

중심장액맥락망막병증에서의 MBTI 성격유형 분석: 파일럿 단면 연구

Distribution of Personality Type Based on Myers–Briggs Type Indicator in Central Serous Chorioretinopathy: A Pilot Cross-Sectional Study

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Purpose: Central serous chorioretinopathy (CSC) has been associated with psychological stress and personality traits. This study investigated the distribution of Myers–Briggs Type Indicator (MBTI) personality types in CSC patients compared with the general population and explored their association with disease chronicity.

Methods: Thirty patients diagnosed with CSC completed the MBTI questionnaire. Four MBTI dichotomies (Extraversion/Introversion [E/I], Sensing/Intuition [S/N], Thinking/Feeling [T/F], Judging/Perceiving [J/P]), attitude combinations (IJ, IP, EJ, EP), and function combinations (ST, SF, NT, NF) were analyzed. Overall distributions were compared with a Korean representative sample ($n = 19,070$) using chi-square tests with Monte Carlo simulation. Individual types and dimensions were assessed using exact binomial tests with Bonferroni correction, and acute–chronic subgroup comparisons were performed using Fisher’s exact test.

Results: Among CSC patients, 70% were classified as Introversion (vs. Extraversion) and 87% as Judging (vs. Perceiving) within their respective MBTI dichotomies. ISFJ was significantly more prevalent in the CSC group compared with the Korean general population (23.3% vs. 8.3%, $p = 0.009$), whereas INFJ showed a higher prevalence that did not remain significant after Bonferroni correction (13.3% vs. 3.0%, adjusted $p = 0.058$). The IJ attitude combination (53.3% vs. 27.4%, $p = 0.005$) and the SF function combination (50.0% vs. 30.3%, $p = 0.027$) were also more frequent in CSC patients, while the EP combination was not observed. No significant differences were observed between acute and chronic CSC subgroups.

Conclusions: CSC patients demonstrated distinctive MBTI distribution patterns compared with the general population, including an overrepresentation of the ISFJ type and higher frequencies of the IJ attitude and SF function combinations. To our knowledge, this study represents the first application of an MBTI-based personality framework in patients with CSC. However, given the cross-sectional pilot design and limitations of MBTI-based assessment, these findings should be interpreted cautiously as exploratory rather than causal.

Keywords: Central serous chorioretinopathy; MBTI; Personality; Questionnaire; Stress

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Introduction

Central serous chorioretinopathy (CSC) is a retinal disorder characterized by serous detachment of the neurosensory retina, commonly associated with increased choroidal thickness and hyperpermeability of the choriocapillaris [1]. It typically affects young to middle-aged adults, particularly individuals in their 30s to 50s, and often resolves spontaneously; however, a subset of patients experience recurrent or chronic disease courses [2]. Reported risk factors include endocrine abnormalities [3], corticosteroid exposure [4], and psychological stress [5], with dysregulation of the hypothalamic-pituitary-adrenal (HPA) axis and elevated cortisol levels implicated in its pathophysiology [6].

Personality has also been suggested as a psychosocial contributor to CSC. The Type A personality, characterized by competitiveness, time urgency, and heightened stress sensitivity, has historically been regarded as a behavioral risk factor [7,8], though this framework is relatively limited. In contrast, the Myers–Briggs Type Indicator (MBTI) provides a broader personality classification, categorizing individuals along four dichotomous dimensions: Extraversion/Introversion (E/I), Sensing/Intuition (S/N), Thinking/Feeling (T/F), and Judging/Perceiving (J/P) [9]. Traits such as Judging (J), with its preference for order and structure, may predispose individuals to increased stress vulnerability, a well-recognized trigger for CSC [2].

The present study aimed to investigate the distribution of MBTI personality types in patients with CSC and to compare these distributions with those of the general population. Furthermore, we evaluated whether specific MBTI traits were associated with disease chronicity by stratifying patients into acute and chronic groups.

Material and Methods

Participants

Patients diagnosed with CSC at the ophthalmology outpatient clinic of Chung-Ang University Gwangmyeong Hospital between January 2025 and August 2025 were consecutively enrolled. Exclusion criteria were as follows: (1) presence of other retinal diseases affecting the macula (e.g., diabetic retinopathy, age-related macular degeneration, retinal vein

occlusion, uveitis); (2) systemic or local corticosteroid use within the past 6 months; (3) significant media opacity or a history of intraocular surgery other than uncomplicated cataract surgery; and (4) inability to complete the MBTI questionnaire. All participants were aged 18 years or older and provided written informed consent. The study adhered to the tenets of the Declaration of Helsinki and was approved by the Institutional Review Board of Chung-Ang University Gwangmyeong Hospital (IRB approval number: 2508-262-137).

Diagnosis and classification of CSC

CSC was diagnosed based on clinical symptoms and multimodal imaging. All patients underwent slit-lamp biomicroscopy, dilated fundus examination, and spectral-domain optical coherence tomography (OCT) (Spectralis HRA+OCT; Heidelberg Engineering). The primary diagnostic criterion was serous neurosensory retinal detachment at the macula on OCT, in the absence of choroidal neovascularization (CNV) or other retinal diseases. Fluorescein angiography (FA) or indocyanine green angiography (ICGA) (HRA2; Heidelberg Engineering) was additionally performed when necessary to support the diagnosis and exclude other maculopathies. To exclude sub-retinal pigment epithelium (RPE) neovascularization, multimodal imaging including OCT, FA, and ICGA was reviewed by two retinal specialists. Cases showing any evidence of Type 1 CNV were excluded.

CSC was classified as acute or chronic according to disease course and RPE changes. Acute CSC was defined as cases with localized RPE atrophy smaller than one disc area, in which subretinal fluid resolved spontaneously within 3 months. Chronic CSC was defined as persistent subretinal fluid lasting longer than 3 months, or recurrent episodes associated with widespread RPE atrophy exceeding one disc area [10].

Personality evaluation

A Korean-language, web-based personality inventory based on the MBTI framework was administered in clinic using the 16PersonalityLab platform (<https://www.16personalitylab.com/>) in a self-paced manner (10–15 min). The instrument classifies four dichotomies (E/I, S/N, T/F, J/P). No proprietary MBTI® test items were disclosed, and MBTI® is a registered trademark of The Myers & Briggs Foundation. The test was self-administered in an outpatient setting, and

all participants completed it fully. Personality distributions were analyzed for the entire cohort and compared according to disease chronicity.

Statistical analyses

Analyses were conducted using IBM SPSS Statistics version 30.0 (IBM Corp.). Demographics and MBTI distributions were summarized descriptively, with continuous variables expressed as means $\pm$ standard deviations. The primary analysis compared the overall distribution of 16 MBTI types in CSC patients with the Korean representative sample ($n = 19,070$) using a chi-square test with Monte Carlo simulation. In addition, for individual MBTI types, as well as preference dimensions (E/I, S/N, T/F, J/P), function combinations (ST, SF, NT, NF) and attitude combinations (IJ, IP, EJ, EP), the observed proportions in CSC patients were compared with those of the Korean population using exact binomial tests. When multiple comparisons were performed, p -values were adjusted using the Bonferroni correction. Differences between acute and chronic CSC subgroups were assessed with Fisher's exact test. A p -value < 0.05 was considered statistically significant.

Results

In this study, we recruited 30 patients diagnosed with CSC, consisting of 27 males and 3 females, with a mean age of 47.1 ± 6.9 years. Among them, 14 patients were classified as acute CSC and 16 as chronic CSC, according to the extent of

RPE atrophy and disease course.

Figure 1 illustrates the distribution of MBTI personality types among CSC patients. The most prevalent type was ISFJ (23.3%), followed by ISTJ (16.7%) and INFJ/ESFJ (13.3%). Other types such as ESTJ and ISFP accounted for 10% each, while INTJ, INFP, ENTP, and ENFJ were observed in 3.3% of patients, respectively. Overall, the distribution showed a predominance of introverted and judging types, with ISFJ and INFJ together comprising more than one-third of the cohort.

Among the MBTI dimensions, significant differences were observed in the I/E, S/N, and J/P axes. Introversion (I) was more common than Extraversion (E) (70% vs. 30%), although this difference only approached statistical significance ($p = 0.05$), and Sensing (S) was significantly more common than Intuition (N) (73% vs. 27%, $p = 0.007$). Most notably, Judging (J) traits were overwhelmingly dominant over Perceiving (P) traits (87% vs. 13%, $p < 0.001$) (Table 1).

The overall distribution of MBTI types in the CSC cohort differed significantly from that of the Korean general population (Monte Carlo χ^2 test, $p = 0.012$). Among individual types, ISFJ was significantly more prevalent in CSC patients compared with the general population (23.3% vs. 8.3%, $p = 0.009$). INFJ was also observed more frequently (13.3% vs. 3.0%, $p = 0.029$). After Bonferroni correction for multiple comparisons, ISFJ remained statistically significant (adjusted $p = 0.019$), whereas INFJ showed only a non-significant trend (adjusted $p = 0.058$). Other types, including ISTJ, ESFJ, ESTJ, and ISFP, did not differ significantly from the general population. Notably, several MBTI types commonly observed in the general population were absent in the CSC cohort, resulting in a significant underrepresentation of the "Others" category ($p < 0.001$) (Table 2).

Analysis of attitude combinations revealed that CSC patients had a significantly higher proportion of the IJ combination compared with the general population (53.3% vs. 27.4%, $p = 0.005$), whereas the EP combination was completely absent (0% vs. 24.6%, $p = 0.001$). No significant differences were observed for the IP and EJ combinations. In terms of function combinations, the SF combination was significantly more frequent in CSC patients (50.0% vs. 30.3%, $p = 0.027$), while the distributions of ST, NT, and NF combinations were comparable between groups (Fig. 2).

When patients were stratified into acute ($n = 14$) and chronic ($n = 16$) CSC groups, no statistically significant dif-

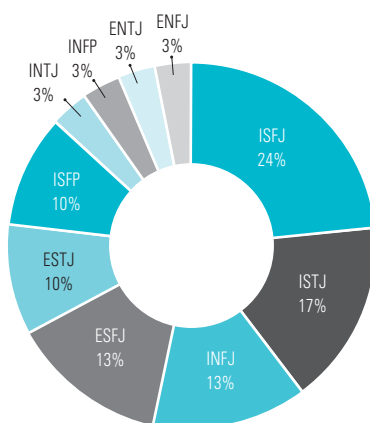


Figure 1. Proportion of Myers-Briggs Type Indicator (MBTI) personality types in patients with central serous chorioretinopathy.

Table 1. Distribution of MBTI dimensions among patients with CSC

Dimension	Category	Number	Percentage*	<i>p</i> -value [†]
I/E	Introversion	21	70%	0.050
	Extraversion	9	30%	
S/N	Sensing	22	73%	0.007
	iNtuition	8	27%	
F/T	Feeling	20	67%	0.215
	Thinking	10	33%	
J/P	Judging	26	87%	<0.001
	Perceiving	4	13%	

MBTI = Myers–Briggs Type Indicator; CSC = central serous chorioretinopathy.

*Percentage represents the proportion of patients classified into each MBTI trait.

[†]Binomial test.

Table 2. Comparison of MBTI type distributions between CSC patients and the Korean general population

MBTI type	CSC patients (n = 30), n (%)	General population (%)	Difference (%; 95% CI)	<i>p</i> -value*
ISFJ	7 (23.3)	8.3	+15.0 (+3.5 to +32.6)	0.009
INFJ	4 (13.3)	3.0	+10.3 (+1.3 to +26.9)	0.029
ISTJ	5 (16.7)	12.8	+3.9 (-7.6 to +20.0)	0.413
ESFJ	4 (13.3)	8.3	+5.0 (-3.8 to +20.3)	0.247
ESTJ	3 (10.0)	12.4	-2.4 (-11.1 to +13.4)	0.999
ISFP	3 (10.0)	6.5	+3.5 (-4.1 to +18.3)	0.379
Other [†]	4 (13.4)	48.7	-35.3 (-46.0 to -21.6)	<0.001

MBTI = Myers–Briggs Type Indicator; CSC = central serous chorioretinopathy; CI = confidence interval.

*Exact binomial test vs. general population proportion. After Bonferroni correction for multiple comparisons, ISFJ remained significant ($p = 0.019$); INFJ showed a non-significant trend ($p = 0.072$).

[†]Includes INTJ, INFP, ENTJ, ENFJ, and all other MBTI types not observed more than once in the CSC cohort.

ferences were observed in the distribution of MBTI personality traits (Table 3). Although the chronic group showed a higher proportion of Intuitive traits compared with the acute group (37.5% vs. 7.1%), this difference did not reach statistical significance (Fisher's exact test, $p = 0.086$). Similarly, no significant differences were found in the I/E, F/T, and J/P dimensions (all $p > 0.05$).

Discussion

CSC is characterized by serous detachment of the neurosensory retina and choroidal hyperpermeability and has been linked to psychological stress and hormonal fluctuations [11–13]. Among psychosocial factors, Type A personality—marked by competitiveness, time urgency, and emotional tension—has long been regarded as a behavioral risk factor. These traits may contribute to CSC pathogenesis through sympathetic hyperactivity and dysregulation of the HPA

axis, leading to cortisol overproduction. Supporting this concept, CSC patients have been reported to show higher perceived stress scores and increased choroidal thickness compared with controls [14] and higher Type A personality scores than patients with non-chorioretinal diseases [15].

The Type A personality construct, first introduced in the 1950s in the context of coronary heart disease research, represents an early but now dated attempt to link personality with disease risk [7]. Although historically influential, subsequent reviews revealed that the broad and dichotomous nature of this classification oversimplifies individual psychological traits, with hostility and anger expression identified as the more critical components [16,17]. Thus, the Type A framework remains an overly simplistic model that fails to capture the complexity of personality. To provide a more structured and differentiated assessment, we applied the MBTI, which classifies individuals into 16 types across four dichotomous dimensions (E/I, S/N, T/F, J/P). While not a diagnostic instrument, MBTI has been increasingly utilized

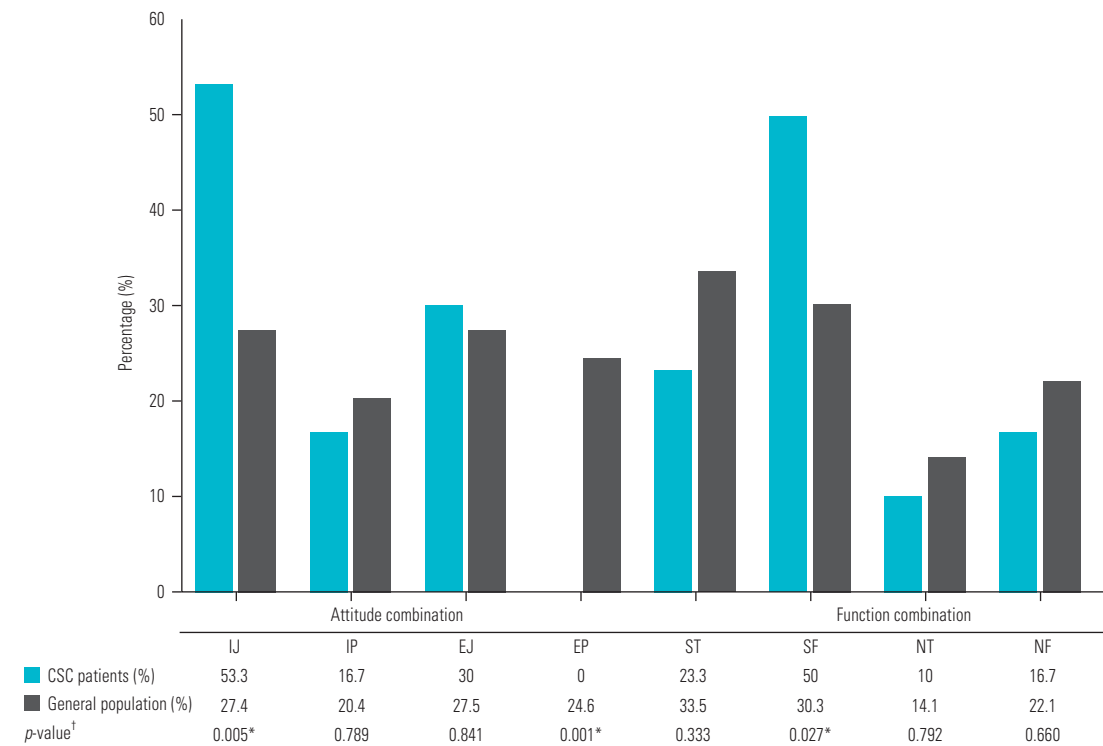


Figure 2. Comparison of MBTI function combinations (ST, SF, NT, NF) and attitude combinations (IJ, IP, EJ, EP) between CSC patients (n = 30) and the Korean general population (n = 19,070). MBTI = Myers-Briggs Type Indicator; CSC = central serous chorioretinopathy. * $p < 0.05$. [†]Exact binomial tests.

Table 3. Comparison of MBTI personality trait distribution between acute and chronic CSC groups (n = 30)

Dimension	Trait	Acute* (n = 14)	Chronic [†] (n = 16)	<i>p</i> -value [‡]
I/E	Introversion	9 (64.3)	12 (75.0)	0.694
	Extraversion	5 (35.7)	4 (25.0)	
S/N	Sensing	13 (92.9)	10 (62.5)	0.086
	iNtuition	1 (7.1)	6 (37.5)	
F/T	Feeling	7 (50.0)	13 (81.3)	0.122
	Thinking	7 (50.0)	3 (18.7)	
J/P	Judging	13 (92.9)	13 (81.3)	0.602
	Perceiving	1 (7.1)	3 (18.7)	

Values are presented as number (%).

MBTI = Myers-Briggs Type Indicator; CSC = central serous chorioretinopathy; RPE = retinal pigment epithelium.

*Focal RPE atrophy <1 disc area with spontaneous resolution within 3 months.

[†]Recurrent or persistent disease with RPE atrophy >1 disc area.

[‡]Fisher's exact test.

in behavioral research in recent decades and has demonstrated utility in exploring associations between personality and disease [18]. However, its psychometric validity has been debated, and in this study it was applied as an exploratory framework.

In this study, CSC patients showed a predominance of Introversion (I) and Judging (J) traits. Introverts tend to rely

on internal reflection and employ avoidant coping strategies under stress [19], while individuals with Judging traits prefer structure and predictability, potentially heightening stress reactivity [20]. The analysis further indicated that the ISFJ type was significantly overrepresented in CSC patients compared with the general population (23.3% vs. 8.3%), whereas INFJ showed only a trend toward increased prevalence

(13.3% vs. 3.0%) that did not remain significant after correction for multiple comparisons. Overall, Judging (J) traits were markedly more frequent in CSC patients (87%) than in the Korean general population (54.3%) [21]. Complementary analyses of attitude and function combinations revealed that the IJ and SF profiles were predominant, while EP was absent, suggesting that specific constellations of traits may further characterize the psychosocial characteristics observed in CSC patients.

Subgroup analysis revealed no significant differences between acute and chronic CSC in MBTI trait distribution. Although Intuitive (N) traits were more common in the chronic group, this did not reach significance, possibly due to limited sample size. These findings suggest that chronicity is more strongly influenced by structural and biological factors such as choroidal thickness, RPE changes, and corticosteroid exposure, rather than personality.

Taken together, our results suggest an association between personality trait distributions and CSC, whereas disease chronicity appears to be more closely related to anatomical and physiological determinants. The overrepresentation of Judging traits indicates a distinctive personality distribution pattern observed in CSC patients.

This study has several limitations. The sample size was relatively small, which may have limited statistical power, particularly in the acute–chronic subgroup analysis. Personality assessment relied on a self-reported, MBTI framework-based inventory, a non-standardized tool with known limitations in reliability and construct validity compared with trait-based models such as the Big Five. In addition, the large discrepancy in sample size between the CSC cohort and the general population reference and the absence of an age- and sex-matched control group may have introduced demographic confounding and inflated statistical significance. Accordingly, these findings should be interpreted cautiously as exploratory and hypothesis-generating, and confirmation in larger, longitudinal studies using validated psychological instruments is warranted.

In conclusion, this study represents the first application of MBTI-based personality analysis in CSC patients. The predominance of Introversion and Judging traits, along with the overrepresentation of ISFJ and INFJ types, provides novel descriptive insights into the personality distribution patterns observed in patients with CSC.

Conflicts of Interest

The authors declare no conflicts of interest relevant to this article.

Author Contribution

Conception (J.H.J); Design (J.H.J); Data acquisition (S.M.C); Analysis (S.M.C); Interpretation (J.H.J); Writing (S.M.C); Review (J.H.J)

Availability of Data and Material

I had full access to all the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis.

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