

EFFECT OF REFRACTIVE ERROR ON TEMPERAMENT AND CHARACTER PROPERTIES

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ABSTRACT

PURPOSE: The purpose of this study is to determine effect of refractive error on temperament and character properties using Cloninger's psychobiological model of personality.

METHODS: Using the temperament and character inventory (TCI), the temperament and character profiles of 40 refractive error patients (16 with myopia, 12 with hyperopic, 12 with myopic astigmatism) were compared with those of 21 healthy participants. Here temperament traits consist of novelty seeking, harm avoidance, and reward dependence while behavior consist of the trait cooperativeness, self-directedness, and self-transcendence.

RESULTS: Analysis shows that participants with refractive error had statistically lower score in expectation, fear of uncertainty, fatigability, sentimentality, self-acceptance compassion, persistence ($p < 0.05$, $p < 0.050$, $p < 0.01$, $p < 0.004$, $p < 0.05$, $p < 0.03$, and 0.05 respectively).

CONCLUSION: Refractive errors can have a negative impact on certain character and temperament traits and various types of refractive errors have different temperament and character properties. These personality disorders may be involved in the beginning and continuation of refractive error and may be the focus of psychological therapy.

KEYWORDS: Refractive error, Temperament, Character.

INTRODUCTION

Refractive error is defined as restricted ability of visual system to bring rays of light accurately on the retina due to shape of the eye. The prevalence rate of refractive error is up to 60% and it is a common condition.¹ Myopia, Hyperopia, and astigmatism are three common types of refractive error. In case of myopia parallel rays of light are focused in front of retina and it may be due to longer axial length of the eyeball. In case of hyperopia, rays of light meets beyond the retina; it is due shorter length of eyeball, lastly far astigmatism the eye are not able focused sharp images of objects clearly on retina because of irregularities of different meridians of cornea and lens. Cloninger's formulated a model of psychobiological model of personality depended on temperament and behavior in order analyze

seven dimension of personality.² Three hereditary temperament elements were narrated by the model. Tridimensional personality, a self-assessment questionnaire was used assess these element. Later, Cloninger's developed temperament and character inventory, expanding preceding model by four elements of character. Temperament elements include novelty seeking; it is a personality trait which expresses a tendency toward intense activity in response to novel stimuli, unthinking decision making, impatience and restrained frustration. Another heritable tendency harm avoidance refers to inborn bias in the inhibition of behavior in order to avoid punishment, reflect a tendency to be shy with stranger, pessimistic worry by expecting future

trouble and possible danger, Submissive avoidant behavior such as fear of unreliability, fatigability and asthenia. Persons with harm avoidant react strongly to harsh signals, leading to inhibition of behavior to avoid punishment, and frustration. Third temperament element reward seeking is defined a tendency to respond significantly to reward signals especially to verbal signals of social acceptance, social assistance and sentiments. The fourth temperament, persistence is ability to refuse any kind of frustration; it corresponds to inflexibility or intolerance.³ Character on other hand, is individual's differences in objectives and values, based on intuition learning and concept about people and objects.⁴

The three measured character elements are self-directedness, which defined as the ability to modify and control one's behavior in order to choose the objectives. Second character dimension; cooperativeness refers to become a socially active, helpful and attachment with others. Third trait of character is self-transcendence which expresses spirituality as well as the tendency to accept life uncertainties. Change in character elements is reflected by the personality development and character change occurs throughout the life. Refractive error as an ocular condition is very much common. Few studies have been conducted to investigate relationship between refractive error and psychological disorder. Ataturk Research and training hospital conducted a research on effect of temperament and character properties which showed that some character traits are influenced by refractive error and also different types of refractive error have different influence on character and temperament properties.¹

In recent year several research have been published which shows increase in psychological disorders among people. These disorders include depression, anxiety, substance abuse and alcohol, delinquency, crime and suicide. The prevention of these disorders consist of proper diagnosis of the

condition, treatment of the condition and conducting preventive programs to aware general public that how to avoid such disorders. Important consideration include, access to psychiatric services should be accessible for both children and adults. Only few studies have investigated refractive error and psychiatric disorders. The aim of my study is to evaluate whether there is any relation between refractive error with temperament and behavior properties.

MATERIALS AND METHODS

Data had been collected by self-made Performa, in which patients had been interviewed individually about their mental and emotional related questions that were assigned in questionnaire and Data was collected by non-probability purposive sampling method.

DATA ANALYSIS METHOD

Data had been analyzed by SPSS 25.0 software. Variables like temperament and characters were measured using 5 point Likert scale. Kruskal Wallis test was applied on Likert scale variables by using refractive errors. Independent sample t- test was used among both groups (Emmetropes and refractive errors) to find out the significance for age. For categorical variables gender and marital status was measured using Chi-Square test. The qualitative variable was presented as frequency and percentage. Descriptive statistics calculated for all variables according to refractive error groups. Frequency and percentages calculated for all Likert scale variables.

RESULTS

Table - 1: High and low order traits temperaments in subjects with refractive error (Group 1) and Emmetropes (Group 2).

Heritable tendency	Group1(n=40)	Group2(n=21)	P- value
Novelty seeking	Mode	Mode	
Exploratory excite	1.00	1.00	0.571
Impulsiveness	2.00	2.00	0.090
Extravagance	2.00	2.00	0.867
Disorderliness	2.00	4.00	0.377
Harm avoidance			
Anticipatory worry	2.00	4.00	0.053 ^b
Fear of uncertainty	2.00	3.00	0.050 ^b
Shyness with stranger	2.00	4.00	0.078
Fatigability	2.00	4.00	0.010 ^b
Reward dependence			
Sentimentality	2.00	1.00	0.004 ^b
Attachment	1.00	1.00	0.666
Dependence	2.00	2.00	0.843
Persistence	2.00	4.00	0.015 ^b

^aKruskal-Wallis test ^b statistically significant.

Analysis in table 2 shows that participants with refractive error had statistically significant lower score in anticipatory worry, fear of uncertainty, fatigability, sentimentality, and persistence ($p < 0.05$, $p < 0.050$, $p < 0.01$, $p < 0.004$, and 0.05 respectively). Mode shows the Likert scale (1 for strongly agree, 2 for agree, 3 for neutral, 4 for disagree, and 5 for strongly disagree).

Table -2: High and low order trait rates of character in subjects with refractive error (Group 1) and Emmetropes (Group 2)^a.

Character	Group1 (n=40)	Group2 (n=21)	P- value
Self-directedness	Mode	Mode	
Responsibility	2.00	2.00	0.211
Purposefulness	2.00	5.00	0.098
Resourcefulness	2.00	1.00	0.330
Self-acceptance	4.00	2.00	0.055 ^b
Congruent second nature	2.00	2.00	0.129
Cooperativeness			
Social acceptance	2.00	4.00	0.613
Empathy	2.00	1.00	0.330
Helpfulness	2.00	2.00	0.530
Mercy/revenge	4.00	3.00	0.039 ^b
Integrated conscience	2.00	2.00	0.740
Self-transcendence			
Transpersonal identity	2.00	2.00	0.186
Spiritual acceptance	2.00	2.00	0.176

^akruskal-wallis test ^b statistically significant.

Analysis of the table 3 above shows that participants having refractive error had statistically significant lower rate in self-acceptance, and compassion ($p < 0.05$, and 0.05 respectively). all other traits were not statistically significant. mode shows the Likert scale (1 for strongly agree, 2 for agree, 3 for neutral, 4 for disagree, and 5 for strongly disagree).

DISCUSSION

The purpose of this study is to evaluate effect of refractive error on temperament and behavior Properties either in patients with refractive error or person with normal vision. Analysis in this study shows that participants with refractive error had statistically significant lower score in anticipatory worry, fear of uncertainty, fatigability, sentimentality, self-acceptance, compassion, persistence. Many researchers have been published which shows temperament and character Inventory have been used to evaluated temperament and character properties in Psychiatric and neurological disease for example

epilepsy. Temperament and character Inventory was also used in enclosing spondylitis patients to evaluate character properties in these patients. Character and temperament properties in psoriasis patients showed significantly higher novelty seeking, harm avoidance reward dependence. However only few Studies have been published which investigated effect of refractive error on temperament and behavior but most of them are anecdotal. According to a research conducted at Ataturk Training and Research Hospital at Yildirim Bayezid University, refractive error have an influence on character and temperament properties people with refractive error showed less score on Cooperativeness, helpfulness, self-directedness and purposefulness. A study on myopic patients' shows they are shy, self-conscious, and self-centered as well as less outgoing in public gathering; have Very few friends, prefer indoor activities to outdoor activities. No significant relationship was found between personal characteristic in nearsighted patients and keratoconus patients. In a study 189 optometry Students were studied by using Eysenck Personality Inventory (EPI) found no association was found between personality and refractive status. Using Rorschach Test a study was conducted which evaluated that Compared to normal healthy subjects myopic and hyperopic patients shows significantly less expression of non-specific anxiety and hostility. A study explained the relation of psychological disorders with refractive error, it showed that Tightening of extraocular muscle as a result of defense mechanism to tension cause refractive error specially myopia. Furthermore, tension causes a break in the separation-individuation process in which myopic patients undergo separation anxiety that results their sense of inability to cope with the world. Myopic patients have more disastrous anxiety than normal patients. My study shows that refractive error has an effect on character properties of a person. People with refractive error had low score on purposefulness especially they are not goal

oriented individual, and low cooperativeness compared to healthy participants. As far as I know, only a single article which have evaluated effect of refractive error on temperament and character properties; this is second article I have done. Patients with refractive error scored lower scored on cooperativeness than normal individuals.

However a major limitation to this study is its small sample which makes it impossible to evaluate association between refractive error and character properties. A larger size sample would be better to further evaluate possible relationship.

CONCLUSION

Refractive errors can negatively affect certain character traits and various types of refractive errors have different temperament and character properties. These personality disorders may be involved in the onset and continuation of refractive error and may be the focus of psychological therapy. Analysis in this study shows that participants with refractive error had statistically significant lower score in expectation, fear of uncertainty, fatigability, sentimentality, self-acceptance, compassion, persistence. This study shows the relationship between temperament and character properties with different types of refractive error e.g. myopia, hyperopic, and astigmatism. Relation found that Hyperopic shows statistically significant ($p < 0.05$) in compassion than myopia and myopic astigmatism. Sentimentality shows statistically significant ($p < 0.05$) in participants with myopia compared those with hyperopic and myopic astigmatism. Fatigability and persistence shows statistically significant ($p < 0.05$) in hyperopic patient than in myopic and astigmatic patients.

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