THE FIT BETWEEN MAJOR OF STUDY AND PERSONALITY TYPE: AN APPLICATION OF HOLLAND'S CODES IN CYPRUS

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Abstract

In this paper we measure the compatibility between undergraduate students' personality types and their study major in order to estimate the extent to which students study a major that fits their personality. An online questionnaire of Holland's typology of personality was used to obtain scores on students' personality types, and these were then compared with their type of major. It was found that the average Personality-Major-Distance (PMd) was 0.94 (where 0 denoted a perfect fit between personality type and type of major and 3 a maximum mismatch).

Introduction and Theoretical Background

The fit between personality and the activities they are engaged in has long preoccupied philosophers, psychologists, sociologists and other observers and analysts of human action. From Confucius' famous quote "Choose a job you love and you will never have to work a day in your life," to the complex tools that are used by schools, universities and consultants to help people choose the 'right' career, the fit between personality and occupation has been the aim of many individuals and organizations. And a good fit between personality and environment is important to organizations and individuals as it leads to job satisfaction and increased performance (Holland, 1996).

In many societies today the link between personality and job choice is frequently mediated through higher-level education. With more than 60% of 20-24 year olds in the EU enrolled in tertiary education (European Commission, 2012) and with many jobs being knowledge based, a university degree is, in many cases, linked to a related job after graduation. In several cases, like for example in medicine, law, the physical sciences, IT and other technical degrees, the choice of major is frequently linked to a related job after graduation. The choice of major is, therefore, an important influence in the road to professional development.

Even though the link between personality and work is frequently studied, the fit between personality and major of study has received less attention. This study

aims to capture this compatibility. Such an effort could contribute to a better understanding of students' choice of majors and assist in their efforts to achieve their educational goals and, eventually, live a more satisfying and fulfilling professional life.

Measuring the Fit Between Personality and Major of Study

Holland's Theory

To measure the fit between personality and major of study Holland's Occupational Themes Theory was used (Holland, 1997). It may be summarized in five statements (The career key, 2013):

1. People are one of six personality types: Realistic, Investigative, Artistic, Social, Enterprising, and Conventional. The characteristics of each of these personality types are described below.

   Realistic - Likes to work with animals, tools, or machines; generally avoids social activities like teaching, counseling, nursing, and informing others; has good skills in working with tools, mechanical drawings, machines or animals; values practical things you can see and touch -- like plants and animals you can grow, or things you can build or make better; sees self as practical, mechanical, and realistic.

   Investigative - Likes to study and solve math or science problems; generally avoids leading, selling, or persuading people; has good skills at understanding and solving science and math problems; values science; sees self as precise, scientific, and intellectual.

   Artistic - Likes to do creative activities like art, drama, crafts, dance, music, or creative writing; generally avoids highly ordered or repetitive activities; has good artistic abilities - in creative writing, drama, crafts, music, or art; values the creative arts - like drama, music, art, or the works of creative writers; sees self as expressive, original, and independent.

   Social - Likes to do things to help people - like teaching, counseling, nursing, or giving information; generally avoids using machines, tools, or animals to achieve a goal; has good skills at teaching, counseling, nursing, or giving information; values helping people and solving social problems; sees self as helpful, friendly, and trustworthy.

   Enterprising - Likes to lead and persuade people, and to sell things and ideas; generally avoids activities that require careful observation and scientific, analytical thinking; is good at leading people and selling things or ideas; values success in politics, leadership, or business; sees self as energetic, ambitious, and sociable.

   Conventional - Likes to work with numbers, records, or machines in a set, orderly way; generally avoids ambiguous, unstructured activities; good at working with written records and numbers in a systematic, orderly way; values success in business; sees self as orderly and good at following a set plan.
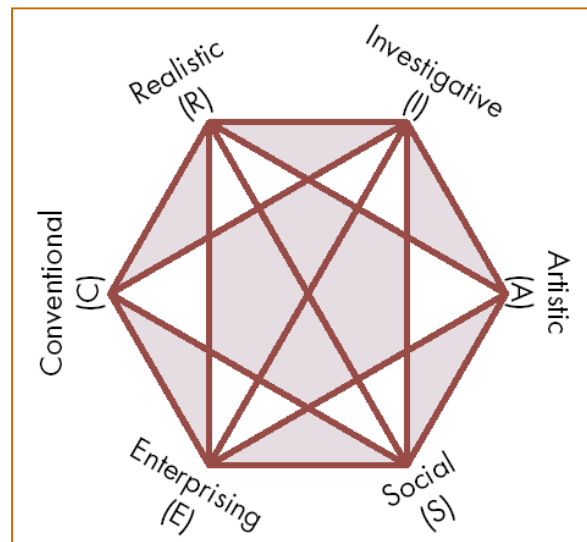
2. People of the same personality tend to "flock together." For example, Artistic people are attracted to making friends and working with Artistic people.

3. People of the same personality type working together in a job create a work environment that fits their type. For example, when Artistic persons are together on a job, they create a work environment that rewards creative thinking and behavior -- an Artistic environment.

4. There are six basic types of work environments: Realistic, Investigative, Artistic, Social, Enterprising, and Conventional.

5. People who choose to work in an environment similar to their personality type are more likely to be successful and satisfied. For example, Artistic persons are more likely to be successful and satisfied if they choose a job that has an Artistic environment, like choosing to be a dance teacher in a dancing school -- an environment "dominated" by Artistic type people where creative abilities and expression are highly valued.

PERSON   **CAREER**

| Your Personality type:
Realistic
Investigative
Artistic
Social
Enterprising
Conventional | Matched with | Compatible work environment:
Realistic
Investigative
Artistic
Social
Enterprising
Conventional | Will likely lead to success and satisfaction |

Figure 1. Person-career fit.

It is useful to note here that even though highest compatibility is obviously attained when personality and work environments are of the same type (Figure 1), not all work environments are equally incompatible when personality type and work environment are not the same. A hexagonal diagram is used to illustrate relations between the six personality types and work environments (Holland & Gottfredson, 1992) (Figure 2). The closer two fields (personality type and work environment) are in the hexagon, the more compatible they are. Adjacent categories are quite similar, whereas those diagonally opposite are highly dissimilar. For instance, a Conventional type personality would be most compatible with Conventional type work environments, less compatible with Enterprising and Realistic work environments, even less with Investigative and Social work environments and least compatible with Artistic work environments.

Figure 2. Hexagonal diagram illustrating relations between the six personality types and work environments.

The Use of Technology for Measurement and Comparison
The measurement of personality–major of study fit has become easier with the utilization of online survey tools. These tools give the opportunity to researchers to design-build surveys or choose from a selection of templates; collect-choose how to distribute and start collecting responses; and analyze results – use powerful analytical tools for intelligent insights. Some examples of the most popular online survey tools vendors are:

> *SurveyMonkey* (www.surveymonkey.com). It offers a popular online-hosted survey tool that works well for basic surveys. It offers both a free version that is most used for very small and informal surveys and that allows very little customization of the survey's look and can only collect 10 questions and 100 responses per survey and the select version that offers unlimited questions and responses, customizability, skip logic and the ability to export Excel and PDF files (costs $16.99/month, $199/year).

> *Zoomerang* (www.zoomerang.com). It is similar to SurveyMonkey, but offers a more powerful package for more money.

> *SurveyGizmo* (www.surveygizmo.com). A low-cost ($19/month) solution with some advanced features—it supports 1,000 responses per month, and basic logic—as well as a range of more advanced packages from $49/month to $160/month.

> Google Forms (www.google.com). One of the free apps developed by Google within its Google Drive services, offering hundreds of templates that can be used for various personal and collaborative purposes.

For the purposes of this study, the Google Forms tool was used since student-researchers were using Google Apps (Docs, Mail, Drive, Sites, Groups, Google+, etc.) for their courses. Google Forms provided a fast way to create the online survey, with responses collected in an online spreadsheet. The form was articulated via email or shared on Google+ and each response was viewed in a single row of the spreadsheet, with each question shown in a column.

Research Methodology

In order to measure the fit between students' personality types and their major of study, student personality types were determined by completing an online version of Holland Codes (http://www.roguecc.edu/Counseling/HollandCodes/about.asp) and then the results were compared with the kind of major they study.

The study's target population consisted of students coming from five universities in Cyprus: University of Cyprus, Technical University of Cyprus, University of Nicosia, European University and Frederick University. Specifically, questionnaires were randomly sent to students during Fall 2012 semester (October 2012 until December 2012) through mailing lists, Facebook and Google +. Three weeks were given to respond. At the end of the three-week period 150 questionnaires were received and analyzed.

The results of the Holland questionnaire are a series of six numbers (one for each of the six types of personality). The higher the number on each personality type the *more* the person who is taking the test is that type of personality. For the purposes of this research, the highest of the six numbers for each participant was taken to be his/her personality type.

In order to estimate the *distance* between students' personality types and the major of study, the various majors had to be categorized. The result of this exercise is shown in the Appendix. It has to be acknowledged that deciding the category of each major of study was not straightforward – especially for some majors. However, in attempts of this sort – categorizing personalities, jobs, social groups etc – this is something that is expected. An effort was made to make the categorization as consistent as possible to minimize negative impact on results.

To determine the fit between students' personality types and major of study we measured the distance between a student's highest score on the six personality types (his/her personality type) and his/her major of study type. We call this the Personality Major distance (PMd) and assigned the following numerical values:

> 0 – Student's personality type totally similar to his/her major of study
> 1 – Student's personality type similar to his/her major of study
> 2 – Student's personality type barely similar (dissimilar) to his/her major of study
> 3 – Student's personality type totally dissimilar to his/her major of study

For example, if a student's personality type was Realistic and the student was enrolled in a Realistic type of major (e.g., Engineering or Computer Technology) the PMd would be 0. If he/she were studying for an Investigative & Conventional type of major it would be 1, for an Artistic or Enterprising, 2, and for a Social type of major, 3 (see Figure 2). Thus, the lower the PMd value the better the match between personality and major of study. (Note: When two personality types had the same score on the Holland Test, the distance was measured from the average of the two. In the previous example, for instance, if the personality highest scores were the Realistic and the Conventional, the PMd from a Realistic and Conventional type of major would be 0.5; from Investigative and Enterprising, 1.5; and from Social and Artistic 2.5).

Online Tools

Google Forms were used to collect students' demographic information (age, gender, major of study) and Holland's typology test scores results. The specific instrument was employed as it was easy to invite students to participate and answer the questions from almost any web browser, including mobile Smartphone and tablet browsers (Wolber, 2012).

Results and Discussion

Participants' gender and year of study are summarized in Tables 1 and 2. With regard to major of study, the most common majors were Accounting (9%), Nursing (8%), and Interior Design, Psychology and Public relations (7% each). Other majors that appeared more frequently included Marketing and Electrical Engineering (6% each), and Management Information Systems, Law, Computer Science and Sports Science (5% each).

Table1

Gender

Male	88 (59%)
Female	62 (41%)

Table 2

Year of Study

1st	18 (12%)
2nd	34 (27%)
3rd	46 (31%)
4th	34 (27%)
5th or higher	30 (20%)

The average PMd of our sample was 0.94. This result is very close to a result of a similar study conducted a few years ago (Ktoridou and Epaminonda, 2003) at

Intercollege, one private institution in Cyprus. The PMd in that study was 0.96. This result suggests that students most probably do go through a process of choosing a major of study that is close to their personality. If the choice of majors had been arbitrary, we would expect an average value close to 1.5 – the average of 0, 1, 2 and 3. The value is, of course, quite far from 0, a result that would indicate complete fit between personality and major of study.

There were differences between the results of students from different kinds of majors (see Table 3). There is a relatively better fit between personality type and major in Enterprising, Investigative and Artistic major students (0.77, 0.88 and 0.90, respectively). A significant mismatch is apparent in students studying for what we called a Conventional major (this included only Accounting students). The mismatch is actually so strong that these students score on average lowest on the Conventional element of the personality test than on any other element. This is not surprising. It is likely that these students may be studying Accounting based more on job opportunities or parent pressure than on a personality fit.

Table 3

Personality-Major Distance by Type of Type of Major

Type of Major	Sample Size	PMd
Enterprising	43	0.77
Investigative	25	0.88
Artistic	21	0.90
Social	23	1.04
Realistic	25	1.08
Conventional	13	1.15
	Total: 150	Average: 0.94

Realistic type of majors included Computer Science and Engineering. From our results it seems that the Computer Science major attracts more Investigative students. This may not be so unexpected as the description of the above majors as *Realistic* is debatable: they include practical elements, but they are also science/theoretically driven. The MIS major was also included in the Realistic type of major in our analysis. The specialization of MIS is offered in the School of Business with emphasis on Information Technology courses. This combination could target both Enterprising and Realistic students and this is probably why several students who do not have a Realistic personality type choose this major.

Further Research Recommendations

Expanding the sample of the study would allow more valid statistical analysis to be performed and expand questions to include for example whether there are significant variations between different groups of students or between specific majors. Also, more qualitative kind of work, like for example interviews with students, could add to our understanding of the processes behind the choice of major – asking the 'how' and 'why' rather than the 'what' questions, in Yin's (1994) words. The personality profile of MIS students is one question that can be further investigated. This could provide assistance, for example, in the discussion of what courses to be included in this specialization.

Holland's personality test could also be taken by first year students to help in their search for a major that fits their personality.

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APPENDIX A

Engineering
Computer Technology
Management Information Systems

REALISTIC 0   1 **INVESTIGATIVE**

Pre-medicine
Statistics
Economics
Psychology
Computer Programming
Chemistry
Mathematics
Sociology
Liberal Arts

Accounting
Secretarial Studies
Advertising

CONVENTIONAL

2

ARTISTIC

Interior/Graphics
design
Visual & Performing
Arts
Photography
Communication
Multimedia

3

Public relations
Food Service Management
Banking & Finance
Journalism
Business Administration
Hospitality/Tourism
Law
Marketing
Advertising
Office Administration

ENTERPRISING

SOCIAL

Nursery Education
Primary Education
Counseling Psychology
Aesthetics   and   Beauty
Therapy