

Picture Test for Career Inclination (PTCI): An Application of Rooted Tree

Ganesh V. Joshi.^a, Pramod D. Tohake^b

^{a, b} Department of Mathematics, Maharshi Dayanand College, Parel, Mumbai 400012, Maharashtra, India

Abstract

Money has become most essential thing to live. It is most valuable commodity now days. To earn lawfully and morally once should get good career option. If student realized there potential inclines and likings at the age of 15 years then surely they can choose better career for themselves and so many social problem which may arise will resolve automatically. This paper is pictorial career inclination test designed by interviewing several personalities. Graph theory has wild range of applications in day to day life & this test is no exception. It is an application of rooted tree where respondent is at the root position of the tree and his inclination towards the career appears at leaf position according to the responses.

Mathematical back ground: A rooted tree is a tree in which a special vertex is singled out. This node is called the root. The numbers of rooted trees on n nodes for $n=1, 2, \dots$ are 1, 1, 2, 4, 9, 20, 48, 115, 286, 719.. which can be derived by using mathematical tools like generating function, recurrence relation. Each path travelling on rooted tree arises at unique leaf. Even though there can be number of rooted tree on 33 vertices, we have design only one for our purpose.

KEYWORDS: Career options, rooted tree, personality inclination, picture test, Rooted Tree

Introduction: Adolescent is stage in life when individual has to decide career option. For most it is a time riddled with confusion with so many career option to choose, hence the age 14 to 16 years is ideal time for student to take test for inclines towards the career so that it helps them gain a direction about the kind of career to take up. Generally this test are design to evaluate intelligence, aptitude, interest and personality of students. It helps an individual to identify strength and weakness and to determine personal work style. The three highest rated career aptitude inventories are as follows.

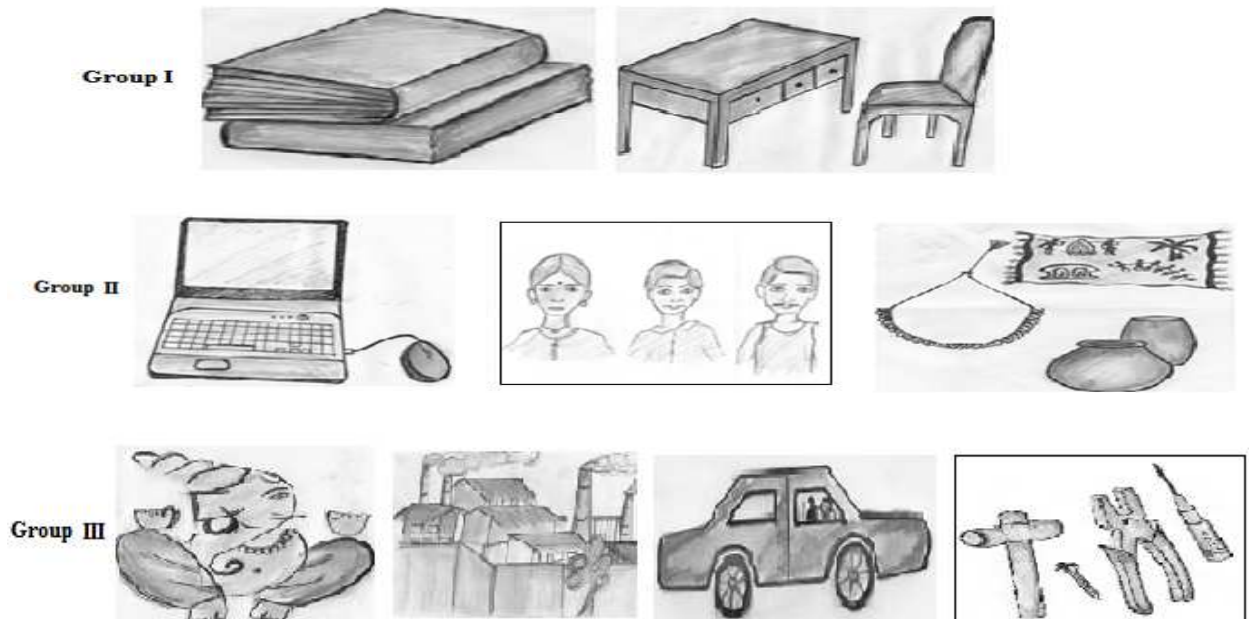
1)The Myers-Briggs type indicator :The Myers-Briggs Type Indicator (MBTI) assessment is a psychometric (which is a field of study concerned with the theory and technique of psychological measurement.) questionnaire designed to measure psychological preferences in how people perceive the world and make decisions.^[1,2,3] The questionnaire was created by Katharine Cook Briggs and Isabel Briggs Myers based on an extrapolation from the typological theories proposed by Carl Gustav Jung's 1921 book Psychological Types (English edition, 1923^[4]). Jung had theorized that there are four principal psychological functions by which humans experience the world - sensation, intuition, feeling, and thinking - and that one of these four functions is dominant most of the times^[5].

2) The Strong interest inventory: The **Strong Interest Inventory (SII)** is an interest inventory used in career assessment.^[6,7] As such, career assessments may be used in career counseling.^{[7][8][9][10][11][12]} The goal of this assessment is to give insight into a person's interests, so that they may have less difficulty in deciding on an appropriate career choice for themselves^[7,12]. It is also frequently used for educational guidance^[10,11] as one of the most popular career assessment tools. The test was developed in 1927 by psychologist Edward Kellogg Strong, Jr. to help people exiting the military find suitable jobs^[13]. It was revised later by Jo-Ida Hansen, and David Campbell. The modern version of 2004 is based on the Holland Codes typology of psychologist John L. Holland^[13].

3) The Kiersey Temperament: The **Keirsey Temperament Sorter (KTS)** is a self-assessed personality questionnaire designed to help people better understand themselves and others. It was first introduced in the book *Please Understand Me*. It is one of the most widely used personality assessments in the world, and its user base consists of major employers including Bank of America, Allstate, the U.S. Air Force, IBM, 7-Eleven, Safeco, AT&T, and Coca-cola^[14]. The KTS is closely associated with the Myers-Briggs Type Indicator (MBTI); however, there are significant practical and theoretical differences between the two personality questionnaires and their associated different descriptions.

Base work for the PTCI:

A thoughtful mind has many ways of own expressions. It may be prose, poems, songs, sculptures, picture etc. The simplest way of relating on expressing one's own thought is picture, so asking to choose a picture gives idea about the thought process in the mind of the respondents. The following pictures are shown while conducting survey of various 105 personalities & the inferences are noted which will help to predict the career/educational interest of the interested crowd.



The characteristics associated with these metaphors are obtained from literature, experience & common sense which are shown below.

Metaphor	Attributes
Book	Knowledge, Creativity, Friends, Opportunities, Willingness, Study, Brainy
Table-Chair	Experiments, Hard work, Management, Friendly, Creativity, Punctuality, Comfort
Computer	Knowledge, Management, Technology, Self centered, Modern
Faces	Social, Management, selfish
Artifacts	Creativity, Moods, Joys
God	Worship, Belief, Holly, Generous, Religious, Dedication, Spiritual
Industry	Dreams, Hard Work, Contacts, Luxury, Progress, Risk, Competitive
Car	Luxury, Hard work, Dreams, efforts, Jolly, Happiness
Instruments	Creativity, Hard work, Dedication, Bravery

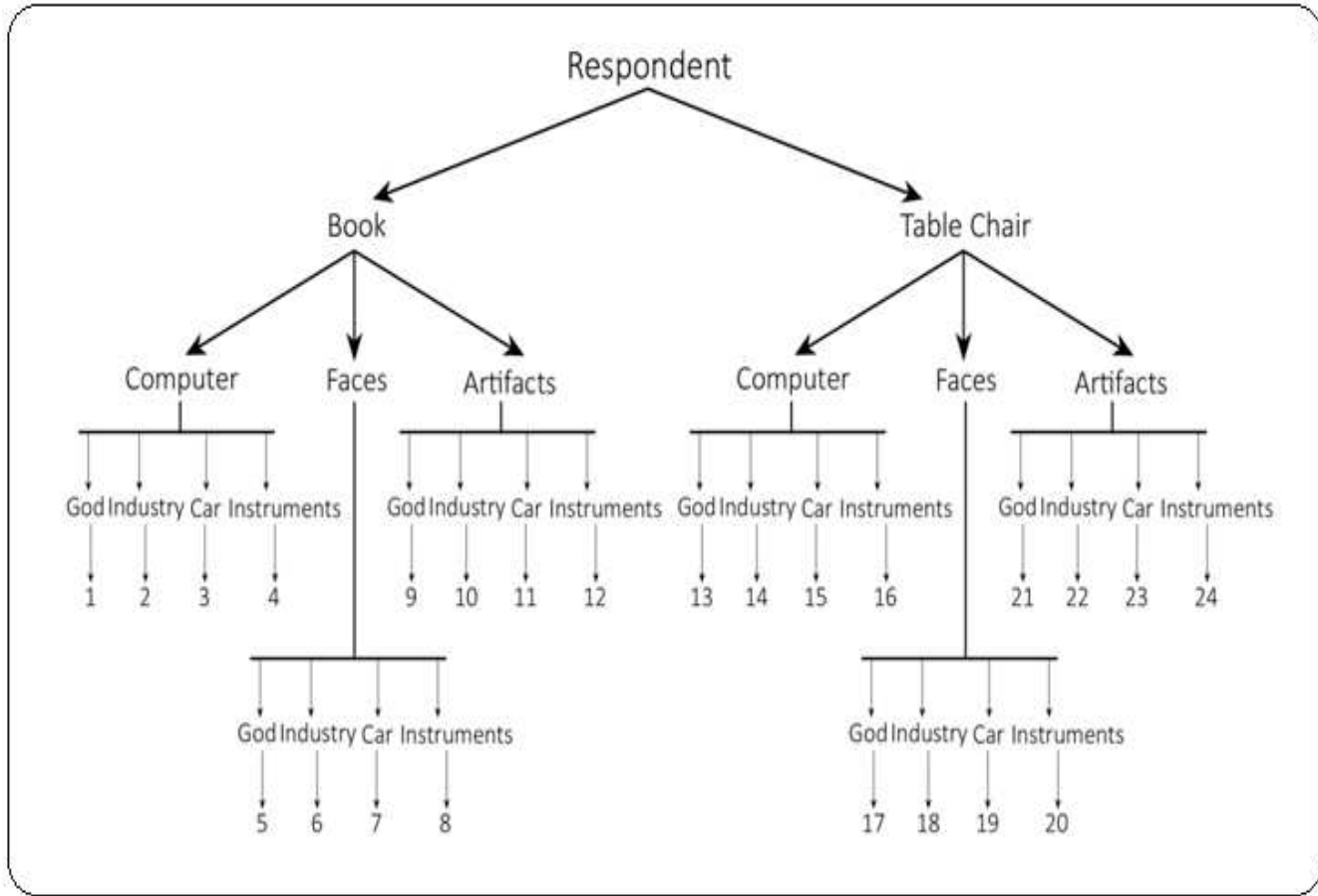
As a picture speaks thousand words, one has to analyze the correct words in a mind of respondents. As colours and emotions are attached to each other & may reflect bias in the selection, hence only black and white ordinarily draw pictures from three groups are offered to the respondents to achieve their own views or inclines.

The result of survey of metaphors liking of various professionals.

Object Profession	Group 1		Group 2			Group 3				Result Referenc e
	Boo k	tabl e	Comput er	face s	artifact s	god	Indust ry	car	Instrum ents	
Engineer	4	2	4	1	1	0	1	4	1	3
doctor	4	1	2	3	0	1	2	1	1	2
Driving	0	3	2	0	1	0	1	2	0	11
CA/CS	6	1	2	4	1	0	1	6	0	7
Counselor	2	0	1	1	0	1	0	1	0	1,3,5,7
Banker	3	1	1	2	1	0	2	2	0	6,7
Sportsman	1	4	1	3	1	0	2	2	1	18,19
MBA	1	3	2	2	0	0	2	2	0	14,15,18, 19
Artists	1	2	0	1	2	2	0	1	0	21
Businessma n	4	2	1	1	4	0	1	2	3	12
Metal/Leath er	0	2	0	0	2	0	0	0	2	24
Shopkeeper	1	5	1	4	1	1	1	3	1	19
Scientist	4	0	3	1	0	0	1	2	1	3
Theatre/med	2	3	2	2	1	1	2	2	0	14,15,18,

ia										19
Domestic works	0	5	1	3	1	0	1	2	3	20
Security	0	3	2	1	0	0	0	1	2	16
Govt. Service	1	4	3	2	0	2	1	2	0	13,15
Lawyer	1	1	0	1	1	0	0	2	0	7,11,19,23
Broker/consultants	2	1	0	1	2	0	2	1	0	10
Teachers	5	1	3	3	0	2	1	2	1	1,3,5,7
Geologist	1	0	1	0	0	0	0	0	1	4
Software/logistics	3	1	2	2	0	0	0	2	2	3,4,7,8
Civil Services	2	1	0	1	2	1	0	1	1	9,11,12
Social Service	1	2	0	3	0	2	0	0	1	17
Food Industry	0	2	0	0	2	0	0	1	1	23,24
Medical Representative	2	1	0	2	1	1	2	0	0	6
Merchants/Technicians	0	2	0	0	2	0	1	1	0	22,23

Now for respondents, those selecting books are oriented towards the book side branch and those who select table are oriented towards table branch and the process is extended in the similar fashion to complete & conclude. The tree is shown below.



Leaf Number at which the respondent arrives	Predicted career/educational inclination of the respondent.
1	Teacher, Counselor
2	Doctors, Teachers
3	Scientist, Engineers, Teachers, Software Profession, Counselor
4	Rare fields like Astronomy, Geologist, Astronomy etc.
5	Teacher, Counselor
6	Banking, Medical Representatives
7	CA, CS, Law, Teacher, Banking, Counselor, Software Profession, Logistics
8	Logistics, Software Profession
9	Civil Services like Police, Fire Brigade, Home Guards
10	Brokers, Consultants
11	Lawyers, Civil Services
12	Businessman, Civil Services
13	Government Service, Clerical Works

14	MBA, Marketing, Theatre
15	Driving Profession, MBA, Theatre, Clerical Works
16	Security Services
17	Social Service, Journalist, Counselor, Event Management
18	Sportsman, Theatre, MBA
19	Shopkeepers, Agents, Sportsman, Theatre, MBA, Lawyer
20	Domestic works, Loan Services
21	Artists
22	Technicians, Merchants
23	Hotel Industry, Merchants, Lawyers, Technicians
24	Leather works, Meatal Works, Food Industry

Advantages:

- 1) It is a very simple user friendly test and can be carried out number of times easily.
- 2) It does not give stress like other verbal test and long questionnaires.
- 3) The test was tried on sample of 56 student and 87.50 % are satisfied with outcome.
- 4) The application is free of cost.
- 5) Pictures speak universal language.
- 6) It quickly provides ruff personality guess of respondents.
- 7) It is easy to design an executable application in visual basic.

Limitations:

- 1) The logical IQ and emotional IQ of respondents are not taken under consideration.
- 2) Socio-eco status of student has given no weight.
- 3) There are more career opportunities then the conventional opportunities which don't have reflection in the test.
- 4) Validity of tools & validity of test is commented on comparatively on small size data and it is not statistically analyzed.

Conclusion:

Despite many other career oriented test available on internet, Students showed interest about the test which we have designed, indicates the success of test and with some modifications one can easily redesigned the test for betterment of results.

Acknowledgements:

We are thankful to Ms. Meenakshi Rane, Ms. Bunty Rane, Vedika Joshi being providing Black & White Pictures of metaphors used & also to Mr. Lalit Vishwakarma for providing us rooted tree diagram.

References:

1. Myers, Isabel Briggs with Peter B. Myers (1995) [1980]. *Gifts Differing: Understanding Personality Type*. Mountain View, CA: Davies-Black Publishing. ISBN 0-89106-074-X.
2. MBTI basics, The Myers-Briggs Foundation, 2014, Retrieved 18 June 2014.
3. Myers-Briggs Type Indicator (MBTI), CPP.com, Menlo Park, CA, 2014, Retrieved 18 June 2014.
4. Jung, Carl Gustav (August 1, 1971). "Psychological Types". *Collected Works of C.G. Jung*, Volume 6. Princeton University Press. ISBN 0-691-097704.
5. Kaplan, R. M.; Saccuzzo, D. P. (2009). *Psychological Testing: Principles, Applications, and Issues* (7 ed.). Belmont, CA:Wadsworth. ISBN 978-0495506362.
6. Staggs, G.D. (2004). *Meta-analyses of interest-personality convergence using the Strong Interest Inventory and the Multidimensional Personality Questionnaire*. (Order No. 3145683, Iowa State University).ProQuest Dissertations and Theses, pp. 1-24.
7. Prince, J.R. (June 1998). "Interpreting the Strong Interest Inventory: A case study". *The Career Development Quarterly* **46** (4): 339–346. doi:10.1002/j.2161-0045.1998.tb00708.x.
8. Harmon, L.W., Hansen, J.C., Borgen, F.H., & Hammer, A.L. (1994) *Strong Interest Inventory applications and technical guide*. Palo Alto, CA: Consulting Psychologists Press.
9. Prince, J.P. (1995). *Strong Interest Inventory resource: Strategies for group and individual interpretations in college settings*. Palo Alto, CA: Consulting Psychologists Press.
10. Day, M.A., & Luzzo, D.A. (1997). *Effects of Strong Interest Inventory feedback on career beliefs*, pp. 1-13. Paper presented at the Annual Meeting of the American Psychological Association, Chicago, Illinois.
11. *Effects of Strong Interest Inventory feedback on career beliefs*, ERIC.ED.gov, 1997, Day, M.A., & Luzzo, D.A., Retrieved 17 June 2014.
12. Katz, L., Joyner, J.W., & Seaman, N. (July 1999). "Effects of joint interpretation of the Strong Interest Inventory and the Myers-Briggs Type Indicator in career choice". *Journal of Career Assessment* **7** (3): 281–298. doi:10.1177/106907279900700306.
13. Donnay, D.A.C. (September 1997). "E.K. Strong's legacy and beyond: 70 years of the Strong Interest Inventory". *The Career Development Quarterly* **46** (1): 2–22. doi:10.1002/j.2161-0045.1997.tb00688.x.
14. "Don't Just Find a Job That's Right for the Economy, Find a Job That's Right for You!". *Guide To Online Schools*. Retrieved 27 April 2013.
15. *Graph Theory with Applications to Engineering and Computer Science* by Narsingh Deo. ISBN-81-203-0145-5