broad groups: Language - humanities (n=250) and science-mathematics (n=250). For convenience the former was mentioned simply as humanities steam and the latter as science stream. Both streams included equal number of males and females i.e. 125 males and 125 females in each academic stream.

MEASURE

The Myers-Briggs Type Indicator (MBTI), form M, a 93-item paper-and-pencil inventory was used to assess personality types of prospective teachers. The MBTI measures four separate preferences or indices, each of which is based on Jung's theories concerning perception and judgment. The preferences have implications for 'not only what people attend to in any given situation, but also how they draw conclusions about what they perceive'.

Extroversion-Introversion (EI)

This index assesses the extent to which an individual tends to be either an extrovert or an introvert. Extroverts tend to focus on external reality (the outer world) and direct their attention toward people and objects. By contrast, introverts attend more to internal

reality (the inner world) and concentrate more on concepts and ideas.

Sensing-Intuition (SN)

The SN index directly measures an individual's preference in the area of cognitive perception. A person who relies more on sensing tends to rely on one or more of the five senses to interpret facts or events. Someone who relies more on intuition to assign meaning uses a more abstract, intuitive process, relying more on internal sources of information to interpret reality.

Thinking-Feeling (TF)

This index directly measures a person's preference in the area of judging. One may rely more on thinking to make decisions on the basis of objective, logical reasoning (T), or one may rely more on feeling (F) to make decisions more subjectively on the basis of internal or external value systems.

Judgment-Perception (JP)

This index assesses the process an individual uses predominantly in interacting with the 'outer world'. One individual may tend to prefer using a judgment process (J) when dealing with the external environment, while another may tend to prefer using a perceptive process (P).

Preferences on the four indices produce sixteen possible combinations which are referred to as 'types' or styles. An individual's type or style is indicated by the four letters of the preferences (e.g. ESTF, INFP). The theory suggests that each of the sixteen types has an associated set of preferred processes and attitudes which tend to be utilized more frequently and effectively by persons of that type.

The participants were asked to fill out MBTI questionnaire selecting one from each of two options for each item. Each scale of the MBTI was transformed to produce specific scale ranges for interpretation purposes. The ranges of raw scores on MBTI were taken as -21 to 21 for the extravert - introvert scale, -26 to 26 for

the sensing - intuitive scale, -24 to 24 for the thinking-feeling scale, and -22 to 22 for the judging-perceiving scale. A positive score value indicates a preference towards the first characteristic, and a negative score value represents a preference for the second characteristic. The range of the scores to important to consider because a student with an extroversion preference score close to 0 (e.g. 1, 2, 3 or 4) is actually indicative of a relatively no preference between extraversion and introversion personality styles. An extraversion-introversion MBTI score of -19 would indicate a strong preference towards introversion. Scores were only computed for participants who answered all items on a scale. The internal consistency reliability ranged from 0.83 to 0.88 for the four scales of MBTI. The intrinsic validity ranged from 0.83 to 0.92.

Percentage of the marks obtained by the prospective teacher in their graduation i.e. B.A./B.Sc. Part-III was taken as a measure of their academic achievement.

RESULTS AND DISCUSSION

The data were analyzed so as to find valid answers to the objectives specified in the study. The details of the analysis are presented under appropriate subheads.

PERSONALITY TYPE OF PROSPECTIVE TEACHERS

The personality types of prospective teachers were compared on the basis of their preference on individual domains (E, I, S, N, T, F, J, P), preferences on 16 personality profiles (e.g. ESTJ, ISTJ) and the actual scores obtained on the four dichotomies of MBTI viz. E/I, S/N, T/F and J/P. Table 1 reveals the frequencies for 8 possible types w.r.t. individual domains of MBTI.

DESCRIPTIVE ANALYSIS OF PERSONALITY TYPES

on various dimensions of personality types, namely, Extraversion (E), Introversion(I), Sensing(S), Thinking(T), Feeling(F), Judging(J) and Perceiving(P).

The personality types of prospective teachers was assessed on the basis of their preferences

A substantially larger percent of prospective teachers (Table1) preferred Extraversion,

Table 1: Distribution of personality types on MBTI (N=500)

Personality Types	Humanities(n=250)		Science(n=250)		All Cases(N=500)	
	n	%	n	%	n	%
Extraversion (E)	168	67.2%	146	58.4%	314	62.8%
Introversion (I)	82	32.8%	104	41.6%	186	37.2%
Sensing (S)	149	59.6%	150	60.0%	299	59.8%
Intuition (N)	101	40.4%	100	40.0%	201	40.2%
Thinking (T)	141	56.4%	142	56.8%	283	56.6%
Feeling (F)	109	43.6%	108	43.2%	217	43.4%
Judging (J)	192	76.8%	174	69.6%	366	73.2%
Perceiving (P)	58	23.2%	76	30.4%	134	26.8%

Sensing, Thinking and Judging (E, S, T and J) personality dimensions (figure .1.1).However, prospective teachers from humanities stream showed greater preference for Extraversion (E) as compared to their science counterparts (67.2% and 58.4% extroverts for humanities and science streams respectively).

Figure 1.1

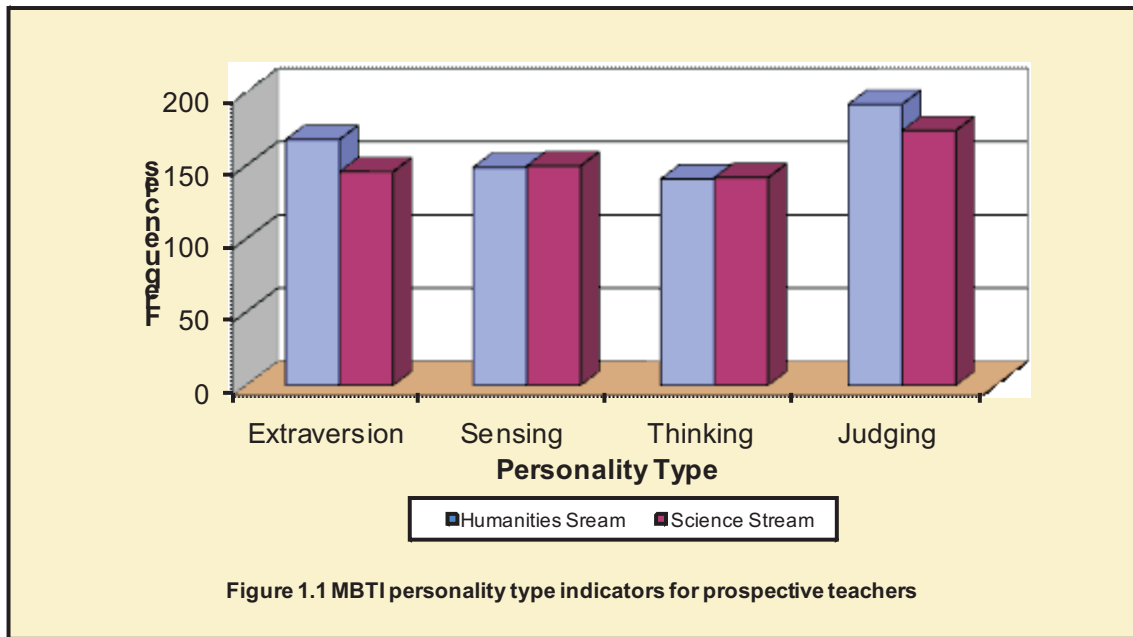


Figure 1.1 MBTI personality type indicators for prospective teachers

Both streams almost equally represented sensing(S) and Intuition(S=59.6%, N=40.4% and S=60%, N=40% for humanities and science streams respectively). Thinking (T) and Feeling (F) dimensions were also almost equally preferred by both streams (T=56.4%, F=43.6% and T=56.8%, F=43.2% for humanities and science streams

respectively).Both groups (humanities and science) had larger proportions of Judgers (J) than Perceivers (76.8% and 69.6% for humanities and science streams respectively). The above findings w.r.t. personality types of prospective teachers agree in many ways with research reported by *Cano, Garton and Raven*

(1994) in respect of pre-service teachers of agricultural education.

DESCRIPTIVE ANALYSIS OF MBTI PERSONALITY PROFILES

The MBTI results in respect of complete personality profile (Table.2) indicates that the majority of prospective teachers were either ESTJ (18.6%) or ISTJ (12.0%). The least

Table 2: Distribution of MBTI personality profile (N=500)

Personality Types	Humanities(n=250)		Science(n=250)		All Cases(N=500)	
	n	%	n	%	n	%
ISTJ	32	12.8%	28	11.2%	60	12.0%
ESTJ	55	22.0%	38	15.2%	93	18.6%
ISFJ	10	4.0%	23	11.2%	33	6.6%
ESFJ	25	10.0%	24	15.2%	49	9.8%
ISTP	5	2.0%	17	9.2%	22	4.4%
ESTP	6	2.4%	8	9.6%	14	2.8%
ISFP	8	3.2%	1	6.8%	9	1.8%
ESFP	10	4.0%	10	3.2%	20	4.0%
INFJ	12	4.8%	4	4%	16	3.2%
ENFJ	26	10.4%	23	4.0%	49	9.8%
INFP	4	1.6%	4	1.6%	8	1.6%
ENFP	13	5.2%	18	7.2%	31	6.2%
INTJ	6	2.4%	14	5.6%	20	4.0%
ENTJ	26	10.4%	18	7.2%	44	8.8%
INTP	5	2.0%	13	5.2%	18	3.6%
ENTP	7	2.8%	7	2.8%	14	2.8%

preferred personality profiles amongst prospective teachers were INFP and ISFP.

ESTJs project personal confidence, are forthright and naturally take command in social or leadership situations. Research confirms that both ESTJs & ISTJs are included among four types with the highest overall undergraduate grades (*Schurr and Ruble, 1986*). ISTJs have hard-working orientation to life and possess adaptive creativity.

The above pattern of distribution of MBTI profiles agrees in many ways with research reported by *Cano, Garton and Raven (1994)* in respect of prospective teachers wherein majority of the subjects were ESTJ, ISTJ or ESFJ.

These results also coincide with those reported by *Perry and Ball (2004)* w.r.t students enrolled in teacher-education courses. Preference of prospective teachers for ESTJ, ISTJ, ESFJ and ENFJ profiles indicates that teacher-education courses attract the students possessing confidence, flair for hard work, friendly and supportive attitude and a quest for creativity.

The results (Table 3) show that the mean differentials on the E-I dimension (t-value = 0.478), S-N dimension (t-value = 0.216), T-F dimension (t-value = 1.869) and J-P dimension (t-value = 1.195) were not significant at any level of significance. This suggests that prospective teachers from humanities stream

Table 3: Mean differentials in the personality types of prospective teachers from Humanities and science streams

Personality Type	M ₁ (N=250)	M ₂ (N=250)	SD ₁	SD ₂	t-value	Significance (2-tailed)
E-I	2.80	3.13	6.82	8.59	0.478	NS
S-N	1.36	1.23	6.68	6.54	0.216	NS
T-F	0.48	1.74	7.50	7.57	1.869	NS
J-P	5.02	4.31	6.59	6.72	1.195	NS

do not differ on Extraversion-Introversion, Sensing-Intuition, Thinking-Feeling and Judging-Perceiving dimensions of personality types from the prospective teachers from science stream.

Hence, hypothesis 1, namely, there is no significant difference in the personality types of prospective teachers from humanities and science streams is accepted as prospective teachers from humanities and science streams did not differ on E-I, S-N, T-F and J-P dimensions of personality types.

ACADEMIC ACHIEVEMENT AND PERSONALITY TYPES

Table 4: Mean differentials between academic achievement scores of humanities and science prospective teachers w.r.t personality types

P. Type	Humanities (n=250)			t-value	Science (n=250)			t-value	Total (N=500)			t-value
	N	Mean	S.D		N	Mean	S.D		N	Mean	S.D	
E	168	58.49	6.32	0.641	146	62.53	7.31	1.11	314	60.37	7.08	1.808
I	82	59.06	7.21		104	63.49	5.88		186	61.54	6.85	
S	149	57.36	6.55	3.938**	150	62.22	7.05	2.094*	299	59.8	7.22	3.967*
N	101	60.62	6.26		100	63.99	6.18		201	62.3	6.43	
T	141	58.05	6.8	1.707	142	62.81	6.15	0.316	283	60.44	6.9	1.325
F	109	59.49	6.31		108	63.08	7.51		217	61.28	7.15	
J	192	58.75	6.61	0.327	174	63.76	7.13	2.985**	366	61.13	7.3	1.737
P	58	58.43	6.69		76	61.03	5.41		134	59.9	6.11	

*significant at 0.05 level, **significant at 0.01 level

prospective teachers with respect to various personality dimensions.

The results show that the mean differentials of the humanities prospective teachers on E-I dimension (t-value=0.641), T-F dimension (t-value=1.707) and J-P dimension (t-value=0.327) were not significant at any level of significance. This suggests that humanities prospective teachers do not differ on E-I, T-F and J-P dimensions. However, a statistically significant difference at 0.01 level of significance was observed w.r.t. S-N dimension amongst the humanities prospective teachers. Thus it may be concluded that Intuitors (N) from humanities stream had higher academic achievement (M=60.62) as compared to the sensors (M=57.36). Intuitive persons rely more on imaginations and are concerned with abstract concepts and theories. Further, the

Hypothesis 2 states, "There is no significant difference in academic achievement of humanities and science prospective teachers in relation to personality types". In order to verify this hypothesis, academic achievement of both groups (Humanities and Science) was compared w.r.t. four dichotomies of MBTI viz. Extraversion-Introversion (E-I), Sensing-Intuition (S-N), Thinking-Feeling (T-F) and Judgement-Perception (J-P). Table 4 depicts the mean differentials between the academic achievement of humanities and science

courses in humanities emphasize theoretical approach over the practical and so give intuitors an advantage over the sensors with respect to the grades. This finding is consistent with *DiTiberio* (1996) who reported that Intuitors show higher achievement by using their mental energy to the fullest.

As regards the mean differentials in the academic achievement of science prospective teachers, no statistically significant difference was observed w.r.t. E-I dimension (t-value=1.110) and T-F dimension (t-value=0.316) whereas, statistically significant differences (P>0.05) were observed w.r.t. S-N (t-value=2.094) and J-P (t-value=2.985) dimensions. This implies that Intuitors (M=63.99) and Judgers (M=63.76) outperform sensors (M=62.22) and perceivers (M=61.03). An interesting finding of the study was that

the proportion of sensing and Intuitive prospective teachers from humanities and science stream was almost similar. The majority of prospective-teachers from both streams exhibited preference for sensing (N=149, N=150 for humanities and science stream respectively). The better achievement of Intuitors in science stream may be attributed to the emphasis on theoretical work over the practical work which fits more in our present examination system whereas better performance of judges may be associated with the methodical and planned ways of performing academic tasks along with effective time management. This result w.r.t. J-P dimension agrees with earlier study by Ball (2004).

Hence, hypothesis 2, namely, "there is no significant difference in the academic achievement of humanities and science prospective teachers in relation to personality types is partially rejected as humanities prospective teachers differed w.r.t. S-N dimension and science prospective teachers differed w.r.t. S-N and J-P dimensions.

CONCLUSION

The prospective teachers from humanities and science streams did not differ on E-I, S-N, T-F and J-P dimensions of personality types. The academic achievement of humanities and science prospective teachers differed w.r.t. S-N dimension only and those of science prospective teachers differed w.r.t. S-N and J-P dimensions of personality types. In both streams, Intuitors outperformed sensors whereas Judges from humanities stream achieved better than perceivers. Sensors need to be explained the conceptual framework of practical tasks to enhance their academic achievement while Intuitors especially those from science stream should not undermine importance of practical and applied aspects underlining theory no matter, how well they secure in examination. Further, both the teacher-educators and the prospective teachers need to emphasize that all personality types are valuable, but the learning environment in each course may favor one

type over another so that some students will have to modify their attitudes and study skills if they are to succeed. In any given class, a wide range of student style and type preferences are present. One role, we play as educators is to try and model for our students what it means to be successful in the real world after completion of studies. Furthermore, every teacher needs to embrace the fact that each student is a unique individual; and be prepared to adjust the teaching strategies appropriately.

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