

The Relationship of Personality Traits and Ego Strength with the Severity of Functional Disability in Individuals with Functional Gastrointestinal Disorders

Maryam. Saeid¹, Mahboobe. Taher^{1*}, Hamid. Vahedi², Abbas Ali. Hosseinkhanzadeh³

1 Department of Psychology, Sha.C., Islamic Azad University, Shahrood, Iran

2 Associate Professor, Department of Gastroenterology, Faculty of Medicine, Shahrood University of Medical Sciences Shahrood, Iran

3 Professor, Faculty of literature and Humanities, University of Guilan, Rasht, Iran

*Correspondence: Mahboobe.Taher@iau.ac.ir

Article type:
Original Research

Article history:

Received 30 March 2026

Revised 07 July 2026

Accepted 14 July 2026

Initial Publish 16 July 2026

Published online 01 March 2027

ABSTRACT

This study aimed to investigate the direct relationships between personality traits and the severity of functional disability and to determine the mediating role of ego strength in individuals with functional gastrointestinal disorders. This quantitative, cross-sectional, correlational study was conducted using structural equation modeling. The statistical population comprised individuals with functional gastrointestinal disorders who attended three healthcare centers in Tehran, Iran, between September 2025 and March 2026: a private gastroenterology and hepatology subspecialty clinic and physician's office in northwestern Tehran, Masoud Specialized and Subspecialized Gastroenterology and Hepatology Clinic in western Tehran, and the Specialized Gastroenterology and Hepatology Clinic of Imam Khomeini Hospital. Eligible individuals had been diagnosed by a gastroenterologist with one or more functional gastrointestinal disorders. A total of 350 participants were selected through nonprobability convenience sampling. Data were collected using the 36-item World Health Organization Disability Assessment Schedule, the 60-item Revised NEO Five-Factor Inventory, and the 32-item Psychosocial Inventory of Ego Strengths. Descriptive statistics, Pearson's correlation coefficient, structural equation modeling, path analysis, and the Sobel test were used for data analysis. SPSS and AMOS Version 24 were employed. The proposed structural model demonstrated an acceptable fit with the empirical data, with $\chi^2/df = 1.71$, RMSEA = .06, CFI = .94, NFI = .93, GFI = .94, and AGFI = .93. Ego strength had a significant negative direct effect on functional disability severity ($\beta = -.44$, $p < .001$). Among the personality dimensions, agreeableness ($\beta = -.37$, $p < .001$), conscientiousness ($\beta = -.20$, $p < .001$), and openness to experience ($\beta = -.12$, $p < .05$) significantly and negatively predicted functional disability. However, the direct effects of extraversion and neuroticism were not statistically significant. The Sobel test also confirmed the significant mediating role of ego strength in the relationship between certain personality traits and functional disability severity ($Z = 2.84$, $p < .01$). Ego strength appears to be an important psychological mechanism through which personality traits influence functional disability in individuals with functional gastrointestinal disorders. Greater agreeableness, conscientiousness, openness to experience, and ego strength were associated with lower disability severity, highlighting the value of incorporating personality-informed assessment and ego-strengthening interventions into multidisciplinary care.

Keywords: Personality traits; ego strength; functional disability; functional gastrointestinal disorders

How to cite this article:

Saeid, M., Taher, M., Vahedi, H., & Hosseinkhanzadeh, A.A. (2027). The Relationship of Personality Traits and Ego Strength with the Severity of Functional Disability in Individuals with Functional Gastrointestinal Disorders. *Mental Health and Lifestyle Journal*, 5(2), 1-16. <https://doi.org/10.61838/mhlj.280>

Introduction

Functional gastrointestinal disorders, increasingly conceptualized as disorders of gut–brain interaction, represent a heterogeneous group of chronic conditions characterized by persistent or recurrent gastrointestinal symptoms that cannot be adequately explained by identifiable structural or biochemical abnormalities. These disorders commonly involve abdominal pain, altered bowel habits, bloating, nausea, early satiety, and other symptoms that may fluctuate over time and substantially disrupt daily functioning. Although they are not typically associated with overt tissue damage, their consequences can be profound because symptom persistence, unpredictability, and sensitivity to psychological and environmental factors frequently impair occupational performance, social participation, self-care, mobility, and overall quality of life. Recent scholarship has emphasized that these disorders constitute a major international public health concern because of their high prevalence, recurrent healthcare utilization, and cumulative personal and societal costs (1-3). The broader burden of gastrointestinal diseases includes considerable direct medical expenditure, work absenteeism, reduced productivity, and long-term limitations in physical and psychosocial functioning, illustrating that gastrointestinal morbidity cannot be evaluated solely through clinical symptoms or disease-specific indicators (4).

One of the most consequential outcomes of chronic gastrointestinal symptoms is functional disability. Functional disability refers to limitations in an individual's capacity to perform essential activities and fulfill expected roles across cognitive, physical, interpersonal, domestic, occupational, and social domains. In patients with chronic diseases, disability is not necessarily proportional to the biological severity of the medical condition; rather, individuals with comparable clinical symptoms may demonstrate markedly different levels of functional limitation. This variability suggests that functional disability emerges through the interaction of disease-related, psychological, behavioral, and social processes. Studies of chronic medical populations have demonstrated that disability is closely associated with diminished independence, restricted participation, lower quality of life, and increased dependence on healthcare and informal support systems (5, 6). Within chronic gastrointestinal conditions, psychological determinants may affect the manner in which symptoms are interpreted, tolerated, regulated, and incorporated into daily behavior, thereby influencing the extent to which gastrointestinal complaints result in actual functional impairment (7). Recent evidence has consequently directed increasing attention toward the psychological predictors of disability severity among individuals with functional gastrointestinal disorders (8, 9).

The biopsychosocial model provides a comprehensive theoretical framework for understanding why gastrointestinal symptoms lead to different levels of disability across individuals. According to this model, health and functional outcomes result from reciprocal interactions among biological vulnerability, psychological characteristics, behavioral responses, interpersonal conditions, and broader environmental influences. From this perspective, gastrointestinal symptoms may initiate disability, but the persistence and severity of disability are shaped by cognitive appraisals, emotional reactivity, coping strategies, personality characteristics, self-regulatory resources, social support, and learned illness behaviors. Contemporary applications of the biopsychosocial model to chronic illness emphasize that biological indices alone are insufficient for predicting adaptation, treatment response, or everyday functioning (10, 11). Iranian studies have similarly indicated that psychological variables contribute meaningfully to disability severity among

individuals with chronic somatic illnesses, suggesting that functional outcomes should be understood through multidimensional models rather than through exclusively biomedical explanations (12, 13).

Among the psychological factors that may explain individual differences in functional disability, personality traits are particularly important because they represent relatively stable patterns of thought, emotion, motivation, and behavior. The five-factor model conceptualizes personality in terms of neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness. These traits influence how individuals perceive physical symptoms, respond to stress, engage with healthcare, regulate emotions, adhere to treatment, seek support, and maintain health-related behaviors. Personality assessment has therefore become increasingly relevant to the prediction of health outcomes, psychological adjustment, and functional adaptation in medical populations (14). From a biopsychosocial perspective, personality traits can shape both exposure to health-related risks and the behavioral pathways through which illness affects functioning (15). In gastrointestinal patients specifically, personality dimensions may influence treatment adherence, symptom monitoring, dietary behavior, medication use, communication with healthcare providers, and persistence in recommended self-management practices (16).

Neuroticism is generally characterized by heightened negative affectivity, emotional instability, worry, sensitivity to threat, and a tendency to experience distress. In individuals with gastrointestinal disorders, elevated neuroticism may intensify symptom vigilance, catastrophic interpretation, illness-related anxiety, and perceived loss of control. Because gastrointestinal sensations are often variable and sensitive to emotional arousal, individuals high in neuroticism may interpret ordinary or transient bodily sensations as threatening, which may increase distress and avoidance of activities. Research has linked neuroticism with maladaptive illness perceptions in gastrointestinal disorders, supporting its potential contribution to disability through cognitive and emotional mechanisms (17). By contrast, extraversion may support adjustment by facilitating social engagement, positive affect, help-seeking, and access to interpersonal resources. Nevertheless, extraversion may not uniformly protect against disability, because its influence can depend on symptom severity, environmental demands, and the availability of supportive social contexts. Evidence examining personality, ego-related capacities, and health outcomes suggests that the effects of individual traits are best understood within broader structural models rather than as isolated associations (18-20).

Openness to experience may influence functional adaptation through cognitive flexibility, receptivity to new coping strategies, and willingness to reconsider rigid beliefs about illness and treatment. Individuals with higher openness may be more prepared to use psychological interventions, behavioral modification, dietary adjustment, or integrative approaches to symptom management. Agreeableness, which involves cooperation, trust, empathy, and interpersonal sensitivity, may facilitate constructive relationships with clinicians and family members, thereby improving treatment engagement and reducing interpersonal stress. Conscientiousness may be especially relevant to chronic illness management because it is associated with planning, self-discipline, persistence, responsibility, and adherence to long-term health routines. Individuals high in conscientiousness may be better able to maintain medication schedules, monitor symptoms systematically, attend follow-up appointments, regulate daily activities, and avoid behaviors that aggravate gastrointestinal symptoms. Accordingly, openness, agreeableness, and conscientiousness may reduce functional disability by promoting adaptive coping and consistent self-management, whereas low

levels of these traits may increase vulnerability to disorganization, avoidance, treatment nonadherence, and functional decline (15, 16). However, personality traits do not operate deterministically, and their effects may depend on internal psychological resources that translate dispositions into adaptive or maladaptive responses (17, 18).

One such psychological resource is ego strength, which has also been discussed in the literature using related terms such as self-capacity, psychological self-capacity, and self-empowerment. Ego strength refers to the individual's capacity to preserve psychological coherence, regulate impulses and emotions, tolerate frustration, sustain goal-directed behavior, maintain realistic judgment, and adapt effectively to internal and external demands. It encompasses developmental strengths such as hope, will, purpose, competence, fidelity, love, care, and wisdom. In the context of chronic illness, ego strength may help individuals integrate the illness into their self-concept without allowing it to dominate their identity or eliminate their sense of agency. Patients with stronger internal capacities may be better able to tolerate uncertainty, respond flexibly to symptom fluctuations, communicate their needs, maintain meaningful roles, and continue valued activities despite physical discomfort. Research has associated self-capacity with more effective psychological adaptation among patients with chronic illness (21), greater emotional adjustment in adults (22), and stronger resilience in the process of chronic disease adaptation (23).

Ego strength may reduce functional disability through several interrelated mechanisms. First, it can strengthen emotional regulation, enabling patients to manage fear, frustration, shame, anger, and helplessness without responding through excessive avoidance or withdrawal. Second, it can support realistic cognitive appraisal by allowing individuals to distinguish actual physical limitations from anticipated or catastrophized limitations. Third, it may promote active coping, problem-solving, persistence, and willingness to seek professional assistance. Fourth, stronger ego capacities may preserve continuity of self and purpose, thereby encouraging patients to remain engaged in family, occupational, and social roles. Empirical studies have shown that self-capacity predicts psychological adjustment and emotion regulation (24), is associated with psychological well-being in chronic illness (25), and contributes to effective coping among individuals managing chronic diseases (26). These findings suggest that ego strength is not merely a general positive attribute but a potentially important determinant of how medical symptoms are translated into everyday disability.

The relationship between personality traits and functional disability may also be indirect, with ego strength functioning as a mediating psychological mechanism. Personality traits describe enduring dispositional tendencies, whereas ego strength reflects the individual's capacity to mobilize adaptive psychological resources in response to developmental and situational demands. For example, conscientious individuals may develop stronger purpose, competence, and will through repeated experiences of planning and goal attainment. Agreeable individuals may strengthen capacities for fidelity, love, and care through stable interpersonal relationships. Open individuals may cultivate wisdom and psychological flexibility through their willingness to engage with novel experiences and alternative perspectives. Conversely, elevated neuroticism may undermine ego strength by increasing emotional instability, self-doubt, perceived helplessness, and difficulty tolerating uncertainty. Thus, personality traits may influence disability partly by shaping the internal capacities through which individuals regulate symptoms and maintain functioning.

Previous research supports the mediating position of self-capacity in the relationship between personality and psychological outcomes. Jarareh et al. reported that self-capacity mediated associations between personality traits and mental health, highlighting the role of internal psychological resources in converting personality dispositions into adaptive outcomes (27). Similarly, research has demonstrated a mediating role for self-capacity in associations between personality characteristics and mental health indicators (28). Structural evidence from chronic disease populations has further suggested that personality, self-capacity, and disability are interconnected rather than independent constructs (20). In individuals with gastrointestinal disorders, findings have specifically indicated that self-capacity may mediate the relationship between personality traits and functional disability (19). These studies provide a conceptual basis for testing a model in which personality traits affect disability both directly and indirectly through ego strength.

Despite these developments, several questions remain unresolved. First, much of the existing literature has examined psychological distress, symptom severity, quality of life, or treatment adherence rather than functional disability as a multidimensional outcome. However, reductions in symptoms do not necessarily correspond to restoration of cognitive, social, occupational, and daily functioning. Second, many studies have assessed personality traits and self-related capacities separately, limiting understanding of the structural pathways through which they jointly predict disability. Third, the relative contributions of the five personality dimensions may vary across cultural and medical contexts. Personality traits may interact with culturally shaped expectations concerning illness behavior, family responsibility, emotional expression, social participation, and reliance on healthcare professionals. Consequently, findings obtained in one population cannot automatically be generalized to patients receiving gastrointestinal care in another sociocultural environment. Studies conducted among patients with chronic and gastrointestinal conditions have emphasized the need for integrated models that account for individual psychological differences in disability severity (7-9).

Examining these relationships has practical significance for psychological assessment and intervention. If particular personality traits are associated with greater disability, clinicians may use personality-informed assessment to identify patients who are vulnerable to maladaptive symptom interpretation, avoidance, emotional dysregulation, or inconsistent self-management. Personality traits themselves are relatively stable and may not be direct targets for rapid clinical change; nevertheless, the behavioral and regulatory processes associated with them can be addressed therapeutically. Ego strength may represent a particularly useful intervention target because it encompasses capacities that can potentially be strengthened through psychological treatment, psychoeducation, skills training, supportive therapy, and structured self-management programs. Interventions designed to enhance hope, purpose, competence, emotional regulation, coping confidence, and interpersonal effectiveness may reduce the functional consequences of gastrointestinal symptoms even when complete symptom remission is not immediately achievable (25, 26). Such an approach is consistent with contemporary biopsychosocial disease management, which prioritizes participation, adaptive functioning, and quality of life alongside symptom control (10, 11).

A structural understanding of personality, ego strength, and disability may also improve interdisciplinary collaboration among gastroenterologists, psychologists, nurses, rehabilitation specialists, and other healthcare professionals. Patients whose disability is disproportionately severe relative to their biomedical

findings may be incorrectly perceived as unmotivated, excessively dependent, or resistant to treatment. A biopsychosocial formulation instead recognizes that functional limitation may arise from complex interactions among personality-based vulnerabilities, diminished self-regulatory capacity, chronic stress, symptom-related fear, and environmental constraints. Identifying these processes can support individualized care plans and prevent unnecessary medical investigations, repeated consultations, and escalating healthcare utilization. Moreover, focusing on functional restoration rather than solely on symptom elimination may encourage gradual re-engagement in daily activities and reduce the reinforcing cycle of avoidance, deconditioning, social withdrawal, and disability (5, 6).

Accordingly, the present study aimed to determine the direct relationships between personality traits and the severity of functional disability and to examine the mediating role of ego strength in these relationships among individuals with functional gastrointestinal disorders.

Methods and Materials

Study Design and Participants

The present study employed a quantitative paradigm and was fundamental in terms of its purpose. Regarding data collection and analysis, it used a correlational design based on structural equation modeling, and it was cross-sectional in terms of its temporal scope. The study variables included functional disability as the endogenous or criterion variable, personality traits as the exogenous or predictor variable, and ego strength as the mediating variable. In the proposed conceptual model, both the direct effects of the predictor variables on functional disability and their indirect effects through ego strength were examined.

The statistical population consisted of all individuals with functional gastrointestinal disorders who attended three healthcare centers in Tehran, Iran, between September 23, 2025, and March 20, 2026: a private gastroenterology and hepatology subspecialty clinic and physician's office in northwestern Tehran, Masoud Specialized and Subspecialized Gastroenterology and Hepatology Clinic in western Tehran, and the Specialized Gastroenterology and Hepatology Clinic of Imam Khomeini Hospital. Participants were selected from patients at these three centers who had been diagnosed by a gastroenterologist with one or more functional gastrointestinal disorders. Considering the sample-size recommendations for structural equation modeling, the complexity of the proposed model, the number of study variables, and the possibility of participant attrition, 350 individuals were selected using nonprobability convenience sampling. Data were collected through both library-based and field methods. Following coordination with the three healthcare centers and obtaining informed consent, the questionnaires were administered to eligible participants.

Data Collection

World Health Organization Disability Assessment Schedule: In the present study, functional disability was assessed using the 36-item World Health Organization Disability Assessment Schedule developed by Üstün et al. (2010), which has been used to evaluate functional disability in patients with chronic pain. This questionnaire comprises 36 items assessing six domains: cognition, including Items 1–6; mobility, including Items 7–11; self-care, including Items 12–15; getting along with others, including Items 16–20; life activities, including Items 21–28; and participation, including Items 29–36. Responses are provided on a five-point Likert scale. The response options are scored as follows: none = 0, mild = 1, moderate = 2, severe = 3, and

extreme = 4. The questionnaire contains no reverse-scored items, and higher scores indicate greater functional disability. In an Iranian study, Cronbach's alpha was reported as .96 for the total scale and .90, .88, .84, .88, .96, and .87 for the cognition, mobility, self-care, getting along, life activities, and participation domains, respectively.

Revised NEO Five-Factor Inventory: The Revised NEO Five-Factor Inventory was developed by Costa and McCrae (2008). It consists of 60 items assessing five personality dimensions: neuroticism, including Items 1, 6, 11, 16, 21, 26, 31, 36, 41, 46, 51, and 56; extraversion, including Items 2, 7, 12, 17, 22, 27, 32, 37, 42, 47, 52, and 57; openness to experience, including Items 3, 8, 13, 18, 23, 28, 33, 38, 43, 48, 53, and 58; agreeableness, including Items 4, 9, 14, 19, 24, 29, 34, 39, 44, 49, 54, and 59; and conscientiousness, including Items 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, and 60. All items are answered on a five-point Likert scale, with scores ranging from 1 to 5. The response options are scored as follows: strongly agree = 5, agree = 4, neither agree nor disagree = 3, disagree = 2, and strongly disagree = 1. The developers reported reliability coefficients of .90 for neuroticism, .78 for extraversion, .76 for openness to experience, .86 for agreeableness, and .90 for conscientiousness (Costa & McCrae, 2008). In an Iranian study, reliability coefficients of .58, .54, .72, .75, and .62 were reported for neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness, respectively.

Psychosocial Inventory of Ego Strengths: The 32-item Psychosocial Inventory of Ego Strengths developed by Markstrom et al. (1997) was used to assess participants' ego strength. The inventory is available in 64-item and 32-item versions; the 32-item version was used in the present study. The questionnaire comprises eight subscales: hope, including Items 8, 15, 26, and 32; will, including Items 2, 4, 19, and 27; purpose, including Items 16, 24, 25, and 28; competence, including Items 3, 11, 13, and 29; fidelity, including Items 6, 10, 18, and 20; love, including Items 1, 7, 14, and 23; care, including Items 9, 17, 21, and 30; and wisdom, including Items 5, 12, 22, and 31. The items are scored on a five-point Likert scale ranging from strongly disagree = 1 to disagree = 2, neither agree nor disagree = 3, agree = 4, and strongly agree = 5. Higher scores indicate a higher level of ego strength. The developers reported satisfactory face, content, and construct validity for the 32-item inventory. Cronbach's alpha was .94 for the total scale, and the reliability coefficients for the subscales were .81 for hope, .69 for will, .68 for purpose, .78 for competence, .62 for fidelity, .63 for love, and .84 for care (Markstrom et al., 1997). In an Iranian study, the reliability of the questionnaire was reported as .81 based on Cronbach's alpha.

Data Analysis

Data analysis was conducted at descriptive and inferential levels. At the descriptive level, means and standard deviations were calculated for the study variables. At the inferential level, Pearson's correlation coefficient and structural equation modeling through path analysis were used to examine the relationships among the variables. SPSS and AMOS, Version 24, were used to analyze the data.

Findings and Results

The descriptive findings indicated that, of the 350 participants, 56.29% were men and 43.71% were women. The highest frequency was observed in the 46–55-year age group, accounting for 48.86% of the participants, and the participants' mean age was approximately 44.90 years. Regarding educational

attainment, the highest frequency was observed among participants with high school diplomas or associate degrees, accounting for 40.29% of the sample. Employed individuals constituted the largest occupational group at 54.57%, and married individuals constituted the largest marital-status group at 80.57%. Table 1 presents the descriptive findings for the study variables and their respective components.

Table 1. Descriptive Statistics for the Study Subscales

Scale or subscale	Mean	Standard deviation	Skewness	Kurtosis	Minimum	Maximum
Extraversion	35.52	7.29	-0.10	-0.36	16	50
Neuroticism	30.47	6.03	-0.28	-0.45	12.80	40
Openness to experience	34.19	8.42	-0.36	-0.17	10	50
Agreeableness	26.71	10.18	0.18	-0.62	10	50
Conscientiousness	26.60	9.64	0.15	-0.48	10	50
Hope	13.00	5.26	0.20	-1.59	5	20
Will	13.35	5.07	0.14	-1.56	4	20
Purpose	13.00	5.24	0.21	-1.60	5	20
Competence	13.37	5.43	0.09	-1.70	5	20
Fidelity	9.96	4.20	1.41	0.91	4	20
Love	11.65	4.96	0.71	-1.00	4	20
Care	11.17	4.79	0.84	-0.74	4	20
Wisdom	11.68	5.08	0.67	-1.15	4	20
Total ego strength	97.18	22.77	0.53	-0.41	51	160
Difficulties in understanding and communication	10.33	4.00	0.25	-1.54	6	18
Mobility	12.21	3.98	-0.46	-1.10	6	19
Self-care	12.31	3.90	-0.51	-1.09	6	19
Getting along with others	11.24	4.17	-0.29	-1.37	6	19
Life activities	10.19	2.58	-0.01	-1.58	7	14
Participation in society	10.06	2.70	0.08	-1.63	8	14
Functional disability	66.34	6.76	0.34	-0.03	49	87

The descriptive results showed that the mean functional disability score was 66.34, with a standard deviation of 6.76. The mean scores for ego strength and distress tolerance were reported as 97.18 and 99.51, respectively.

Maximum likelihood estimation was used to estimate the path coefficients and model-fit indices. Data normality is among the principal assumptions of this estimation method. Linearity of the relationships and the absence of multicollinearity among the predictor variables are additional assumptions. Accordingly, skewness and kurtosis values were calculated to assess the normality assumption, and all values fell within the acceptable range of ± 2 . Mardia's multivariate kurtosis coefficient was 2.72, which was below the critical value of 5 and indicated multivariate normality. The tolerance index and variance inflation factor were calculated to assess multicollinearity. The tolerance values were greater than .01, and the variance inflation factor values were below 5, indicating that multicollinearity was not problematic among the predictor variables. In addition, the Durbin-Watson statistic was 1.95, confirming the independence of errors. Therefore, the assumptions required for applying maximum likelihood estimation were satisfied. The model-fit indices are presented in Table 2.

Table 2. Model-Fit Indices

Fit index	Obtained value	Acceptable threshold
χ^2/df	1.71	< 3
Root mean square error of approximation (RMSEA)	0.06	< .10
Comparative fit index (CFI)	0.94	> .90
Normed fit index (NFI)	0.93	> .90
Goodness-of-fit index (GFI)	0.94	> .90

Adjusted goodness-of-fit index (AGFI)	0.93	> .90
---------------------------------------	------	-------

The model-fit indices demonstrated that the proposed model adequately fit the data. Specifically, the chi-square-to-degrees-of-freedom ratio was 1.71, the RMSEA was .06, and the CFI, NFI, GFI, and AGFI values were all greater than .90. These findings indicate an acceptable fit between the proposed model and the empirical data. Table 3 presents a summary of the direct, indirect, and total effects in the structural model.

Table 3. Summary of Direct, Indirect, and Total Effects in the Structural Model

Relationship path	Direct effect (β)	Indirect effect (β)	Total effect (β)
Health-promoting lifestyle $\rightarrow$ functional disability severity	-0.11	-0.32***	-0.43
Extraversion $\rightarrow$ functional disability severity	0.09	-0.02	0.07
Neuroticism $\rightarrow$ functional disability severity	0.11	0.01	0.12
Openness to experience $\rightarrow$ functional disability severity	-0.12*	-0.01	-0.13
Agreeableness $\rightarrow$ functional disability severity	-0.37***	-0.12*	-0.49
Conscientiousness $\rightarrow$ functional disability severity	-0.20***	-0.11*	-0.30
Distress tolerance $\rightarrow$ functional disability severity	-0.45***	-0.17**	-0.62
Ego strength $\rightarrow$ functional disability severity	-0.44***	—	-0.44
Health-promoting lifestyle $\rightarrow$ ego strength	0.73***	—	0.73
Personality traits $\rightarrow$ ego strength	0.42***	—	0.42
Distress tolerance $\rightarrow$ ego strength	0.39***	—	0.39

The path-coefficient results indicated that ego strength had a significant negative direct effect on the severity of functional disability ($\beta = -.44$), such that higher ego strength was associated with lower functional disability severity. Among the personality-trait dimensions, agreeableness ($\beta = -.37$), conscientiousness ($\beta = -.20$), and openness to experience ($\beta = -.12$) had significant negative effects on functional disability severity. Furthermore, the Sobel test indicated that ego strength played a significant mediating role in the relationships between certain dimensions of personality traits and functional disability severity, $Z = 2.84$, $p < .01$. Figure 1 illustrates the proposed research model and the direct and indirect paths among the study variables.

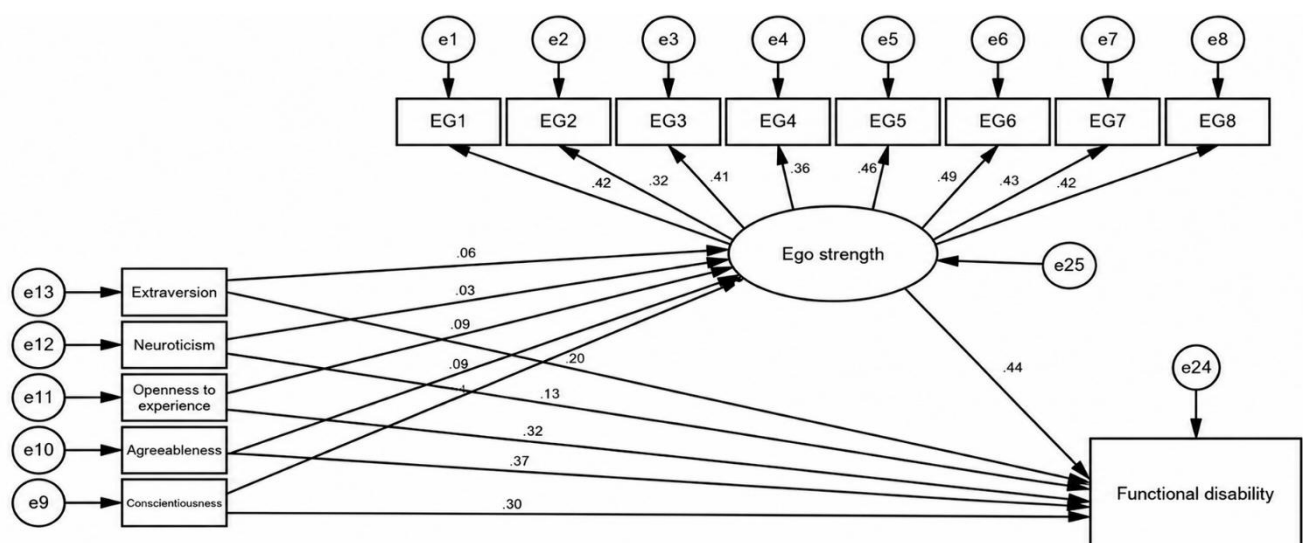


Figure 1. The Proposed Research Model and the Direct and Indirect Paths Among the Study Variables

Discussion and Conclusion

The present study examined the relationships between personality traits, ego strength, and the severity of functional disability among individuals with functional gastrointestinal disorders. The findings indicated that the proposed structural model demonstrated an acceptable fit with the empirical data, as reflected by a chi-square-to-degrees-of-freedom ratio of 1.71, an RMSEA value of .06, and CFI, NFI, GFI, and AGFI values exceeding .90. These indices support the adequacy of the hypothesized relationships among the study variables. The results further showed that ego strength had a significant negative direct effect on functional disability severity ($\beta = -.44$), indicating that individuals with greater ego strength experienced lower levels of functional limitation. Among the five personality dimensions, agreeableness had the strongest significant negative direct effect on functional disability ($\beta = -.37$), followed by conscientiousness ($\beta = -.20$) and openness to experience ($\beta = -.12$). In contrast, the direct effects of extraversion and neuroticism on functional disability were not statistically significant. Finally, the Sobel test confirmed that ego strength significantly mediated the relationship between certain personality dimensions and functional disability severity, $Z = 2.84$, $p < .01$. Collectively, these findings indicate that personality-related differences in disability are partly transmitted through individuals' internal psychological capacities.

The significant negative association between ego strength and functional disability suggests that individuals who possess greater hope, will, purpose, competence, fidelity, love, care, and wisdom are better able to maintain functioning despite persistent gastrointestinal symptoms. Functional gastrointestinal disorders are often characterized by recurrent pain, bloating, altered bowel habits, uncertainty regarding symptom onset, and heightened sensitivity to stress. These features can impair daily functioning not only through direct physical discomfort but also through emotional dysregulation, anticipatory anxiety, avoidance, and reduced confidence in one's ability to manage illness. Ego strength may protect patients against these processes by increasing their capacity to tolerate distress, regulate emotional reactions, preserve realistic judgment, and sustain goal-directed behavior. This interpretation is consistent with evidence showing that self-capacity is positively associated with psychological adaptation among patients with chronic illnesses (21), emotional adjustment in adults (22), and psychological resilience in chronic disease management (23).

The present finding regarding ego strength also aligns with research demonstrating that stronger self-capacity predicts more effective coping and greater psychological well-being among individuals living with chronic medical conditions (25, 26). Patients with stronger internal psychological resources may be more capable of interpreting symptoms as manageable rather than catastrophic, seeking appropriate support, and continuing important activities even when symptoms have not completely subsided. They may also be less likely to allow illness to dominate their identity or determine all aspects of their daily behavior. In this sense, ego strength may reduce functional disability by preserving a sense of agency and continuity of self. Deniz and Yıldırım Kurtuluş likewise reported that self-capacity contributed to psychological adjustment and emotional regulation, which are essential for maintaining adaptive functioning under stressful conditions (24). Therefore, the negative path from ego strength to disability observed in this study is theoretically coherent with the view that internal regulatory capacities influence how physical symptoms are converted into functional limitations.

The significant negative effect of agreeableness on functional disability indicates that more agreeable individuals tended to report lower disability severity. Agreeableness is associated with cooperation, empathy, trust, patience, and constructive interpersonal behavior. In the context of chronic gastrointestinal disorders, these characteristics may facilitate more effective communication with physicians, greater receptivity to treatment recommendations, and stronger relationships with family members and caregivers. Patients who are able to cooperate with healthcare professionals and communicate their needs appropriately may be more likely to receive timely support and adhere to multidimensional treatment plans. Agreeableness may also reduce interpersonal conflict, which is relevant because chronic gastrointestinal symptoms can be exacerbated by psychosocial stress and may become more disabling when patients experience social tension or lack of support. The current result is compatible with studies suggesting that personality dimensions affect treatment adherence, healthcare engagement, and health-related behavior in gastrointestinal patients (16). It also accords with broader evidence that personality characteristics shape psychological adjustment and functional outcomes in chronic illness (14, 18).

Agreeableness may further influence disability indirectly by strengthening relational components of ego strength, such as fidelity, love, and care. Individuals who form stable and supportive relationships may develop greater trust in others and a stronger sense of belonging, both of which can buffer the disabling consequences of chronic symptoms. Socially cooperative individuals may also be more willing to accept assistance without experiencing it as a threat to independence, while simultaneously maintaining reciprocal and meaningful social roles. This may prevent the social isolation and withdrawal that often accompany chronic gastrointestinal problems. Structural research has indicated that self-capacity can mediate associations between personality characteristics and psychological outcomes (27, 28). Accordingly, the effect of agreeableness on functional disability may arise not only from cooperative behavior itself but also from the stronger internal and interpersonal resources cultivated through positive social experiences.

Conscientiousness also had a significant negative direct effect on functional disability. This finding suggests that individuals who are organized, responsible, persistent, self-disciplined, and goal-oriented experience fewer limitations in daily functioning. Chronic gastrointestinal disorders often require ongoing self-management, including dietary regulation, medication adherence, symptom monitoring, stress management, attendance at follow-up appointments, and modification of daily routines. Conscientious individuals may be more capable of maintaining these behaviors consistently, even when improvement is gradual or symptoms fluctuate. They may also be better able to structure their activities around symptom patterns without completely abandoning occupational, family, and social responsibilities. The association between conscientiousness and better health-related behavior is supported by the biopsychosocial literature, which identifies personality as an important determinant of self-regulation and health management (15). Similarly, personality dimensions have been linked to adherence and adjustment among patients with gastrointestinal conditions (16).

The effect of conscientiousness may also be explained through its relationship with ego-strength components such as will, purpose, and competence. Repeated engagement in planned and responsible behavior may strengthen patients' confidence in their ability to manage illness-related challenges. Individuals high in conscientiousness are more likely to set realistic goals, persevere when symptoms interfere with activities, and evaluate their progress over time. These patterns can reduce helplessness and

support gradual functional restoration. Conversely, low conscientiousness may contribute to irregular medication use, inconsistent dietary practices, missed medical appointments, and avoidance of structured coping strategies, thereby increasing disability. Findings from structural studies have shown meaningful relationships among personality, self-capacity, and disability-related outcomes in chronic disease populations (19, 20). Thus, the present findings reinforce the proposition that conscientiousness protects functioning through both direct behavioral pathways and indirect psychological pathways involving ego strength.

Openness to experience had a smaller but significant negative effect on functional disability. Individuals with greater openness are generally characterized by cognitive flexibility, curiosity, receptiveness to new ideas, and willingness to reconsider established perspectives. These characteristics may help patients adapt to the uncertainty and complexity of functional gastrointestinal disorders. Because these disorders frequently require combined medical, psychological, dietary, and behavioral approaches, patients who are open to new experiences may be more willing to engage in psychoeducation, psychotherapy, relaxation training, behavioral modification, or alternative symptom-management strategies. They may also be more capable of revising rigid beliefs such as the assumption that all activity must cease until symptoms fully disappear. Such flexibility can facilitate continued participation in daily life despite residual discomfort. This interpretation is compatible with evidence that personality traits influence health behaviors and responses to illness through cognitive and behavioral mechanisms (14, 15).

The relationship between openness and disability may also operate through the wisdom and competence dimensions of ego strength. Openness can encourage reflection, learning from experience, and integration of multiple perspectives, which may enhance the ability to understand illness realistically and develop individualized coping strategies. Patients who remain cognitively flexible may be less vulnerable to rigid avoidance patterns and may more readily distinguish between genuine physical limitations and fear-based restrictions. Psychological determinants have been shown to contribute substantially to disability among patients with chronic gastrointestinal disease (7), and recent findings have emphasized the importance of personality and self-related capacities in predicting functional impairment (8, 19). Therefore, although the direct effect of openness was weaker than those of agreeableness and conscientiousness, it may still represent a clinically meaningful resource for adaptive illness management.

The nonsignificant direct effect of extraversion suggests that sociability, positive affect, and interpersonal activity did not independently predict functional disability in this sample. Although extraversion can facilitate help-seeking, social support, and positive emotional experiences, its influence may depend heavily on contextual conditions. For instance, socially active individuals may benefit from interpersonal support, but gastrointestinal symptoms may also make social gatherings, travel, or eating in public particularly stressful. Consequently, the potentially beneficial and adverse implications of extraversion may offset each other. Extraversion may also affect disability indirectly through ego strength or social support rather than through a direct pathway. This interpretation is consistent with studies indicating that the health consequences of personality dimensions are not uniform and should be examined in relation to mediating psychological and behavioral mechanisms (18, 28).

Neuroticism likewise did not have a significant direct effect on functional disability, despite theoretical expectations that emotional instability and negative affectivity might increase symptom-related impairment.

Neuroticism has been associated with maladaptive illness perceptions and greater psychological distress in gastrointestinal disorders (17). Nevertheless, the absence of a significant direct path in the present model may indicate that its influence is transmitted through intermediate variables such as emotional regulation, catastrophizing, illness anxiety, coping strategies, or ego strength. It is also possible that, once the effects of other personality dimensions and ego strength were simultaneously considered, the unique contribution of neuroticism was reduced. Functional disability is a multidimensional outcome involving behavioral performance and social participation, whereas neuroticism may be more strongly related to subjective symptom distress than to objective or self-reported limitations in daily activities. This distinction may explain why neuroticism predicts illness perception or emotional suffering without necessarily exerting an independent effect on functional disability.

The significant mediating role of ego strength constitutes one of the principal findings of the study. This result indicates that personality traits influence functional disability partly by shaping the psychological capacities through which patients confront chronic symptoms. Personality traits describe relatively stable tendencies, but these tendencies do not automatically produce disability or adaptation. Their consequences depend on whether individuals can mobilize hope, will, purpose, competence, and other ego strengths when facing illness-related demands. For example, conscientiousness may reduce disability because it strengthens will and competence, agreeableness may foster fidelity and care, and openness may support wisdom and adaptive reinterpretation. The present finding is consistent with previous studies demonstrating that self-capacity mediates relationships between personality and mental health (27, 28). It is also aligned with research directly examining structural associations among personality, self-capacity, and disability in chronic illness (19, 20).

From a broader theoretical perspective, the findings support the biopsychosocial model of chronic illness and disability. Functional disability among individuals with gastrointestinal disorders cannot be explained solely by physiological symptoms or diagnostic classifications. Rather, disability emerges from interactions among physical sensations, personality dispositions, emotional regulation, self-management capacity, interpersonal functioning, and contextual demands. Contemporary biopsychosocial frameworks emphasize that psychological and behavioral factors influence both illness adaptation and functional outcomes (10, 11). The current results also correspond with evidence that functional disability in chronic disease is strongly related to quality of life and social participation (5, 6). Given the substantial global burden of functional gastrointestinal disorders, identifying modifiable psychological mechanisms is particularly important (1-3). The present study therefore extends previous work by indicating that ego strength is a central mechanism linking personality characteristics to disability severity.

The findings are also consistent with Iranian studies demonstrating that psychological variables contribute to disability severity among patients with chronic somatic conditions (12, 13). In the Iranian sociocultural context, family relationships, social expectations, and access to psychological services may influence the extent to which chronic gastrointestinal symptoms interfere with everyday roles. Patients may experience pressure to continue occupational and family responsibilities despite discomfort, while stigma surrounding psychological treatment may limit access to appropriate support. Under these conditions, ego strength may become especially important because it enables individuals to balance illness-related

limitations with social obligations. The findings therefore highlight the need to integrate culturally responsive psychological assessment into the clinical management of functional gastrointestinal disorders.

The present study had several limitations. Its cross-sectional correlational design prevents definitive conclusions regarding temporal precedence or causality among personality traits, ego strength, and functional disability. The use of convenience sampling from a single hospital in Tehran may limit the representativeness of the sample and the generalizability of the findings to patients receiving care in other regions, private clinics, or community settings. All variables were assessed using self-report instruments, which may have increased the influence of common-method variance, recall error, and social desirability. The study did not systematically control for potentially important medical and contextual variables, including the specific type of functional gastrointestinal disorder, symptom duration, symptom severity, comorbid psychiatric conditions, medication use, socioeconomic status, and perceived social support. In addition, some personality subscales have shown modest reliability coefficients in previous Iranian studies, which may have attenuated particular associations. Finally, the use of path analysis within cross-sectional data provides evidence of statistical mediation but does not establish a developmental or causal mediating process.

Future research should employ longitudinal designs to determine whether personality traits predict subsequent changes in ego strength and whether changes in ego strength precede improvement in functional disability. Multicenter studies with probability-based sampling and participants from diverse geographical, cultural, and socioeconomic backgrounds would enhance external validity. Researchers should examine the model separately across diagnostic groups such as irritable bowel syndrome, functional dyspepsia, and functional constipation, because psychological pathways may differ according to symptom profiles. Future studies should incorporate clinician-rated disability indicators, behavioral measures of daily functioning, medical records, and ecological momentary assessment alongside self-report questionnaires. Additional mediators and moderators, including illness perception, catastrophizing, experiential avoidance, social support, coping style, psychological flexibility, and symptom severity, should also be evaluated. Experimental and intervention studies are particularly necessary to determine whether strengthening ego-related capacities produces measurable reductions in disability and whether such effects differ according to baseline personality characteristics.

Healthcare professionals should assess functional disability, personality-related vulnerabilities, and ego strength as part of the routine evaluation of patients with functional gastrointestinal disorders. Psychological services should not be restricted to patients with severe psychiatric symptoms but should also be offered to those whose daily functioning is disproportionately impaired by gastrointestinal complaints. Interventions may focus on strengthening hope, purpose, competence, emotional regulation, problem-solving, treatment adherence, and gradual re-engagement in avoided activities. Patients with lower conscientiousness may benefit from structured routines, written self-management plans, reminders, and regular follow-up, whereas those with lower openness may require gradual psychoeducation and collaborative introduction of unfamiliar treatment approaches. Patients with interpersonal difficulties may benefit from communication and support-building interventions. Interdisciplinary collaboration among gastroenterologists, psychologists, nurses, nutritionists, and rehabilitation professionals should prioritize functional restoration,

patient agency, and sustained participation in valued life roles rather than focusing exclusively on symptom elimination.

Acknowledgments

The authors express their deep gratitude to all participants who contributed to this study.

Authors' Contributions

All authors equally contributed to this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

Funding

This research was carried out independently with personal funding and without the financial support of any governmental or private institution or organization.

References

1. Black CJ, Drossman DA, Talley NJ, Ruddy J, Ford AC. Functional Gastrointestinal Disorders and Global Health Burden. *The Lancet Gastroenterology & Hepatology*. 2025;10(1):34-48. doi: 10.1016/S2468-1253(24)00211-9.
2. Jia Y, Wang X, Chen L. Emerging Perspectives on Gastrointestinal Functional Disorders. *Nature Reviews Gastroenterology & Hepatology*. 2026;23(1):15-29. doi: 10.1038/s41575-025-00987-4.
3. Khasawneh O, Al-Horani R, Bataineh T. Global Prevalence and Psychosocial Burden of Gastrointestinal Diseases. *World Journal of Gastroenterology*. 2026;32(4):355-72. doi: 10.3748/wjg.v32.i4.355.
4. Peery AF, Crockett SD, Murphy CC. Burden and Cost of Gastrointestinal, Liver, and Pancreatic Diseases in the United States. *Gastroenterology*. 2022;162(2):621-44. doi: 10.1053/j.gastro.2021.10.017.
5. Chalise HN. Functional Disability and Quality of Life among Patients with Chronic Diseases. *Disability and Rehabilitation*. 2024;46(3):411-20. doi: 10.1080/09638288.2023.2184561.
6. Zaks N. Disability and Chronic Illness: Functional Outcomes in Medical Populations. *Rehabilitation Psychology*. 2024;69(1):88-101. doi: 10.1037/rep0000521.
7. Lu Q, Zhang Y, Li H. Psychological Determinants of Disability in Chronic Gastrointestinal Disease. *Journal of Behavioral Medicine*. 2024;47(2):188-201. doi: 10.1007/s10865-023-00456-9.

8. Taghiloo A, Rezaei M, Moradi H. Psychological Predictors of Disability Severity in Functional Gastrointestinal Disorders. *BMC Gastroenterology*. 2025;25(1):77-89. doi: 10.1186/s12876-025-03122-5.
9. Volarić M, Kovačević I, Radić F. Psychological and Behavioral Correlates of Functional Disability in Gastrointestinal Disorders. *Frontiers in Psychology*. 2026;17:1452334. doi: 10.3389/fpsyg.2026.1452334.
10. Maddock J. The Biopsychosocial Model in Chronic Illness and Disability Research. *Health Psychology Review*. 2026;20(1):1-17. doi: 10.1080/17437199.2025.1012234.
11. McFarland DC, Alici Y. Biopsychosocial Approaches to Chronic Disease Management. *Current Psychiatry Reports*. 2024;26(2):95-104. doi: 10.1007/s11920-024-01456-3.
12. Asmekhani Akbarinejad F, Naghizadeh Alamdar H. The Role of Psychological Variables in Disability Severity among Patients with Chronic Diseases. *Journal of Clinical Psychology*. 2021;13(1):77-95.
13. Barzegari Soltanahmadi M, Ahmadi A, Rezaei S. Investigating Psychological Factors Affecting Disability in Patients with Chronic Somatic Disorders. *Health Psychology Quarterly*. 2020;9(2):45-62.
14. Piedmont RL. Personality Assessment and Health Outcomes. *Journal of Personality Assessment*. 2024;106(2):145-58. doi: 10.1080/00223891.2023.2245110.
15. Lim AG. Personality Traits and Health-Related Behaviors: A Biopsychosocial Perspective. *Personality and Mental Health*. 2024;18(1):21-36. doi: 10.1002/pmh.1601.
16. Özpek A, Kandemir H. Personality Dimensions and Treatment Adherence in Gastrointestinal Patients. *Journal of Psychosomatic Medicine*. 2024;66(1):55-67. doi: 10.1097/PSY.0000000000001287.
17. Gilmartin H, Roberts K, Evans T. Neuroticism and Illness Perception in Gastrointestinal Disorders. *Journal of Psychosomatic Research*. 2024;178:111594. doi: 10.1016/j.jpsychores.2024.111594.
18. Bwanali W, Tembo C, Phiri M. Personality Traits, Self-Capacity, and Psychological Outcomes in Chronic Illness. *Current Psychology*. 2025;44(5):4201-14. doi: 10.1007/s12144-024-06211-7.
19. Razaghpour M, Ahmadi S, Karimi F. Personality Traits and Functional Disability in Gastrointestinal Disorders: The Mediating Role of Self-Capacity. *Journal of Health Psychology*. 2025;30(3):390-404. doi: 10.1177/13591053251324567.
20. Zhu L, Chen Y, Huang J. Structural Relationships among Personality, Self-Capacity, and Disability in Chronic Disease. *Personality and Individual Differences*. 2025;228:112456. doi: 10.1016/j.paid.2024.112456.
21. Abdellatif M, Hassan R, El-Sayed A. Self-Capacity and Psychological Adaptation among Patients with Chronic Illness. *Journal of Health Psychology*. 2024;29(4):522-36. doi: 10.1177/13591053241234567.
22. Asio JMR. Psychological Self-Capacity and Emotional Adjustment among Adults. *Psychological Reports*. 2024;127(2):611-28. doi: 10.1177/00332941241214567.
23. Baydhowi A, Osman I, Nur A. Psychological Resilience and Self-Capacity in Chronic Disease Adaptation. *BMC Psychology*. 2024;12(1):88-101. doi: 10.1186/s40359-024-01745-3.
24. Deniz ME, Yıldırım Kurtuluş H. Self-Capacity as a Predictor of Psychological Adjustment and Emotional Regulation. *Personality and Individual Differences*. 2025;236:112784. doi: 10.1016/j.paid.2024.112784.
25. Heydarnejad S. Self-Capacity and Psychological Well-Being in Patients with Chronic Illness. *Journal of Clinical Psychology*. 2025;81(2):233-47. doi: 10.1002/jclp.23678.
26. Amayreh H, Alshraideh J, Alzoubi M. Self-Empowerment and Coping Effectiveness in Chronic Disease Patients. *International Journal of Behavioral Medicine*. 2025;32(1):44-58. doi: 10.1007/s12529-024-10345-2.
27. Jarareh M, Seyfour N, Amiri R. The Mediating Role of Self-Capacity in the Relationship between Personality Traits and Mental Health. *Journal of Psychological Studies*. 2022;18(3):101-18.
28. Priamono A, Yusuf M, Santoso H. Mediating Role of Self-Capacity in Personality and Mental Health Association. *Current Psychology*. 2024;43(18):16420-31. doi: 10.1007/s12144-023-05467-8.