

A STATISTICAL STUDY ON IMPACT OF PERSONALITY TRAITS ON JOB PERFORMANCE MODERATED BY AGE

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Abstract

Psychologists have denied the perspective that there was any stability to Personality at all. The research on Personality Aging Pattern (PAP) established that a pattern exists with Personality along Aging. The purpose of the research is to determine a statistical relation between Personality traits of Five Factor Model and Work Force Age Bands.. The results give the most desirable personality and the most productive Age band for job performance. The finding shows that all the five factors of personality take different patterns along the life span. Human Resource Metric System may be designed based on the study results.

Key words: Five Factor Personality Model, Job Performance, Work force Age Bands.

Introduction:

Inspiration of this study was sourced from the article published in the Academy of Management Journal ,2015 that all the characteristics were “more predictive of performance for jobs” when the work was performed in an unstructured environment with freedom to make choices. Big Five model include a dimension of more particular characteristic derived from statistical analysis. The Big Five components are an analytically based phenomenon, not a theory of personality: Openness to experience, Extroversion, Neuroticism, Agreeableness and Conscientiousness. The domain of job achievement has been defined by specifying the major dimensions of performance viz., behaviors that limit performance, interpersonal relations, individual and team task performance, job proficiency, job-related skills and task knowledge. There exist many studies related to Personality and Age. The research purpose of this study was to trace if any Pattern exists with Personality and Age, its relation to the job performance. Thus the Objective of the study was to analyse the association between the Five Factor Model of Personality and Job achievement moderated by Age, especially along three work force Age bands 20+ years, 30+ years, 40+ years of age group; to identify the Age band of the most accepted personality and the most productive performance.

Review of Literature

Trends of difference in the mean based on personality traits across the life course: a meta-investigation of longitudinal research. : Longitudinal research, mostly of Western cultures, has found strikingly relevant findings. Changes in mean levels of personality traits were recently analysed in a meta-analysis of 92 longitudinal research covering the life course from age 10 to 101 (Roberts, Walton, & Viechtbauer, 2006).

As in the cross-sectional studies, momentous mean-level change in all characteristic domains was found at some point in the life course, and statistical meaningful change was found in 75% of personality traits in middle age (40–60) and old age (60+). Clearly, personality traits continue to improve in adulthood. The

leadership of change is clearly in the positive direction. With age, people become more confident, warm, answerable, and calm—or what some have described as socially mature (Roberts & Wood, 2006).

People who conduct problematic, counterproductive activities at work, such as theft, aggression, and malingering, are prone to diminish on measures of conscientiousness and emotional stability (Roberts, Walton, Bogg, & Caspi, 2006).

Social maturity is equated with the capacity to become a productive and involved contributor to society. Moreover, those who improve the cardinal characteristics of psychological maturity earliest are more efficient in their relationships and work and lead healthier and longer lives (Roberts, Kuncel, Shiner, Caspi, & Goldberg, 2007).

Journal of Research in Personality Volume 79, April 2019, Pages 67-78 To fear or fly to the unknown: Tolerance for ambiguity and Big Five personality traits Author Hayley K. Jach Luke D. Smillie

Methodology :

Data were collected from employees of various organizations in India and only 450 valid data sheets were considered for the study purpose. BIG FIVE Inventory was selected to test Personality Dimension. Likert scale was used to score Performance Dimensions of the employees Job performance ratings was done on behaviors that limit performance, interpersonal relations, individual and team task performance, job proficiency, job-related skills and task knowledge. Regression Analysis was done to study the association between the Five Factor Model of Personality and Job achievement mediated by three work force age bands of 20+ years, 30+ years and 40+ years of age. Scatter plot was done to fetch PAP graphs for all the five factors of personality.

IMPACT OF DIMENSIONS OF PERSONALITY ON PERFORMANCE OF 20 + YEARS AGE GROUP

Regression is the determination of statistical relationship between two or more variables. In simple regression two variables are used. One variable (independent) is the cause of the behaviors of another one (dependent). When there are more than two independent variables the investigation regarding association is known as multiple correlations and the equation depict such relation is called as the multiple regression equation.

Regression analysis using the source of a suitable mathematical explanation is derived for outcome values of a dependent variable on the base of independent variable. It is thus designed to analyse the association of a variable Y to a set of other variables $X_1, X_2, X_3, \dots, X_n$. the most frequently applied linear equation in $Y = b_1 X_1 + b_2 X_2 + \dots + b_n X_n + b_0$

Here Y is the dependent variable, which is to be found. X_1, X_2, \dots and X_n are the known variables with which assumptions are to be made and b_1, b_2, \dots, b_n are coefficient of the variables.

In this study, the dependent variable is work of 20 years age panel; Independent variables are personality they are extraversion, openness to knowledge, conscientiousness, agreeability and neuroticism are discussed as follows:

- Dependent Variable – Performance of 20 years age group (y)
- Independent Variable
 - i. Extraversion (X_1)
 - ii. Openness to experience (X_2)
 - iii. Conscientiousness (X_3)
 - iv. Agreeableness (X_4)
 - v. Neuroticism (X_5)
- Multiple R value: 0.828
- R Square value: 0.685

- Adjusted R square value: 0.668
- F value: 39.197
- P value: 0.000

Table1: impact of dimensions of personality of 20+years age group

Variables	Unstandardized Coefficients(B)	S.E error of B	Standardized Coefficients Beta	t-value	p-value
Constant	.014	.348	-----	.040	.968
Extraversion	.105	.059	.129	1.780	0.078
Openness to experience	.274	.066	.312	4.150	0.000**
Conscientiousness	.401	.049	.533	8.120	0.000**
Agreeableness	.170	.046	.243	3.667	0.000**
Neuroticism	.266	.063	.260	4.219	0.000**

Note: ** Denotes significant at 1% level

* Denotes significant at 5% level

The multiple correlation coefficient is 0.828 measures the degree of linkage between the actual values and the predicted values of the performance of 20 years age group. Because the predicted values are obtained as a linear combination of Extraversion (X_1), Openness to experience (X_2), Conscientiousness (X_3), Agreeableness (X_4) and Neuroticism (X_5) the coefficient value of 0.828 indicates that the relationship between performance of 20 years age group and the five independent variables is quite strong and positive.

The Coefficient of Determination R-square measures the goodness-of-fit of the estimated Sample Regression Plane (SRP) in terms of the percentage of the different in the dependent variables explained by the fitted sample regression equation. Thus, the value of **R square is 0.685** simply means that about 68.5% of the different in work of 20 years age group is explained and R square value is significant at 1 % level.

The multiple regression equation is

$$Y = 0.014 + 0.105 X_1 + 0.274 X_2 + 0.401 X_3 + 0.170 X_4 + 0.266 X_5$$

Here the coefficient of X_1 is 0.105 represents the partial effect of Extraversion on performance of 20 years age group, holding the other variables as constant. The estimated positive sign implies that such effect is positive that performance of 20 years age group would increase by 0.105 for every unit increase in Extraversion and this coefficient value is not significant at one percent level. The coefficient of X_2 is 0.274 represents the partial effect of Openness to knowledge on work of 20 years age panel, holding the other variables as constant. The estimated positive sign implies that such effect is positive that performance of 20 years age group would increase by 0.274 for every unit increase in Openness to experience and this coefficient value is significant at 1% level. The coefficient of X_3 is 0.401 represents the partial effect of Conscientiousness on work of 20 years age group, holding the other variables as constant. The estimated positive sign implies that such effect is positive that performance of 20 years age group would increase by 0.401 for every unit apprehended in Conscientiousness and this coefficient value is significant at 1% level. The coefficient of X_4 is 0.170 represents the partial effect of Agreeableness on performance of 20 years age group, holding the other variables as constant. The estimated positive sign implies that such effect is positive that performance of 20 years age group would increase by 0.170 for every unit apprehended in Agreeableness and this coefficient value is meaningful at 1% level. The coefficient of X_5 is 0.266 represents the partial effect of Neuroticism on performance of 20 years age group, holding the other variables as

constant. The estimated positive sign implies that such effect is positive that performance of 20 years age group would increase by 0.266 for every unit apprehended in Neuroticism and this coefficient value is meaningful at 1% level.

Based on standardized coefficient, Conscientiousness (0.533), Openness to experience (0.312), Neuroticism (0.260) is the most significant elements to extract performance of 20 years age group, followed by Agreeableness (0.243) and Extraversion (0.129).

IMPACT OF DIMENSIONS OF PERSONALITY ON PERFORMANCE OF 30 + YEARS AGE GROUP

In this research, the dependent variable is performance of 30 years age group; Independent variables are personality they are extraversion, openness to knowledge, conscientiousness, agreeableness and neuroticism are discussed as follows:

- Dependent Variable – Performance of 30 years age group (y)
- Independent Variable
 - i. Extraversion (X_1)
 - ii. Openness to experience (X_2)
 - iii. Conscientiousness (X_3)
 - iv. Agreeableness (X_4)
 - v. Neuroticism (X_5)
- Multiple R value: 0.843
- R Square value: 0.711
- Adjusted R square value: 0.697
- F value: 51.098
- P value: 0.000

Table2: impact of dimensions of personality of 30+years age group

Variables	Unstandardized Coefficients (B)	S.E error of B	Standardized Coefficients Beta	t-value	p-value
Constant	.057	.313	-----	.183	.855
Extraversion	.099	.055	.117	1.815	0.072
Openness to experience	.255	.060	.290	4.268	0.000**
Conscientiousness	.193	.044	.257	4.356	0.000**
Agreeableness	.422	.045	.556	9.474	0.000**
Neuroticism	.248	.057	.241	4.332	0.000**

Note: ** Denotes significant at 1% level

* Denotes significant at 5% level

The multiple correlation coefficient is 0.843 measures the degree of linkage between the actual values and the predicted values of the performance of 30 years age group. Because the predicted values are obtained as a linear combination of Extraversion (X_1), Openness to experience (X_2), Conscientiousness (X_3), Agreeableness (X_4) and Neuroticism (X_5) the coefficient value of 0.843 indicates that the relationship between performance of 30 years age group and the five independent variables is quite strong and positive.

The Coefficient of Determination R-square analysis the goodness-of-fit of the estimated Sample Regression Plane (SRP) in terms of the percentage of the different in the dependent variables interpreted by the fitted sample regression equation. Thus, the value of **R square** is 0.711 simply means that about 71.1% of the different in work of 30 years age group is explained and R square value is meaningful at 1 % level.

The multiple regression equation is

$$Y = 0.057 + 0.099 X_1 + 0.255 X_2 + 0.193 X_3 + 0.422 X_4 + 0.248 X_5$$

Here the coefficient of **X₁** is 0.099 represents the partial effect of Extraversion on performance of 30 years age group, holding the other variables as constant. The estimated positive sign implies that such effect is positive that achievement of 30 years age group would enhance by 0.099 for every unit apprehended in Extraversion and this coefficient value is not meaningful at 1% level. The coefficient of **X₂** is 0.255 represents the partial influence of Openness to knowledge on performance of 30 years age group, holding the other variables as constant. The estimated positive sign implies that such effect is positive that performance of 30 years age group would increase by 0.255 for every unit apprehended in Openness to experience and this coefficient value is meaningful at 1% level. The coefficient of **X₃** is 0.193 represents the partial impact of Conscientiousness on work of 30 years age group, holding the other variables as constant. The estimated positive sign implies that such effect is positive that performance of 30 years age group would increase by 0.193 for every unit apprehended in Conscientiousness and this coefficient value is meaningful at 1 % level. The coefficient of **X₄** is 0.422 represents the partial effect of Agreeableness on performance of 30 years age group, holding the other variables as constant. The estimated positive sign implies that such effect is positive that performance of 30 years age group would increase by 0.422 for every unit apprehended in Agreeableness and this coefficient value is meaningful at 1% level. The coefficient of **X₅** is 0.248 represents the partial effect of Neuroticism on performance of 30 years age group, holding the other variables as constant. The estimated positive sign implies that such effect is positive that performance of 30 years age group would increase by 0.248 for every unit apprehended in Neuroticism and this coefficient value is meaningful at 1% level.

Based on standardized coefficient, Agreeableness (0.556), Conscientiousness (0.257), Openness to experience (0.290) is the most important factors to extract performance of 30 years age group, followed by Neuroticism (0.241) and Extraversion (0.117).

IMPACT OF DIMENSIONS OF PERSONALITY ON PERFORMANCE OF 40 + YEARS AGE GROUP

In this research, the dependent variable is performance of 40 years age group; Independent variables are personality they are extraversion, openness to knowledge, conscientiousness, agreeableness and neuroticism are discussed as follows:

- Dependent Variable – Performance of 40 years age group (y)
- Independent Variable
 - i. Extraversion (X₁)
 - ii. Openness to experience (X₂)
 - iii. Conscientiousness (X₃)
 - iv. Agreeableness (X₄)
 - v. Neuroticism (X₅)
- Multiple R value: 0.845
- R Square value: 0.714
- Adjusted R square value: 0.704
- F value: 67.011
- P value: 0.000

Table3:impact of dimensions of personality on performance of 40 + years age group

Variables	Unstandardized Coefficients(B)	S.E error of B	Standardized Coefficients Beta	t-value	p-value
Constant	.170	.280	-----	.607	.545
Extraversion	.264	.054	.290	4.890	0.000**
Openness to experience	.112	.049	.128	2.292	0.023*
Conscientiousness	.428	.040	.553	10.701	0.000**
Agreeableness	.185	.039	.246	4.745	0.000**
Neuroticism	.279	.051	.265	5.428	0.000**

Note: ** Denotes significant at 1% level

* Denotes significant at 5% level

The multiple correlation coefficient is 0.845 measures the degree of association between the actual values and the predicted values of the performance of 40 years age group. Because the predicted values are obtained as a linear combination of Extraversion (X_1), Openness to experience (X_2), Conscientiousness (X_3), Agreeableness (X_4) and Neuroticism (X_5) the coefficient value of 0.845 indicates that the relationship between performance of 40 years age group and the five independent variables is quite strong and positive.

The Coefficient of Determination R-square investigates the goodness-of-fit of the estimated Sample Regression Plane (SRP) in terms of the percentage of the different in the dependent variables interpreted by the fitted sample regression equation. Thus, the value of **R square** is 0.714 simply means that about 71.4% of the varied in work of 40 years age group is explained and R square value is meaningful at 1% level.

The multiple regression equation is

$$Y = 0.170 + 0.264 X_1 + 0.112 X_2 + 0.428 X_3 + 0.185 X_4 + 0.279 X_5$$

Here the coefficient of X_1 is 0.264 represents the partial effect of Extraversion on performance of 40 years age group, holding the other variables as constant. The estimated positive sign implies that such effect is positive that performance of 40 years age group would increase by 0.264 for every unit apprehended in Extraversion and this coefficient value is not meaningful at 1% level. The coefficient of X_2 is 0.112 represents the partial effect of Openness to knowledge on work of 40 years age group, holding the other variables as constant. The estimated positive sign implies that such effect is positive that performance of 40 years age group would increase by 0.112 for every unit apprehended in Openness to knowledge and this coefficient value is meaningful at 1% level. The coefficient of X_3 is 0.428 represents the partial effect of Conscientiousness on work of 40 years age group, holding the other variables as constant. The estimated positive sign implies that such effect is positive that performance of 40 years age group would increase by 0.428 for every unit improved in Conscientiousness and this coefficient value is meaningful at 1% level. The coefficient of X_4 is 0.185 represents the partial effect of Agreeableness on work of 40 years age group, holding the other variables as constant. The estimated positive sign implies that such effect is positive that performance of 40 years age group would increase by 0.185 for every unit developed in Agreeableness and this coefficient value is significant at 1% level. The coefficient of X_5 is 0.279 represents the partial effect of Neuroticism on performance of 40 years age group, holding the other variables as constant. The estimated positive sign implies that such effect is positive that performance of 40 years age group would improved by 0.279 for every unit apprehended in Neuroticism and this coefficient value is meaningful at 1% level.

Based on standardized coefficient, Conscientiousness (0.553), Extraversion (0.290), Neuroticism (0.265) is the most significant elements to extract performance of 40 years age group, followed by Agreeableness (0.246) and Openness to knowledge (0.128).

Findings

The association between, Extraversion, Agreeableness and Openness and Job achievement became stronger with age whereas the association between Conscientiousness, Neuroticism and Job Performance became weaker with age. Among the workforce Age groups, age band of 30+ years showed the most desired Personality traits for performance outcome. Performance index was at its best for the employees in the 30s on the whole. The researchers found that

1. Conscientiousness (organized, meticulous) increases with age, at a higher pace after 30+.

Graph 1 : Conscientiousness and Job Performance against Age bands

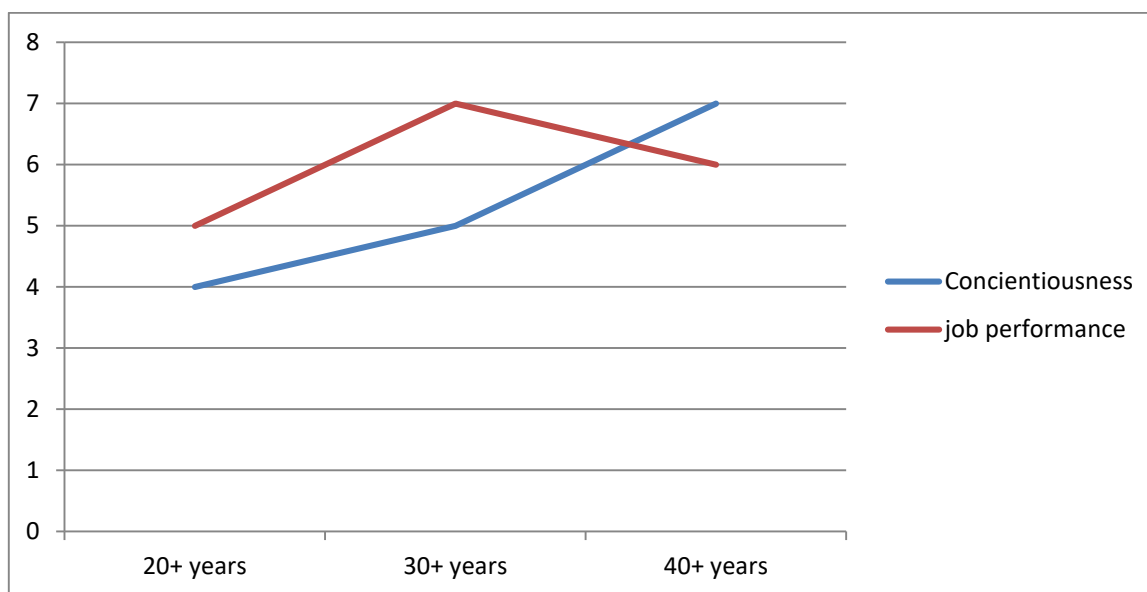


Figure1:conscientiousness and job performance against age bands

2. Agreeableness (warm, generous, and helpful) escalated most in the 20s and 30s and declined gradually in the 40s.

Graph 2 : Agreeableness and Job Performance against Age bands

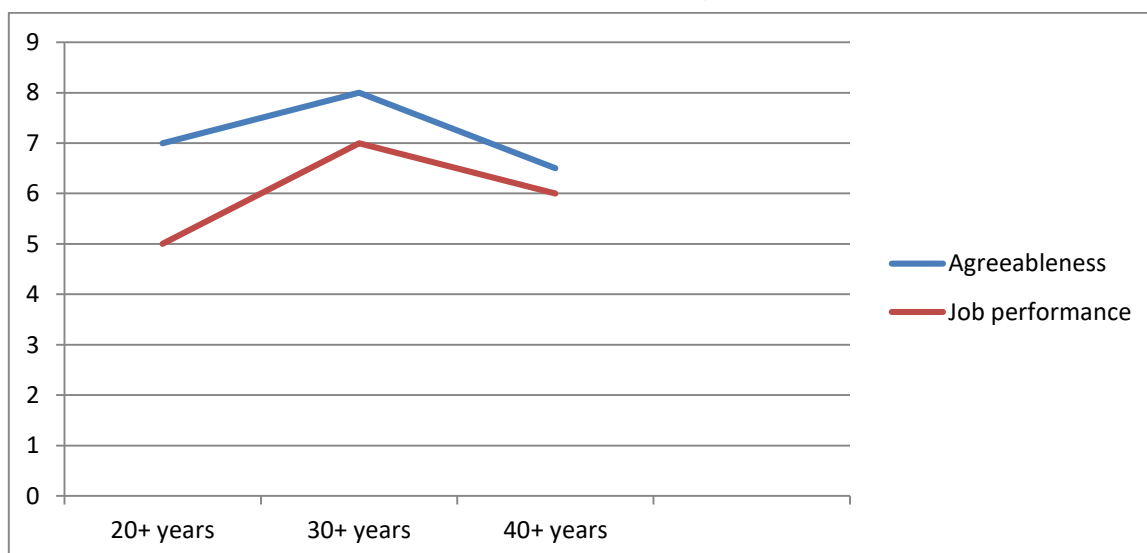


Figure2: agreeableness and job performance against age bands

3. Neurosis (impulsive, anxious) tended to decrease withthe age.

Graph 3: Neurosis and Job Performance against Age bands

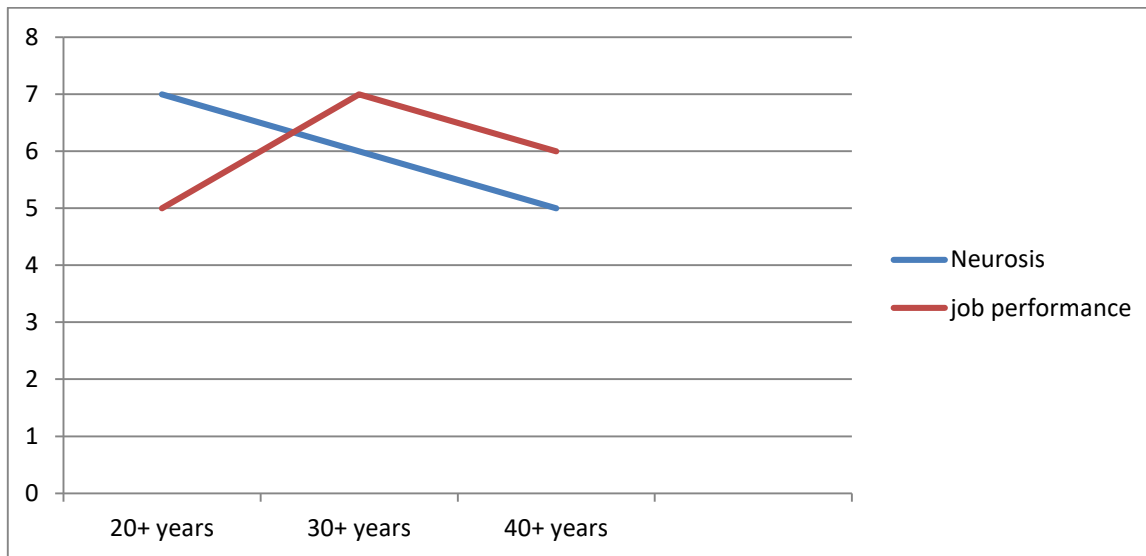


Figure3: : neurosis and job performance against age bands

4. Openness(inventive/curious)tends to score very high in 20+ years and reaches its peak in 30+ thereafter reduces gradually in 40+ years

Graph 4: Openness and Job Performance against Age bands

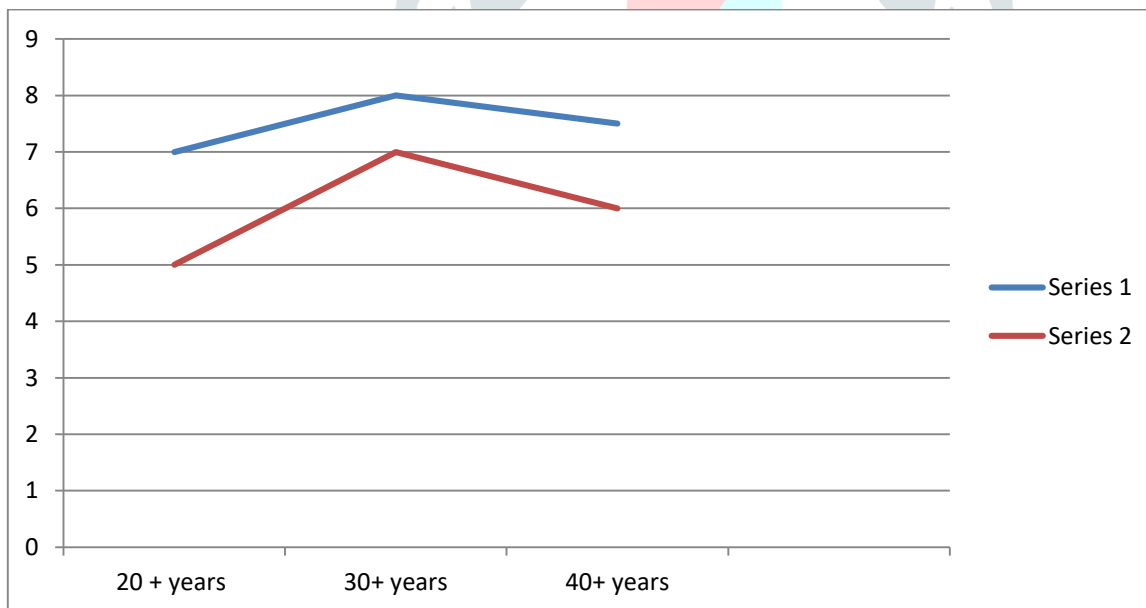


Figure4: openness and job performance against age bands

5. Extroversion factor (*outgoing/energetic*) scores more or less similar to the factor openness, slopes downward in the 40s.

Graph 5: Extroversion and Job Performance against Age bands

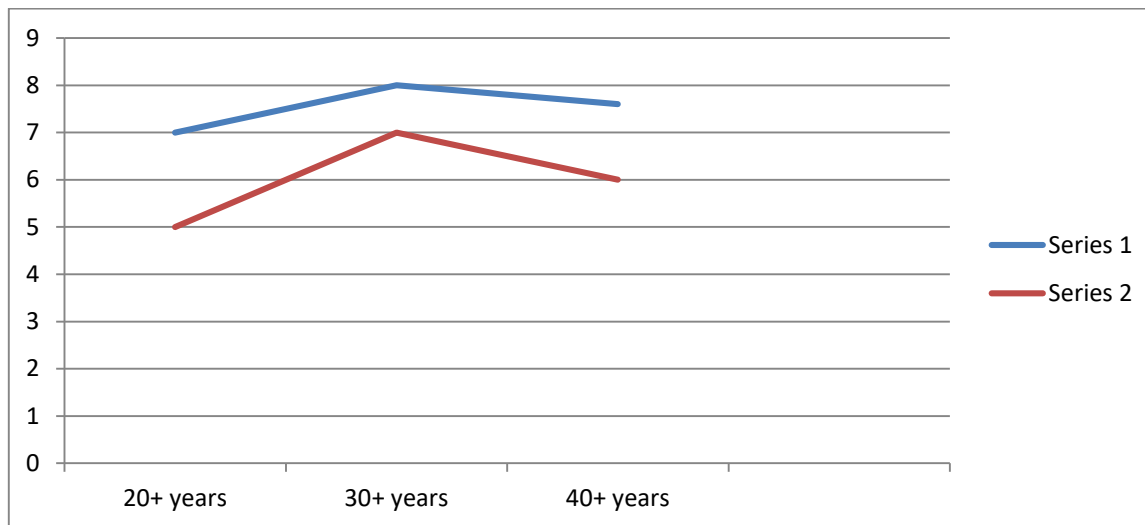


Figure5: extroversion and job performance against age bands

Conclusion:

With reference to Florida Tech online, According to a paper published in Science Direct, 2016, “leaders who have an understanding of how individuals’ personalities differ can use this understanding to improve their leadership effectiveness and lead to improve employees’ job performance”. All the HR functions may be designed and executed with the Personality Aging Pattern in the core. Personality though a qualitative aspect, PAP gives a quantifiable, customized intervention which increases the validity of hiring, training and other HR interventions.

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