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IMPACT OF ASTHMA OCCURRENCE STATE, AGE, SEX AND HEREDITY ON THE LEVEL OF EXTRAVERSION

DR. M. K. CHAUHAN* DR. C. P. KHOKHAR**

**Assistant Professor, Deptt. of Psychology, G.K. University, Haridwar, [U.K.] - 249407*

*** Professor, Deptt. of Psychology, G. K. University, Haridwar, [U.K.] - 249407*

ABSTRACT

The present investigation has been conducted to study the impact of asthma occurrence states, age, sex, and heredity on the level of extraversion. The study adopted a 2×2×2×2 four-variate factorial design. A total sample of 320 (160 normals &160 asthma patients) has been randomly drawn from the clinics and hospitals of district Haridwar. Analysis of Variance [ANOVA] has been used to find out significant mean difference and interaction effect among variables. Results show that Asthma occurrence state & Age level promotes extraversion in the people. Female asthmatics have high extraversion in comparison to male asthmatics. In general, people with non-hereditary effect have more extraversion than people with hereditary effect. However, asthmatics have more extraversion with hereditary background than with non hereditary background.

Key word: Asthma, Age, Sex, Heredity, Extraversion

INTRODUCTION

Asthma is a respiratory disorder involving recurring episodes of impaired breathing when the airways become obstructed. This disease is very prevalent around the world (ALA, 2000). Asthma episodes typically begin when the immune system is activated to react in an allergic manner, producing antibodies that cause the bronchial tubes and other affected body tissues to release a chemical called histamine. This chemical causes irritation to those tissues. In an asthma attack, these events cause the bronchial tubes to become obstructed as their smooth muscles become inflamed, develop spasms, and produce mucus (AAFA, 2000; Evans, 1990). These events last one hour or two and can lead to tissue damage, thereby increasing the likelihood of more frequent and severe future attacks. For some asthmatics airway inflammation becomes constant. According to type theories, there are two fundamental types of people, introverts and extraverts. According to trait theories, introversion and extraversion are part of a continuous dimension, with many people in the middle (ambiversion). The idea of psychological types originated in the theoretical work of Carl Jung and other researchers. The concept of personality type refers to the psychological classification of different types of people. Personality types can be distinguished from personality traits, which come in different levels or degrees.

The trait of extroversion-introversion is a central dimension of human personality. Extroverts (also spelled extraverts, Merriiam-Webster and Corsini) tend to be gregarious, assertive, and interested in seeking out excitement. Introverts, in contrast, tend to be more reserved, less outgoing, and less sociable. They are not necessarily loners but they tend to be satisfied with having fewer friends. Introversion does not describe social discomfort but rather social preference: an introvert may not be shy but may merely prefer less

social activities. Ambiversion is a balance of extrovert and introvert characteristics.

The terms introversion and extroversion were first popularized by Carl Jung (Jung, C.J., 1921). Virtually all comprehensive models of personality include these concepts. Examples include Jung's analytical psychology, Eysenck's three-factor model, Cattell's 16 personality factors, the Big Five personality traits, the four temperaments, the Minnesota Multiphasic Personality Inventory, and Myers Briggs Type Indicator

Extroversion and introversion are typically viewed as a single continuum. Thus, to be high on one is necessarily to be low on the other. Carl Jung and the authors of the Myers-Briggs provide a different perspective and suggest that everyone has both an extroverted side and an introverted side, with one being more dominant than the other. In any case, people fluctuate in their behavior all the time, and even extreme introverts and extroverts do not always act according to their type.

Extroversion is "the act, state, or habit of being predominantly concerned with and obtaining gratification from what is outside the self"(Merriam Webster Dictionary). Extroverts tend to enjoy human interactions and are generally enthusiastic, talkative, assertive, and gregarious in social situations. They take pleasure in activities that involve large social gatherings such as: parties, community activities, public demonstrations, business, and political groups. Politics, teaching, sales, managing and brokering are fields that favor extroversion. An extroverted person enjoys and becomes energized by larger groups of people while time alone is less enjoyable and boring to them.

Introversion is "the state of or tendency toward being wholly or predominantly concerned with and interested in one's own mental life". (Merriam Webster Dictionary) Introverts are people whose energy tends to expand through reflection and dwindle during interaction. Helgoe, Laurie (2008) Introverts tend to be more reserved and less outspoken in large groups. They often take pleasure in solitary activities such as reading, writing, music, drawing, tinkering, playing video games, watching movies and plays, and using computers; along with some more reserved outdoor activities such as fishing and hiking. In fact, social networking sites have been a thriving home for introverts in the 21st century, where introverts are free from the formalities of social conduct and may become more comfortable blogging about personal feelings they would not otherwise disclose. The archetypal artist, writer, sculptor, engineer, composer, and inventor are all highly introverted. An introvert is likely to enjoy time spent alone and find less reward in time spent with large groups of people, though he or she may better enjoy interactions with a small group of close friends. Trust is usually an issue of significance-a virtue of utmost importance-to an introvert choosing a worthy companion. They prefer to concentrate on a single activity at a time and like to observe situations before they participate, especially observed in developing children and adolescents (Gale Encyclopedia of Childhood & Adolescence. Gale Research, 1998). Introverts are easily overwhelmed by too much stimulation from social gatherings and engagement. They are more analytical before speaking. Laney, Marti Olsen (2002). Introversion is not necessarily the same as shyness or the social outcast. Introverts choose solitary over social activities by preference. Whereas shy people-who may be extroverts at heart-avoid social encounters out of fear and the

social "outcast" not by choice (Meredith Whitten, 2001).

Although many people view being introverted or extroverted as a question with only two possible answers, most contemporary trait theories (e.g. the Big Five) measure levels of extroversion-introversion as part of a single, continuous dimension of personality, with some scores near one end, and others near the half-way mark(The Ocean of Personality, 2004). Ambiversion is a term used to describe people who fall more or less directly in the middle and exhibit tendencies of both groups (Cohen D. and Schmidt J.P., 1979; Merriam Webster Dictionary). An ambivert is normally comfortable with groups and enjoys social interaction, but also relishes time alone and away from the crowd.

According to Carl Jung, introversion and extroversion refer to the direction of psychic energy. If a person's psychic energy usually flows outwards then he or she is an extrovert, while if the energy usually flows inwards, the person is an introvert (The Old Wise Man, 1955). Extroverts feel an increase of perceived energy when interacting with a large group of people, but a decrease of energy when left alone. Conversely, introverts feel an increase of energy when alone, but a decrease of energy when surrounded by a large group of people.

Hans Eysenck described extroversion-introversion as the degree to which a person is outgoing and interactive with other people. These behavioral differences are presumed to be the result of underlying differences in brain physiology (Eysenck, H. J. , 1967). Extroverts seek excitement and social activity in an effort to heighten their arousal level, whereas introverts tend to avoid social situations in an effort to keep such arousal to a minimum. Eysenck designated extroversion as one of three major traits in his P-E-N model of personality, which also includes psychoticism and neuroticism.

Eysenck originally suggested that extroversion was a combination of two major tendencies, impulsiveness and sociability. He later added several other more specific traits, namely liveliness, activity level, and excitability. These traits are further linked in his personality hierarchy to even more specific habitual responses, such as partying on the weekend.

Eysenck compared this trait to the four temperaments of ancient medicine, with choleric and sanguine temperaments equating to extroversion, and melancholic and phlegmatic temperaments equating to introversion (Eysenck, H. J. and Eysenck, S. G. B., 1965).

Twin studies find that extroversion/introversion has a genetic component. The relative importance of nature versus environment in determining the level of extroversion is controversial and the focus of many studies. Twin studies find a genetic component of 39% to 58%. In terms of the environmental component, the shared family environment appears to be far less important than individual environmental factors that are not shared between siblings (Auke Tellegen, David T Lykken, Thomas J. Bouchard, Jr., Kimberly J. Wilcox, Nancy L Segal, Stephen Rich, 1988). Eysenck proposed that extroversion was caused by variability in cortical arousal. He hypothesized that introverts are characterized by higher levels of activity than extroverts and so are chronically more cortically aroused than extroverts. The fact that extroverts require more external stimulation than introverts has been interpreted as evidence for this hypothesis. Other evidence of the "stimulation" hypothesis is that introverts salivate more than extroverts in response to a

drop of lemon juice (Lemon juice experiment). Extroversion has been linked to higher sensitivity of the mesolimbic dopamine system to potentially rewarding stimuli (Depue, R. A., & Collins, P. F., 1999). This in part explains the high levels of positive affect found in extroverts, since they will more intensely feel the excitement of a potential reward. One consequence of this is that extroverts can more easily learn the contingencies for positive reinforcement, since the reward itself is experienced as greater.

One study found that introverts have more blood flow in the frontal lobes of their brain and the anterior or frontal thalamus, which areas are dealing with internal processing, such as planning and problem solving. Extroverts have more blood flow in the anterior cingulated gyrus, temporal lobes, and posterior thalamus, which are involved in sensory and emotional experience (Johnson, D. L., Wiebe, J. S., Gold, S. M., Andreasen, N. C.,1999). This study and other research indicate that introversion-extroversion is related to individual differences in brain function.

Extroverts and introverts have a variety of behavioral differences. According to one study, extroverts tend to wear more decorative clothing, whereas introverts prefer practical, comfortable clothes (Sharma, R. S., 1980). Extroverts are likely to prefer more upbeat, conventional, and energetic music than introverts (Rentfrow, P. J., & Gosling, S. D., 2003). Personality also influences how people arrange their work areas. In general, extroverts decorate their offices more, keep their doors open, keep extra chairs nearby, and are more likely to put dishes of candy on their desks. These are attempts to invite co-workers and encourage interaction. Introverts, in contrast, decorate less and tend to arrange their workspace to discourage social interaction (Gosling, S., 2008). Although extroverts and introverts have real personality and behavior differences, it is important to avoid pigeonholing or stereotyping by personality. Humans are complex and unique, and because extroversion varies along a continuum, they may have a mixture of both orientations. A person who acts introverted in one scenario may act extroverted in another, and people can learn to act "against type" in certain situations. Jung's theory states that when someone's primary function is extroverted, his secondary function is always introverted (and vice versa) (Jung, C.J., 1921). Acknowledging that introversion and extroversion are normal variants of behavior can help in self-acceptance and understanding of others. For example, an extrovert can accept his or her introverted partner's need for space, while an introvert can acknowledge his or her extroverted partner's need for social interaction.

Researchers have found a correlation between extroversion and happiness. That is, more extroverted people tend to report higher levels of happiness than introverts (Myers, David G, 1992; Pavot, W., Diener, E., & Fujita, F. , 1990). This does not mean that introverts are unhappy. Extroverts simply report experiencing more positive emotions, whereas introverts tend to be closer to neutral. This may be due to the fact that extroversion is socially preferable in Western culture and thus introverts feel less desirable. In addition to the research on happiness, other studies have found that extroverts tend to report higher levels of self-esteem than introverts (Swickert, R., Hittner, J. B., Kitos, N., & Cox-Fuenzalida, L. E., 2004; Cheng, H. & Furnham, A., 2003). Others suggest that such results reflect socio-cultural bias in the survey itself (Laney, Marti Olsen, 2002). Also, according to Carl Jung, introverts acknowledge more readily their psychological needs and problems, whereas extroverts

tend to be oblivious to them because they focus more on the outer world (Jung, C.J., 1921). Career counselors often use personality traits, along with other factors such as skill and interest, to advise their clients (Ateel, Saqib Ali , 2005). Some careers such as computer programming may be more satisfying for an introverted temperament, while other areas such as sales may be more agreeable to the extroverted type.

In the present research effect of asthma occurrence state, age, sex and heredity on the level of extraversion have been examined and discussed.

OBJECTIVES OF THE STUDY

The following objectives are set to achieve in the present investigation.

1. To visualize the impact of asthma occurrence state, age, sex, and ancestral/heredity effect on the level of extraversion.
2. To assess the interacting effects of age, sex, heredity and asthmatic state in relation to extraversion.

METHOD

Sample : A total sample of 320 subjects (160 normal people and 160 asthma patients) has been randomly drawn from different clinics and hospitals of district Haridwar. Age range of the patients was 20 to 75 years in two groups with an onset of asthma ranging from 5-10 years for each group. During sampling it had been considered that only those patients were taken into account whose disease was not triggered through the allergic cause and through any infection and was not suffering with any potential symptoms of a disorder other than asthma. Data were collected in the fair climate mainly in summer season to control the effect of weather conditions.

Tool : Extraversion is measured through standardized tool of Eight State Questionnaire [Hindi Version, Indian adaptation] developed by Kapoor and Bhargava (1990). This tool is highly reliable, valid and published by the Psycho-Centre, T-22, Green Park, New Delhi.

Design : The study adopted a $2\times2\times2\times2$ four-variate Ex-Post-Facto factorial design in natural setting of the variables to operate, providing an opportunity to study the interaction among the independent variables influencing the dependent measure in the study.

Variables : **Independent Variables:** Study operates with passive manipulation through selection of asthma occurrence state at two levels normal & asthmatic state and hereditary existence at two levels in males and females of two age groups 20-40 & 55-75 yrs. **Dependent Variable:** Extraversion trait is measured as dependent measure.

Hypotheses : The following hypotheses are set to for verification.

1. Asthma occurrence state will not affect extraversion.
2. Sex will not affect extraversion.
3. Heredity will not affect extraversion.
4. Age will not affect extraversion.
5. Asthma occurrence state and sex will not interact in the set.
6. Asthma occurrence state and heredity will not interact in the set.
7. Asthma occurrence state and age will not interact in the set.
8. Sex and heredity will not interact in the set.
9. Sex and age will not interact in the set.
10. Heredity and age will not interact in the set.
11. Asthma occurrence state, sex and heredity will not interact in the set.
12. Asthma occurrence state, sex and age will not

interact in the set.

13. Asthmatic occurrence state, heredity and age will not interact in the set.
14. Sex, heredity and age will not interact in the set.
15. Asthmatic occurrence state, sex, heredity and age will not interact in the set.

Procedure

First of all, the purpose of study was explained which helped to establish a proper rapport. The test was administered individually at clinics or their homes, as per the desire and convenience of subjects. Respondents were asked to fill the questionnaire according to the instructions. They were requested to respond truly as they feel in their present state and were assured that their responses would be kept confidential.

RESULTS

Details of Significant Results: (Ref. Table No. 1)

Table-1 : Extraversion: The ANOVA Summary [2×2×2×2 Factorial Design]

Source of Variance	S.S.	Df	M.S.	F	P
Treatment	552.30	15	36.82		
Asthmatic State	69.38	1	69.38	10.28	< 0.01
Sex	0.70	1	0.70	0.10	
Heredity	18.53	1	18.53	2.75	
Age	136.50	1	136.50	20.22	< 0.01
Asth. S. × Sex	109.28	1	109.28	16.19	< 0.01
Asth. S. × Heredity	27.03	1	27.03	4.00	< 0.05
Asth. S. × Age	91.38	1	91.38	13.54	< 0.01
Sex × Heredity	10.15	1	10.15	1.50	
Sex × Age	2.63	1	2.63	0.39	
Heredity × Age	15.75	1	15.75	2.33	
Asth. S. × Sex × Heredity	28.20	1	28.20	4.18	< 0.05
Asth. S. × Sex × Age	16.64	1	16.64	2.47	
Asth. S. × Heredity × Age	9.45	1	9.45	1.40	
Sex × Heredity × Age	0.01	1	0.01	0.002	
Asth. S. × Sex × Heredity × Age	16.67	1	16.67	2.47	
ERROR	2050.95	304	6.75		
TOTAL	2603.25	319	8.16		

1. The retained H0s (Nos. 2, 3, 8, 9, 10, 12, 13, 14, & 15) show that main effect (Sex & Heredity) and bivariate interactions (Sex × Heredity, Sex × Age & Heredity × Age) and trivariate interactions (Asth.S. × Sex × Age, Asth.S. × Heredity × Age & Sex × Heredity × Age) and fourvariate interaction (Asth.S. × Sex × Heredity × Age) are not significant.
2. The rejected H0s may be detailed as given below:

(a) H0 1. Asthma Occurrence State is rejected at .01 ls.

Asthmatic state promotes extraversion in the people.

(b) H0 4. Age is rejected at .01 ls.

Age level promotes extraversion in people.

(c) H0 5. Asthma Occurrence State × Sex is rejected at .01 ls. Female asthmatics have high extraversion in comparison to male asthmatics.

(d) H0 6. Asthma Occurrence State × Heredity is rejected at .05 ls.

Asthmatics have more extraversion with hereditary effect than with non hereditary effect. People with non-hereditary effect have more extraversion than people with hereditary effect. (

e) H0 7. Asthma Occurrence State × Age is rejected at .01 ls.

Asthmatics have more extraversion in old age level (55-75 yrs) than in young age level (20-40 yrs).

People have more extraversion in old age level (55-75 yrs) than in young age level (20-40 yrs).

(f) H0 11. Asthma Occurrence State × Sex × Hererdiy is rejected at .05 ls.

Table-2 shows these results.

Table-2 : Break up of 2 × 2 × 2 tri-variate Interaction (Asthma Occurrence State × Sex × Heredity)

Source of Variance	S.S.	Df	M.S.	F	P
I. Asthmatic : Sex × Heredity	36.1	1	36.1	5.35	< 0.05
II. Normal : Sex × Heredity	2.26	1	2.26	0.35	
III. Male : Asth.S. × Heredity	0.01	1	0.01	0.002	
IV. Female : Asth.S. × Heredity	55.23	1	55.23	8.18	< 0.01
V. Hereditary : Asth.S. × Sex	124.26	1	124.26	18.41	< 0.01
VI. Non-Hereditary : Asth.S. × Sex	13.23	1	13.23	1.96	

(I) Asthmatic: (Sex × Heredity) $P < .05$

Asthmatic females with hereditary effect have high extraversion in comparison to asthmatic males with hereditary effect.

(IV) Female: (Asth.S. × Heredity) $P < .01$

Female asthmatics with hereditary effect have more extraversion than normal females with hereditary effect.

(V) Hereditary: (Asth.S. × Sex) $P < .01$

Asthmatic females with hereditary effect have higher extraversion than asthmatic males. Female asthmatics with hereditary effect have more extraversion than normal females.

DISCUSSION

The significant results of this research reveal that

asthmatic state promotes extraversion in the people. Asthmatics feel a lot of pressure, frustration, experiencing great strain and lots of demands but, they may produce a tendency to become much extrovert to cope. They are unable to take time off and relax constantly on the go. Many people with asthma report that the triggers of their attacks often involve their emotional states, such as being worried, angry, or excited (Janson-Bjerklie, Carrieri, and Hudes, 1986). Results of the present research suggest that female asthmatics are more extrovert than male asthmatics. As seen by the time of interview during data collection, it may be possible that the tendency of becoming extrovert as shown by the female asthmatics was due to the rising burden of dual responsibility, the house hold work and job responsibility out side the home. Low attention to the women's problems in the family and faulty intolerable job situations of which women face from the beginning of his life may also be a relevant factor responsible for higher incidence of asthma in women due to morbidity to high arousal in comparison to male asthmatics. Other studies conducted to find the effect of sex upon asthma show that the asthma is more common in the males than the females. However, in adolescence stage, girls are more prone to asthma than boys, Sweeting (1995). The present research enumerates the amount of extraversion in the asthma patients of two different age levels namely young age level [20-40 yrs] and old age level [55-75 yrs]. Age level promotes extraversion in asthma patients. The extraversion level in old age asthmatics have been found more than the young age asthmatics, however, asthma patients in old age are more prone to the severity of the disease since they reduce the bodily resistance power to fight safely with the disease. A number of biological factors have been implicated in psychosomatic disorders like asthma the problem of the present research. The important biological factors are genetic factors, differences in autonomic reactivity, somatic weakness, and alteration in corticovisceral control mechanisms. Here, only the genetic factors with respect to hereditary factors in the asthma disease are concerned. Increased frequencies of asthma have also been reported for close relatives, and these frequencies are specific to given reaction-that is, the relatives of bronchial asthma cases show an increased frequency of bronchial asthma but not of other psychosomatic disorders, Coleman.J.C, (1988). It has been also proposed by some other researchers that asthma has a strong genetic component inducing hereditary effects and so psychological factors alone are not sufficient enough to cause the disease. The people inherited with hyper reactive air sacs, stress and emotional factors may precipitate asthma attacks or make them more severe, Sarson & Sarson (1998). There is another hypothesis for hereditary susceptibility for increased frequencies of asthma patients in families. Where the parental or ancestral member is an asthma sufferer another member may imitate of parental activities and learning. But the hypothesis is turndown by several other researches as the autonomic nervous system was presumably much less vulnerable to conditioning and learning than the cerebrospinal system. However, more recent studies of learning in the autonomic system indicate that increased incidence of specific psychosomatic conditions in particular families could result from common experience and learning. Further research evidence is needed, but genetic factors should not be ruled out-particularly in such disorders as bronchial asthma, Coleman. J. C. (1988). However, present study shows that the asthmatics have more

extraversion with hereditary effect than with non hereditary effect. In the light of the results of the study it might be concluded that the propensity of being asthmatic due to the emotional factors is high in those persons who have the family background with non-hereditary effect. It implies that there is higher risk to be affected with the asthma even without any high extraversion state in those persons who belong to the family background with non hereditary effect. There may be some other biological factors like somatic weakness, difference in autonomic reactivity, inadequate corticovisceral control mechanisms that may play a significant role in the precipitation of asthma symptoms in the individuals with hereditary family back ground but extraversion as triggering agent is not found to be inherited in asthma people while it may appear due to the experience of asthma attacks.

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