An Analysis of Computing Major Students' Myers-Briggs Type Indicator Distribution

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Abstract

An experiment was undertaken to study the relationship between persons' Myers-Briggs Type Indicator (MBTI) personality and the computing tasks. For the experiment, a group of computing majors, 68 undergraduate students, (40 underclassmen and 28 upperclassmen) and 60 graduate students pursuing masters degrees have participated. The result shows that the most common MBTI types among the students are Introvert-sensing-thinking-judging (ISTJ) type and extrovert-sensing-thinking-judging (ESTJ) type, and the least common MBTI type is introvert-intuition-feeling-judging (INFJ) type. For a relative comparison analysis, the computing major students group is compared to two other similar groups; one group of general university students, and another group of science major university students only. It appears that the students who major in computing studies exhibit mostly sensing preference whereas the science major students exhibit mostly intuition preference. There is no outstanding preference from the general university students group. Based on this study, it is speculated that the students with sensing preference show the highest level of affinity to the qualities of computing tasks.

Keywords: MBTI, personality, computing major

BACKGROUND

It is a general assumption that some of the intrinsic personal attributes of computing major students, and those required skills of computing studies form an ideal union. One of those intrinsic personal attributes is personality. Personality illustrates a person's disposition and tendency in expressing one's world and also in accepting the outer world. The challenges of computing studies may attract certain type of students. Technical, yet very diverse, accomplishing computing tasks requires not only the analytical and logical skills, but also a team player attitude and excellent communication skills. Just to name a few, some of the computing tasks attributes are problem solving, determination, persistence, analytical ability, attention to detail, logical thinking, communication, and attitude (Sterling and Brinthaupt, 2003; DeMarco and Lister, 1999; Hunter, 1994). However, this assumption that the computing tasks attract a certain type of student must be further developed and validated. As a first step, an understanding of the computing major students' personality profile is due. There are many popular and valid personality instruments out there, but the most common one is the Myers-Briggs Type Indicator (MBTI). As shown in table 1, MBTI classifies a person's preferences into four basic scales with two opposite poles in each: MBTI measures a person's preferences using four basic scales with opposite poles. The

four scales are: (1) extraversion/introversion: EXTRAVERSION – people who prefer Extraversion tend to focus on the outer world of people and things, INTROVERSION - people who prefer introversion tend to focus on the inner world of ideas and impressions; (2) sensate/intuitive: SENSING - people who prefer sensing tend to focus on the present and on concrete information gained from their senses, INTUITION - people who prefer intuition tend to focus on the future, with a view toward patterns and possibilities; (3) thinking/feeling: THINKING - people who prefer thinking tend to base their decisions primarily on logic and on objective analysis of cause and effect, FEELING - people who prefer feeling tend to base their decisions primarily on values and on subjective evaluation of person-centered concerns; and (4) judging/perceiving: JUDGING - people who prefer judging tend to like a planned and organized approach to life and prefer to have things settled, PERCEIVING - people who prefer perceiving tend to like a flexible and spontaneous approach to life and prefer to keep their options open. The various combinations of these preferences result in 16 personality types and are typically denoted by four letters--for example, INTJ (introversion, intuition, thinking and judging) or ESFP (extrovert, sensing, feeling, and perceiving).

LITERATURE REVIEW

Some previous studies investigated the link between certain personalities to computing tasks. Capretz (2003) studied a group of 100 software engineers and software engineering students on their MBTI types. The investigation has shown that ST type represented over 50% of the group. The most common type was ISTJ with 24%. Smith (1989) studied 54 systems analysts' MBTI type from a large insurance company. The result revealed that the two most common MBTI types were ISTJ (35.1%) and ESTJ (29.7%). Interestingly, NF showed 0 %. Chang and Chang (2000) have studied a group of master degree pursuing electrical engineering university students and discovered that the MBTI profiling of the students provides another analytical dimension to students' academic performance. Some suggests a notion that even among various computing tasks there is a matching personality type to each task (DaCunha and Greathead, 2004; Weinberg, 1998). Weinberg (1998) quotes "all other things being equal, certain people will find the job of product test programmer easier psychologically." DaCunha and Greathead (2004) studied a group of 64 university students' performance on a computer code reviewing task. The result revealed that the students with NT performed at the highest level. Deviating from a typical experiment, Moore (1991) structured an experiment that consisted of four specific computing groups – application programmers, systems analysts, technical programmers, and data processing managers - instead of one large "computer programmers" group. The study revealed that even these sub-groups exhibited personality differences among them.

THE SURVEY

For the survey sample size, we allocated a total of 128 computing majoring students (majors in management information systems, information systems, and information technology): 68 undergraduate students (40 underclassmen and 28 upperclassmen) and 60 graduate students pursuing masters degrees. For the MBTI instrument, the online MBTI version is selected over the pencil-and-paper version, not only for the convenience but also for the accuracy in the scoring. The online MBTI website (http://www.skillsone.com) provided by the official MBTI distribution organization, Consulting Psychologists Press Inc. (CPP Inc.) is used.

The students were first thoroughly informed about the experiment, given an introduction on MBTI followed by a questions-and-answers session. Afterwards, in a lab-controlled room, each subject was asked to login to the MBTI site and complete the online MBTI questionnaire. The questionnaire results were automatically analyzed and provided by the site.

RESULT AND ANALYSIS

Before our sample group, a few comparable samples are reviewed. Figure 1 is the United States national normative sample of adults. The notable pattern here is the predominance of ISFJ and ESFJ. The least ones are INFJ and ENTJ.

Since our sample is computing majoring students, we have reviewed two other similar groups; one group of general university students (all majors), and another group of science major university students only. The general university students group's MBTI distribution is shown on figure 2. It shows ESTJ and ESFJ as the two most common types with 10.6% and 10.6% respectively. The people-oriented F preference is represented at a much higher number than the computing major students group. Probably the most glaring difference is how all sixteen types are evenly distributed: the difference between the most common type to the least common type is only 7.3%, whereas in our computing major students group that difference is 20.3%.

Another group is the science majoring students only and their MBTI type distribution is shown on figure 3. In this group, the two most common MBTI types are INTJ and INTP with 18.2% and 17.5% respectively. N is the influencing preference. ESFP is the least common type. A profound difference between this group and our computing majoring students group is the presence of N preference over S preference.

For our sample group, the distribution is in figure 4. Apparently, the most common type is ISTJ with 21.1%, followed by ESTJ with 14.8%. The least common type is INFJ with less than 1%, just one student. The ST is presented in both ISTJ and ESTJ, conversely the least common type contains NT.

From the two most common MBTI types, we cautiously project both S preference and T preference may contribute to a certain degree of an individual's interest on the computing studies. Contrariwise, N and F preferences from the least common MBTI type may have minimum impact.

For a further comparison, self-selection index, R is used (Capretz, 2003). As shown on table 1, the ratio, R1 is the computing major students' percentage over the general university students' percentage; and R2 is the computing major students' percentage over the science major students' percentage. Figures 5 and 6 show the comparisons among the groups. Between the computing major students group and the general university students group, T (R1 = 1.3), F (R1 = 0.7) and ST (R1 = 1.5) show R1 value of 1.0 + 0.2. This infers that the students with T and S are more frequent among the computing major students group than the general university students group. In the R2 values, there is a much higher percentage of S in the computing major students group whereas there is a much lower percentage of N in the computing major students group. More interestingly, both ST and SF preferences percentage levels are much higher (ST, R2 = 3.8; SF, R2 = 4.6) than the science major students group; and both NF and NT preferences percentage levels are much lower (NF, R2 = 0.6; NT, R2 = 0.3) than the science major students group.

DISCUSSION

A noticeably large portion from the computing major students sample group exhibited both sensing and thinking preferences (hereafter ST), more so with sensing preference, S. This result is very similar to some of the previous studies' results (Capretz, 2003; Sterling and Brinthaupt, 2003; Moore, 1991; Smith, 1989). The high R2 values of both ST and SF are mostly due to the high R2 value of S, as both T and F show no significant difference among the groups. The findings of this study underpin the assumption that the ST individuals, the highest group in this study, are more attracted to the rich and complex computing tasks than the individuals with other MBTI type preferences. In the MBTI manual (Myers, et al., 1998), it states "ST people rely primarily on sensing for purposes of perception and on thinking for purposes of judgment. Their main interests focus on facts because facts can be collected and verified directly by the senses. The ST types typically approach their decisions regarding facts using objective analysis because what they trust is thinking, with its linear and logical process of reasoning from cause to effect, from premise to conclusion." It appears that ST people are maybe best suited in technical areas with facts and objects. The sample group of science major students showed that the students with NT are most common. According to the MBTI manual, NT individuals tend to be logical and ingenious. They focus on possibilities, theoretical relationships, abstract patterns, and judge from a nonpersonal, cause-and-effect perspective. Based on this comparison result, we see a clear pattern of the affinity between a certain MBTI type groups to a particular profession domain.

However, this pattern of affinity does not assure the success of the students in their respective fields (Ackerman, 1996). There are many other factors that are involved than just a personality type in leading an individual to a successful career.

CONCLUSION

This analysis result gives an idea that individuals with ST are more disposed to those required skills for rich and complex computing tasks. This result also confirms and adds to the findings of many earlier empirical studies. Based on this analysis result, this information can serve as additional information for those college-bound high school students and their parents in deciding a major. Also many employers can use this information in hiring and selecting appropriate computing personnel. A recommended future study is the correlation between the computing major students with ST and the professional computing personnel with both sensing and thinking preferences, focusing on the computing personnel's job competency and job satisfaction.

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APPENDIX

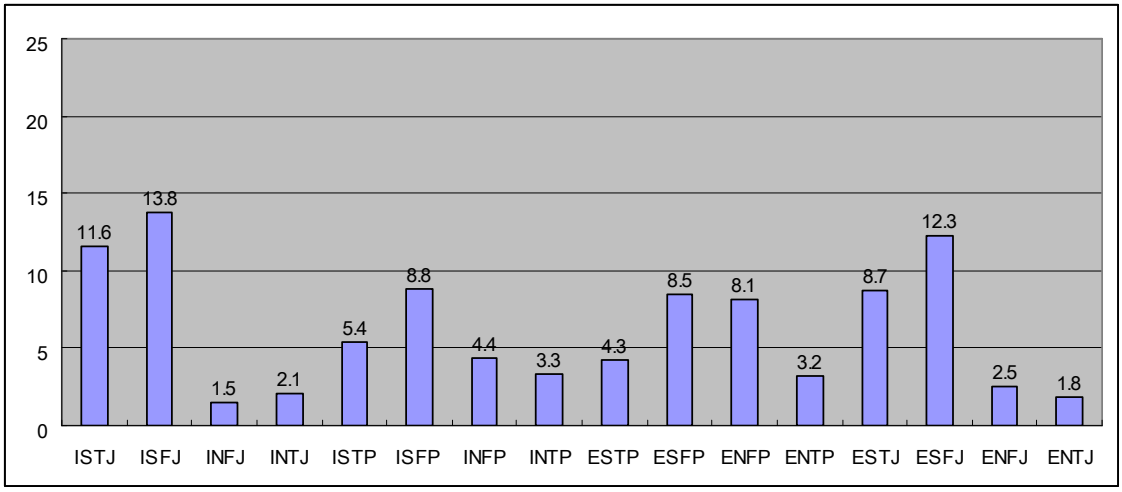

Figure 1 United States national normative sample of adults Source: Myers, et al. (1998)

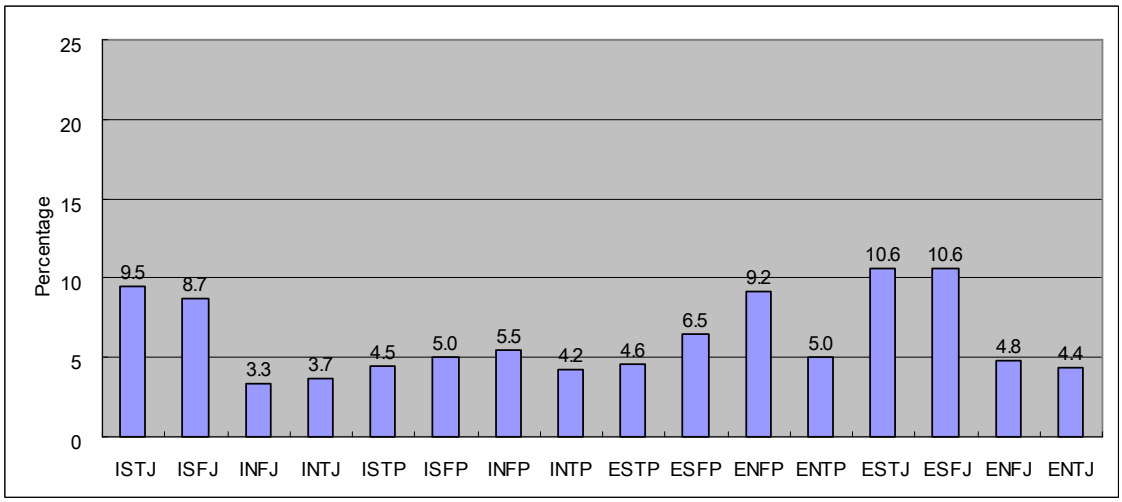

Figure 2 General university students, Source: Myers, I. B. and Myers, P.B., (1995)

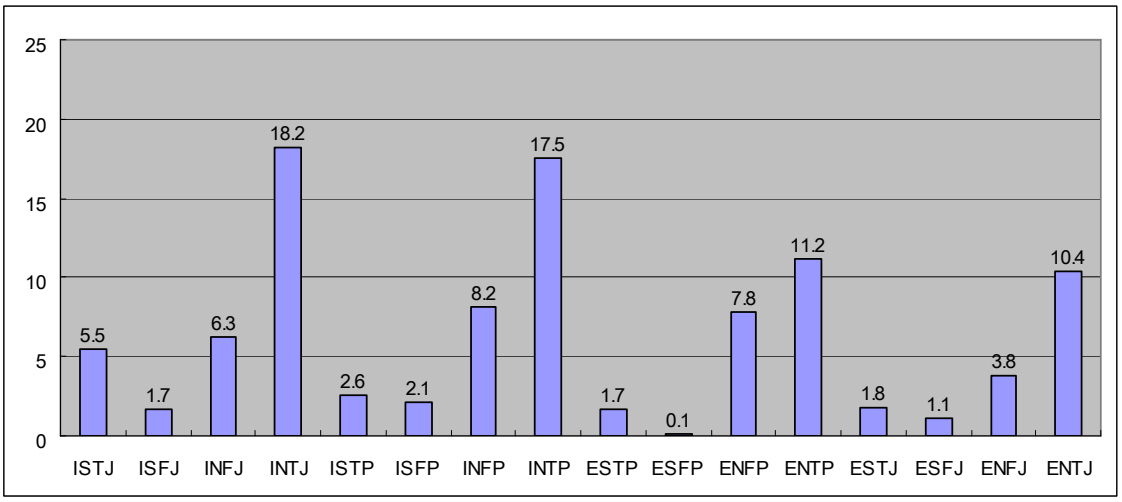

Figure 3 Science Majoring University Students, Source: Myers, I. B. and Myers, P.B., (1995)

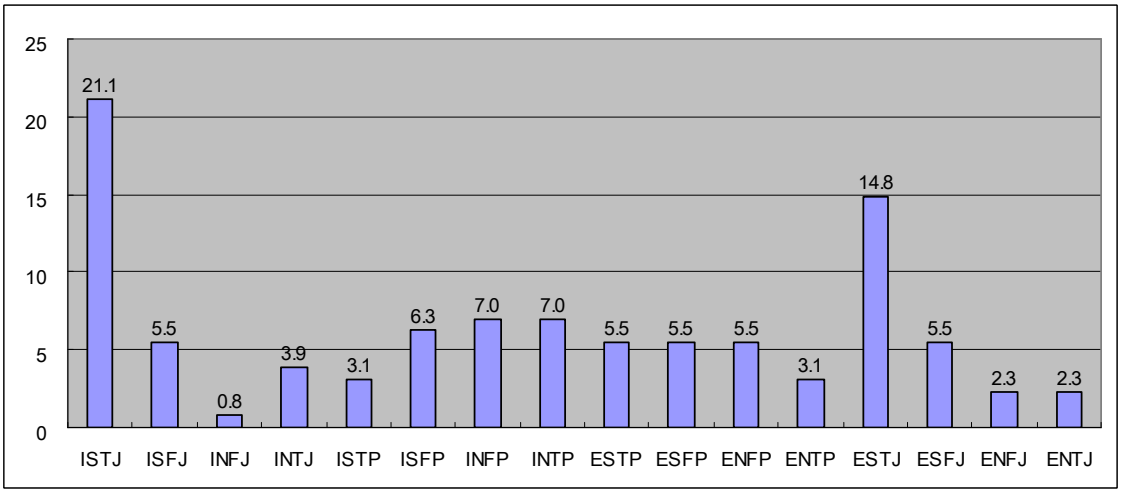

Figure 4 Experiment Subjects (Computing majoring university students)

Table 1 MBTI Type Distribution

Preferences	Comp.Major (%)	Gen.Univ. (%)	R1	Science Major (%)	R2
E	44.5	55.7	0.8	37.9	1.2
I	54.7	44.4	1.2	62.1	0.9
S	67.3	60.0	1.1	16.6	4.1
N	31.9	40.1	0.8	83.4	0.5
T	60.8	46.5	1.3	68.9	0.9
F	38.4	53.6	0.7	31.1	1.2
J	56.2	55.6	1.0	48.8	1.2
P	43.0	44.5	1.0	51.2	0.8
ST	44.5	29.2	1.5	11.6	3.8
SF	22.8	30.8	0.7	5.0	4.6
NF	15.6	22.8	0.7	26.1	0.6
NT	16.3	17.3	0.9	57.3	0.3

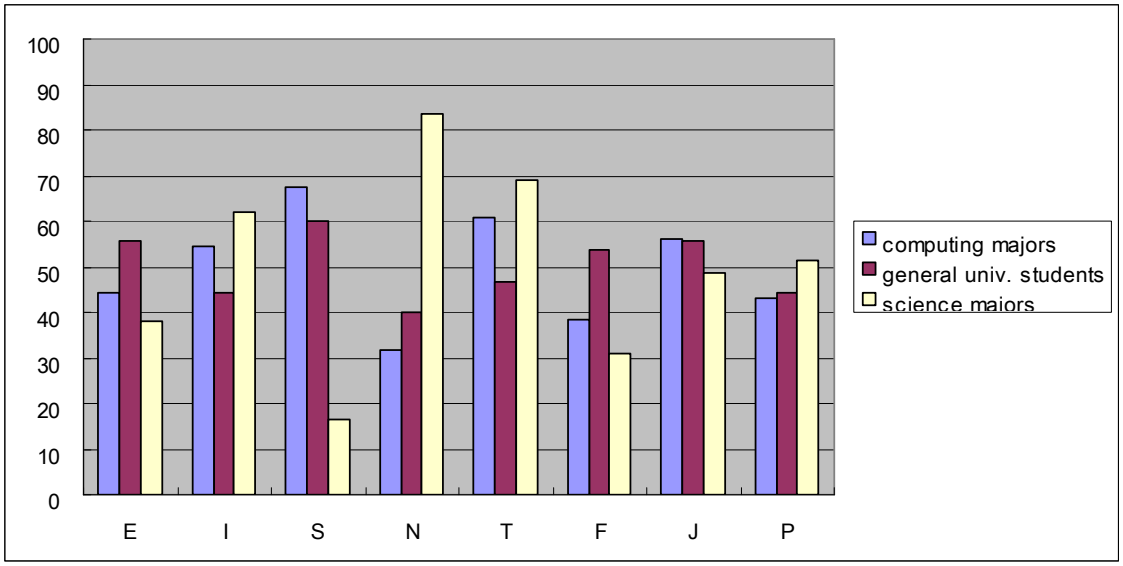

Figure 5 MBTI Preference Distribution Comparison

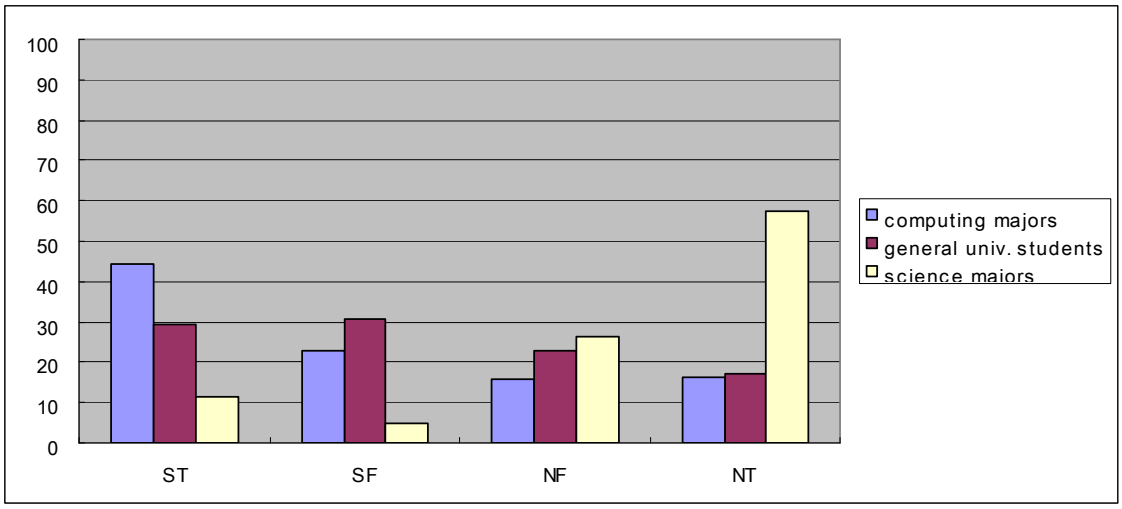

Figure 6 MBTI Two Inner Preferences Distribution Comparison