

## **Exploration of Personality Factors and their Effects on People's Decision Making of Complementary and Alternative Medicine**

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### **ABSTRACT**

*Complementary and Alternative medicine (CAM) often promoted and utilized as a non-integral part of conventional medicine has diverse modalities and variegated application. To choose among the alternatives in a comparable situation the decision process is complex and dependent on many factors including social, cognitive component and personality traits. This study is aimed to explore whether the factors affecting the choice of treatment modality between CAM and Conventional Medicine has any underlying effects of personality of the decision makers, as per Big 5 personality traits. The study focuses on the decision making process behind the choice of therapy so that a valid decision path can be formulated. It was found that Personality has an important role in decision making as three underlying Personality Factors (Neuroticism, Conscientiousness and Extraversion) are separately identified. Extraversion has positive ( $B = 0.693$ ,  $p < 0.001$ ) and Conscientiousness has ( $B = -.306$ ,  $p < 0.001$ ) negative effect. However, Neuroticism has no direct effect but affecting via one mediating component, i.e. Anxiety. Pro-CAM Social enabling factor is positively affecting CAM usage ( $B = .538$ ,  $p < 0.001$ ). A validated path model has been constructed involving the effects of personality factors. This study shall help in future planning of healthcare human resource allocation, management as well as understanding the treatment seeker's psychosocial dynamics while making an important decision for attaining health.*

**Keywords:** Big 5 personality traits, Treatment decision making, CAM, Health human resource, Path analysis.

### **INTRODUCTION:**

Complementary and Alternative medicine (CAM) includes a diverse group of medical treatment modalities each having separate principles of treatment and is not an integral part of Conventional medical practice. In India, there is a comparable situation of choosing the treatment provider; and hence, the ultimate treatment decision is solely dependent on patient's and / or kin's choice. According to World Health Organization, use of CAM is common all over the world in both developed and developing nations and is estimated between 30% to 70%. USA has a systemic data as reviewed in National Health Statistics report, shows an estimated 38% of American adults reported using a form of CAM in the past 12 months as of 2007 (Barnes et al., 2008). According to Hunt et al. (2010) lifetime and 12-month prevalence of CAM use were 44% and 26.3% respectively in Europe. In India, there is a lack of organized data. However a cross sectional study done by Kaur et al. (2016) in rural Punjab shows that 57.8% of the participants were CAM users. There are 5.88 lakh registered CAM practitioners in India, in comparison to 9.36 lakh MCI approved conventional medical practitioner (Indian Medical Registrar, MCI). Ayurveda, Yoga, Unani, Siddha and Homeopathy are the main Complementary and Alternative Medicines in India, among which, Ayurveda and Homeopathy are prevailing in terms of usage, number of education and training institutes, research and development centers. The Ministry of AYUSH is a Government body in India

purposed with developing, education and research in traditional Indian medicines and other Indigenous medicines. Although many studies have proved the importance of personality factors in treatment decision making (Flynn, & Smith, 2007; Sørensen et al., 2008), there is negligible data on how it acts on choice between complementary medicine and conventional medicine. On the other hand studies delineating the factors behind such decision making have omitted personality traits. The big 5 personality trait theory states that there are five core personality traits; neuroticism, extraversion, openness to experience, agreeableness and conscientiousness. Neuroticism refers the degree of emotional stability and the tendency to experience psychological stress. Extraversion is characterized by sociability, talkativeness, assertiveness and surgency. Openness to experience features characteristics such as creativity, imagination and insight, appreciation for art, variety of interest. Agreeableness is a tendency to be compassionate and cooperative than suspicious or hostile to others and characterized by trust, altruism, kindness and affection. Conscientiousness is a tendency to be disciplined, dutiful, organized, dependable, goal oriented and to prefer planned action than spontaneous one. Health awareness and health related decision making are also promoted by personality traits, as elaborated by several workers. Level of self-efficacy has been found to be an important predictor of participation in decisions about medications, especially in older adults. Other studies have also found correlations between self-efficacy and active participation in health care decisions (Arora, Ayanian & Guadagnoli, 2005; Janz et al., 2004). One qualitative study ( $N = 25$ ) of cancer patients found that patient shyness hindered active participation (Sainio, Eriksson, & Lauri, 2001). In a study on college students by (Raynor et al., 2009) found individuals with high conscientiousness had increased motivation and action to maintain a healthy self, free from harm, as to wear seat belts, utilize alcohol-related harm reduction, exercise, get enough sleep, and consume ample fruits and vegetables. They were also less likely to smoke cigarettes, consume alcohol, and binge drink which is just reverse in case of people with high extraversion, and they were less likely to engage in alcohol-related harm reduction, use condoms, and get enough sleep. Hence there is enough evidence that in all age groups and social levels the importance of personality trait should be taken into account while analyzing the decision making procedure and trend in people's choice while seeking medical attention. This is much more emphasized in situations where multiple possible treatment modalities exist, like conventional methods and alternative or complementary medicine.

## **LITERATURE REVIEW:**

There is significant paucity of structured literature to explore the relationship between a comprehensive assessment of personality and CAM related health care decision-making. In this context examining the relationship between personality and overall health outcomes may be informative. The study of Sirois, & Purc-Stephenson (2008) shows that External influences like age, social recommendations, decision process factors like symptom severity, egalitarian provider preference and post-decision factors like dissatisfaction with conventional care influence CAM use. Astin (1998) shows that anxiety, high education level, chronic painful disease, holistic philosophy act as significant independent component of decision making towards alternative medicine. The five-factor model of personality has formed a strong basis for these studies, which have often associated personality traits with disease and aging. Conscientiousness, one of the five factors, predicts longevity (Friedman, 2000) most likely through social environmental factors and health behaviors. In an extensive meta-analysis, Bogg, & Roberts (2004) found that conscientiousness was consistently negatively related to risky health behaviors such as drug use and violence and was positively related to beneficial health behaviors such as physical fitness. As conscientious individuals tend to take a more active role in trying to improve their health, we hypothesize that they will prefer more active participation in health care decision making as well. Research suggests that neuroticism influences patient illness behavior, potentially in two different ways. Freidman (2000) posited that for some neurotic patients, negative affect leads them to give up on treatment regimens and avoid interpersonal assistance that could improve their health. The second sort of neurotic patient is the "health nut" or "worried well" patient who is hyper vigilant about germs and getting medical attention for symptoms, and who could try to influence doctors toward more aggressive therapies. However, an experimental test of this theory found that neurotic individuals who present more elaborate symptoms can actually harm their credibility with doctors. The presentation of psychosocial concerns may lead doctors to misdiagnose the patient's disease and recommend psychological interventions in lieu of medical treatments (Ellington, & Wiebe, 1999). To determine the role of personality on healthcare related decision making Flynn, & Smith (2007) explored relationships between five factors of personality and four preference types that account for multiple components of the health care decision-making process (information exchange, deliberation, and selection of treatment choice). Increased conscientiousness and openness to experience and decreased agreeableness and neuroticism corresponded to preferring the most active decision-making style. A

similar study by Sørensen et al., (2008) found associations between personality and health cognitions and behaviors related to preparation for future care. It concluded that higher levels of neuroticism, openness, and agreeableness were associated with greater awareness of care needs. None of these studies has been reported the effect of personality on choosing CAM and conventional medicine.

## **METHODOLOGY:**

The study follows a mixed research design, i.e. it comprises of exploratory research design for exploration of factors of healthcare related decision making and causal research design that uses logistic model including factors and path analysis. The survey uses primary data collected through convenient sampling technique from the rural and urban settings of Kolkata and its 25 km surrounding area, between the months of December 2016 to May 2017. Sample size is 300 and all respondents belong to socially adult age group, i.e. above 18 years of age and have basic idea of CAM and conventional medicine. Since this study is intended to explore the personality traits independently by factorization Big-5 inventory questionnaire is not utilized. A structured and pretested 30 points questionnaire having 7 point Likert Scale and Dichotomous Scale is used and includes questions on preference and usage of CAM and Conventional Medicine, demographics, perception of disease burden, personality and social elements. The results are analyzed in IBM SPSS ver. 23 and Amos ver. 20 for appropriate statistical outcomes and a decision path model. Initially a Pilot Study has been conducted on 50 samples to measure validity of the study.

## **FINDINGS AND DISCUSSION:**

- 1. Demographic:-** It was found that 40.3% responders prefer CAM & 51.3% has actually used it in 12 months. This is significantly higher than western data of 26% (Coelho et al. 2010). This Preference & Prevalence are highly correlated (Spearman rho= 0.461,  $p < 0.001$ ). 31.3% people actually prefers CAM more than Conventional Medicine. Preference pattern is independent of age but usage pattern significantly vary with age. Male gender ( $p = 0.026$ ), people with higher Education Level ( $p < 0.001$ ), higher socio-economic status ( $p = 0.017$ ), low disease burden ( $p = 0.043$ ) and those who are taking decision in a group ( $p < 0.001$ ) have higher prevalence of CAM usage. City dwellers prefer and use Conventional medicine more than village or suburbans. It is also observed that preference & usage are not always in congruence. (Table 1)
- 2. Exploration of personality factor:-** Personality has an important role in treatment related decision making as three underlying Personality Factors (Neuroticism, Conscientiousness and Extraversion) (**Table 2**) are separately identified through exploratory factor analysis explaining 64.23% of variability and Bartlett's Test of Sphericity has chi square value 275.31 ( $P < 0.001$ ). This study shows extraversion has strongest effect on decision. Probably in this socio-geographic location female responders are less extravert and has less exposure to social interaction as well as power of decision making, hence choice for alternative medicine is limited. (Table 3)
- 3. Social Factor and Personality:-** From the social effect questions one single underlying Pro-CAM social effect has been found out. Regression analysis has been done to test the degree of association of social effect with personality. More is the conscientiousness less is the Pro-CAM social effect (Beta= -0.593,  $P < 0.00$ ;  $R^2 = 0.351$ ,  $P$  of  $F < 0.001$ ). Again more is the extraversion; more is the Pro CAM social effect (Beta= 0.435,  $P < 0.00$ ;  $R^2 = 0.19$ ,  $P$  of  $F < 0.001$ ) (Figure 1). These are in congruence with the actual effect of personality on CAM usage.
- 4. Responder groups:-** By K-means clustering it is found that the responders are broadly divided among themselves in three distinctive clusters. Cluster 1 having 98 cases, cluster 2, 123 cases and cluster 3, 79 cases. Three questions have maximum variability (highest F value) hence distinct cluster centers. They are plotted on a three dimensional plane to understand the cluster positions and relative distances. Cluster 1 has center (2,6,6), Cluster 2 with center (2,4,5), Cluster 3 having center (6,5,7). Opinion differs widely whether costlier treatment is better ( $F = 560.9$ ,  $p < 0.001$ ) and treatment modality should be holistic ( $F = 152.6$ ,  $p < 0.001$ ). (Figure 2)
- 5. Model of Decision:-** The linear regression model shows Conscientiousness and Neuroticism are significant contributor to CAM usage. Neuroticism though affecting negatively has no direct effect on CAM usage (beta= -0.045,  $P = 0.23$ ). Conscientiousness has negative drive, that is more is the conscientiousness factor less is the propensity of usage of CAM by users (beta= -0.462,  $P < 0.001$ ). Extraversion has positive effect on CAM usage. Extrovert people are tending to use CAM in a higher frequency (beta=0.693,  $p < 0.001$ ). The equation of this regression is-

$Y$  (CAM usage) = 2.930 – 0.306  $X_1$  (Conscientiousness) + 0.693  $X_2$  (Extraversion)

It is seen that, though the neuroticism has not any significant contribution on CAM usage when it acts through anxiety mediator the effect of mediation as well as the direct effect are significant as per result of sobel test (after Hays). The effect of mediation of anxiety is stronger and has net negative effect on usage of CAM (beta= -.3332, P=0.0013) and the direct component is weaker and has positive effect on CAM usage (beta= .2653, P=0.0479). Hence the total effect has been negative, though insignificant (beta=-.0678, P=0.4375).

The model of micro-path has been constructed. It is observed that extraversion has most significant effect of this decision making pathway. This path is significant with CMIN/DF=2.2, GFI, NFI, CGI all >.95. (Figure 3)

## CONCLUSION:

Although some studies have proved the importance of personality factors in treatment decision making, there is negligible data on how it acts on choice between complementary medicine and conventional medicine. On the other hand studies delineating the factors behind such decision making have omitted personality traits. This study has shown that the personality traits are significantly affecting individual's treatment related decision making and choice of treatment modality. Also a model of such factors has been constructed. This will be helpful in future for strategic planning of health human resource allocation, management as well as understanding the treatment seeker's psychosocial dynamics while making an important decision for attaining health.

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TABLE(S):

Table 1: Distribution of Responses

Variable	Strongly Disagree %	Disagree %	Somewhat Disagree %	Neither agree nor disagree %	Somewhat Agree %	Agree %	Strongly Agree %
Treatment of a disease should be holistic	0.3	4.0	8.0	29.0	18.3	20.3	20
Conventional medicine has treatment for most of the ailments	0	4.0	2.7	6.7	27.3	31.0	28.3
You would like to be disease free at any cost	0.3	0	1.0	3.7	9.7	17.3	68.0
Scientific evidence is necessary for an intervention	0	0.3	3.0	18.7	14.3	29.3	34.3
Whenever you fall ill you become anxious to have proper treatment	0.3	2.3	0.7	4.7	6.3	43.3	42.3
Costlier treatment is better treatment	13.0	26.0	15.0	6.3	23.3	10.7	5.7
You would suggest using CAM to your relatives/ friends	1.0	17.0	13.7	7.3	23.0	32.0	6.0

Table 2: Rotated Component Matrix of Personality Factors

Questions	Component		
	1	2	3
Treatment of a disease should be holistic, involving the whole individual rather than the disease only		.696	
Conventional medicine has treatment for most of the ailments	.490	.539	
You would like to be disease free at any cost	.758		
Scientific evidence is necessary for an intervention to be fruitful		.708	
Whenever you fall ill you become anxious to have proper treatment	.766		
A costlier treatment is a better treatment	.565	-.452	-.447
You would suggest using CAM to your relatives/friends			.924

Table 3: Factor Explanation of personality traits

<b>Factor 1</b>	You would like to be disease free at any cost	Apprehension	<b>Neuroticism</b>
	Whenever you fall ill you become anxious to have proper treatment	Anxiety	
	A costlier treatment is a better treatment	Consumer-mindedness	
<b>Factor 2</b>	Treatment of a disease should be holistic, involving the whole individual rather than the disease only	Goal Oriented	<b>Conscientiousness</b>
	Scientific evidence is necessary for an intervention to be fruitful	Rationalism	
<b>Factor 3</b>	You would suggest using CAM to your relatives/friends	Suggesting/ discussing with others	<b>Extraversion</b>

FIGURE(S)

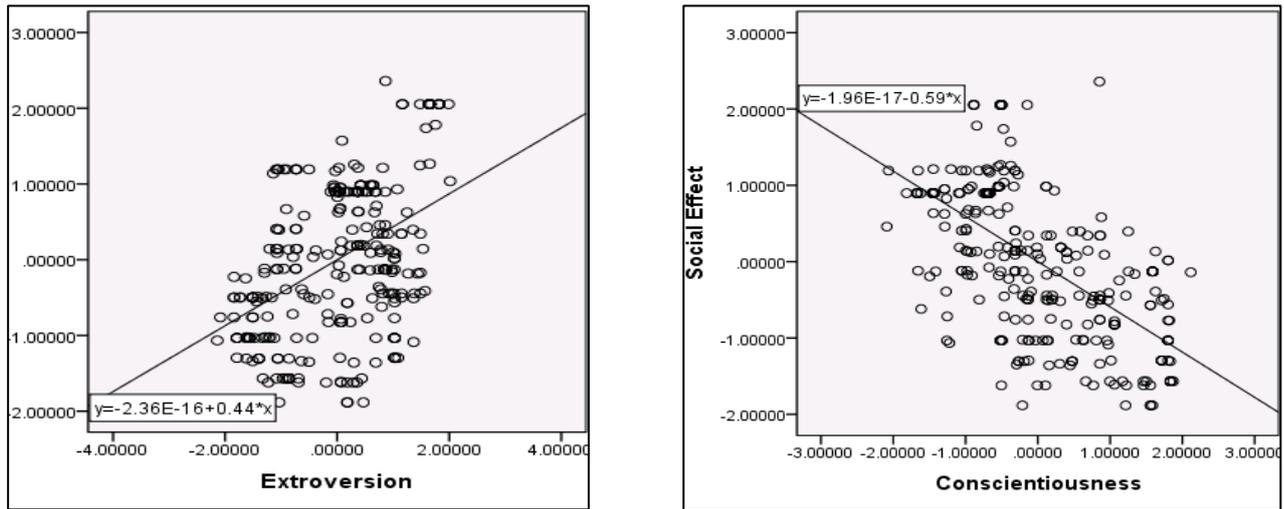


Figure 1: Regression line of Personality factors on social effect

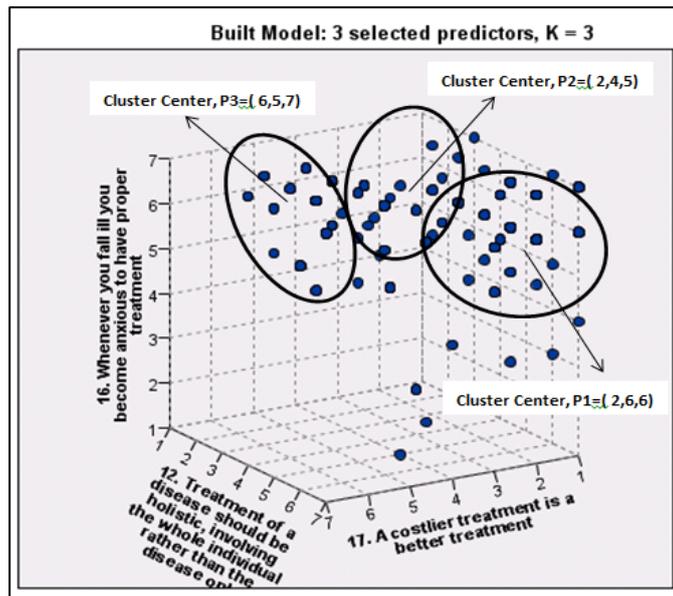


Figure 2: Responders group

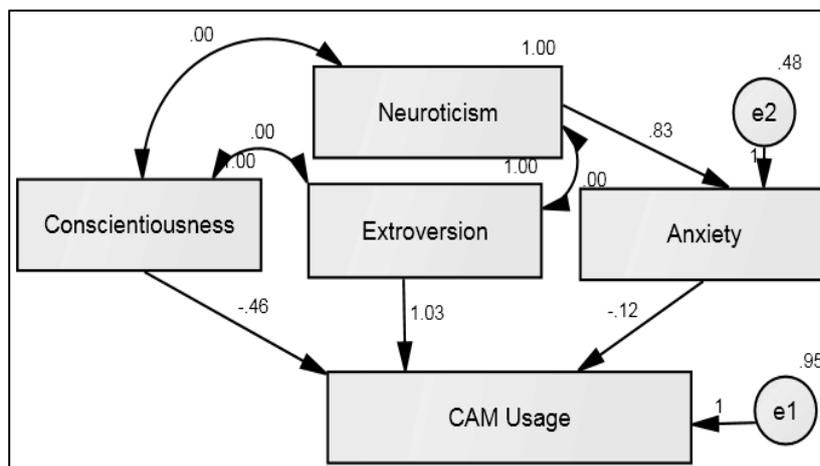


Figure 3: Path analysis showing how personality factors effect treatment decision