Iran J Psychiatry Behav Sci. 2026 June; 20(2): e160220 https://doi.org/10.5812/ijpbs-160220

Published Online: 2026 May 31 **Research Article**

Alexithymia in Patients with Irritable Bowel Syndrome: Association with Perfectionism and Defense Styles in a Cross-Sectional Study

Ali Pourramzani [1], Kourosh Mojtahedi [2], Adele Isanazar [3], Reza Jahanian [4,*]

[1] Kavosh Behavioral, Cognitive and Addiction Research Center, Shafa Hospital, Guilan University of Medical Sciences, Rasht, Iran
[2] Gastrointestinal and Liver Diseases Research Center, Guilan University of Medical Sciences, Rasht, Iran
[3] Kavosh Cognitive Behavior Sciences and Addiction Research Center, Department of Psychiatry, School of Medicine, Guilan University of Medical Sciences, Rasht, Iran
[4] Cognitive and Addiction Research Center, Shafa Hospital, Guilan University of Medical Sciences, Rasht, Iran

[*] ***Corresponding Author:*** Cognitive and Addiction Research Center, Shafa Hospital, Guilan University of Medical Sciences, Rasht, Iran. Email: r_jahanian@yahoo.com

Received: 4 February, 2025; **Revised:** 6 May, 2026; **Accepted:** 30 May, 2026

Abstract

Background: Irritable bowel syndrome (IBS) is a common gastrointestinal disorder that substantially impairs patients' quality of life. Psychological factors may influence the severity of IBS symptoms and treatment outcomes. Alexithymia is a transdiagnostic factor associated with various psychopathologies and is linked to poorer psychotherapy outcomes and a weaker therapeutic alliance. Perfectionism and maladaptive defense styles may contribute to alexithymia, but their role in IBS remains underexplored.

Objectives: This study aimed to examine the associations among perfectionism, defense styles, and alexithymia in patients with IBS.

Methods: This cross-sectional analytical study included patients with IBS referred to Razi Hospital in Rasht, Iran, in 2023. Based on the inclusion and exclusion criteria, 244 participants were enrolled. Data were collected using Frost's Multidimensional Perfectionism Scale, the Defense Style Questionnaire, and the 20-item Toronto Alexithymia Scale. Correlation and regression analyses were performed to assess the relationships among these variables.

Results: Ordinal logistic regression showed that higher levels of perfectionism (OR = 1.021; P = 0.011; 95% CI, 1.005 - 1.037) and an immature defense style (OR = 1.037; P < 0.001; 95% CI, 1.022 - 1.053) significantly predicted higher odds of alexithymia. Compared with office-based employees, self-employed individuals (OR = 0.362; P = 0.008; 95% CI, 0.172 - 0.763) and unemployed participants, including students and housewives (OR = 0.426; P = 0.020; 95% CI, 0.208 - 0.872), had significantly lower odds of alexithymia.

Conclusions: These findings indicate significant associations among perfectionism, maladaptive defense styles, and alexithymia in patients with IBS. Although these associations suggest that psychological factors may contribute to the clinical profile of IBS, the cross-sectional design precludes causal inference. Nevertheless, these findings may inform future research on psychiatric interventions targeting perfectionism and defense mechanisms as potential pathways for reducing alexithymia.

Keywords: Irritable Bowel Syndrome, Perfectionism, Defense Mechanisms, Alexithymia

1. Background

Irritable bowel syndrome (IBS) is a common functional gastrointestinal disorder that affects approximately 15% of the population. It is a frequent reason for medical consultation, most often due to episodic or chronic abdominal pain and discomfort. Despite its prevalence, IBS often remains undiagnosed (1).

Contemporary conceptualizations of IBS have shifted from a purely physiological perspective to a biopsychosocial model that recognizes the complex interplay of biological, psychological, and social factors mediated by the brain-gut axis, through which emotions and cognitive processes influence

How to Cite: Pourramzani A, Mojtahedi K, Isanazar A, Jahanian R. Alexithymia in Patients with Irritable Bowel Syndrome: Association with Perfectionism and Defense Styles in a Cross-Sectional Study. Iran J Psychiatry Behav Sci. 2026;20(2):e160220. doi: https://doi.org/10.5812/ijpbs-160220

gastrointestinal function (2). The effectiveness of psychotherapies for IBS has been extensively investigated, with cognitive-behavioral therapy (CBT) and gut-directed hypnotherapy showing the most promising outcomes (3). These therapies target maladaptive cognitive and emotional processes that are closely linked to IBS symptoms. Notably, alexithymia, a trait characterized by difficulty identifying and describing emotions, has been identified as a key psychological factor in psychosomatic disorders (4).

Alexithymia involves impaired emotional processing, which may contribute to prolonged physiological arousal, heightened neural reactivity, and increased psychological distress. These disruptions have been linked to dysregulation of autonomic and immune functions and dysfunction of the hypothalamic–adrenal axis (5). Several studies have shown that alexithymia is a transdiagnostic factor in many psychopathologies, negatively influences psychotherapy outcomes and the therapeutic alliance (6), and mediates the relationship between stressful experiences and psychological symptoms (7). Alexithymia has also been shown to mediate the relationship between dysfunctional defense mechanisms and maladaptive behaviors (8), as well as the relationship between perfectionism and broader psychological difficulties (9). In the present study, alexithymia was conceptualized as an outcome variable reflecting an individual psychological trait.

Defense mechanisms are unconscious functions that protect the self from emotional distress (10). Another variable examined in this study was perfectionism, which is typically defined as having high, unrealistic expectations and harsh, critical self-evaluation (11).

Researchers suggest that perfectionism can be considered a transdiagnostic process that contributes to individuals' vulnerability to, and persistence of, mental health problems. Moreover, it has been identified as a significant predictor of treatment outcomes, with studies suggesting that addressing perfectionism can reduce a wide range of psychopathological symptoms (12, 13).

Although the etiology of alexithymia is likely multifactorial, certain personality traits and psychological mechanisms are thought to contribute to its development. To clarify their roles as potential risk factors, descriptive epidemiological studies are needed. Given that previous research has demonstrated links among alexithymia, perfectionism, and defense mechanisms in other psychosomatic conditions (12), investigating their relationships in patients with IBS could provide further evidence to support or refute the roles of perfectionism and maladaptive defense mechanisms as risk factors for alexithymia.

2. Objectives

The present study aimed to investigate the associations of defense styles and perfectionism with alexithymia and its dimensions after controlling for age, gender, education, and occupation in patients with IBS. If significant associations were identified, defense styles and perfectionism were examined as potential risk factors for alexithymia in patients with IBS.

3. Methods

3.1. Study Design

This study employed a cross-sectional analytical design.

3.2. Participants

Convenience sampling was used after ethical approval was obtained and participants provided informed consent. A total of 244 participants, all Iranian nationals, were recruited from a gastroenterology clinic in Rasht, Iran. The minimum required sample size was calculated using effect sizes reported by Lenzo et al. (12), and the final sample exceeded this requirement.

The inclusion criteria were as follows: (A) willingness to participate in the study and (B) IBS confirmed by a gastroenterology specialist based on the Rome IV criteria.

The exclusion criteria were as follows: (A) physical, neurological, or major psychiatric disorders, as well as the use of psychotropic medications or substances that affect emotional expression, confirmed by a psychiatry resident using a standard DSM-5-based semi-structured interview; and (B) incomplete responses or inaccurate personal information.

3.3. Measures

3.3.1. Defense Mechanisms

The Defense Style Questionnaire is a standard 40-item scale developed by Andrews et al. in 1993. It assesses 20 defense mechanisms categorized into 3 styles: mature, immature, and neurotic. An individual's dominant defense style is determined by the highest average score. The Defense Style Questionnaire has been widely used, and previous research has demonstrated good psychometric characteristics (14). Andrews reported test-retest reliability estimates ranging from

0.46 to 0.86 and Cronbach alpha values of 0.68, 0.58, and 0.80 for the mature, neurotic, and immature styles, respectively. In the present study, internal consistency, measured by Cronbach alpha, was 0.78 for the total score.

3.3.2. Alexithymia

The Toronto Alexithymia Scale was developed by Bagby, Parker, and Taylor in 1994. It is a 20-item measure with 3 subscales: difficulty identifying emotions, with 7 items; difficulty describing emotions, with 5 items; and externally oriented thinking, with 8 items. The psychometric properties of the Toronto Alexithymia Scale have been examined and confirmed in numerous studies (15). In the Persian version, the scale demonstrated strong internal consistency (Cronbach alpha = 0.85), with test-retest reliability coefficients ranging from 0.37 to 0.80 (16). In the present study, internal consistency, measured by Cronbach alpha, was 0.842 for the total score.

3.3.3. Perfectionism

The Frost Multidimensional Perfectionism Scale was designed by Frost et al. in 1990 based on the multidimensional concept of perfectionism. It consists of 35 items rated on a 5-point Likert scale, from 1 to 5, with total scores ranging from 35 to 175. Scores of 35 - 70 indicate low perfectionism, scores of 70 - 105 indicate moderate perfectionism, and scores above 105 indicate high perfectionism. The psychometric properties of this questionnaire have been validated (17). In the Persian version of the scale, Cronbach alpha was 0.84. The test-retest reliability coefficient over a 1-week interval for the entire questionnaire was 0.90 (18). In the present study, internal consistency for this questionnaire, measured by Cronbach alpha, was 0.89, indicating high reliability.

3.4. Procedures and Statistical Analysis

To minimize potential bias, participants were not informed of the study hypotheses, resulting in a single-blind design. Data were analyzed using IBM SPSS Statistics version 27. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were calculated for all demographic and study variables. Chi-square tests were performed to examine associations between categorical demographic variables and psychological constructs, including perfectionism, defense styles, and alexithymia.

Pearson correlation coefficients were used to assess bivariate relationships among the study variables. Finally, ordinal logistic regression analysis was conducted to identify unique predictors of alexithymia, with perfectionism, defense styles, and demographic variables entered as predictors. Model fit was evaluated using the -2 log likelihood, chi-square tests, and pseudo R-squared indices, including Nagelkerke R^2. Odds ratios and 95% confidence intervals were reported to interpret the direction and strength of the associations. The type I error rate was set at 0.05 for all statistical analyses. Demographic variables, including age, gender, education, and occupation, were included as covariates in the regression model to control for potential confounding effects.

4. Results

Cases with incomplete responses were excluded from the analyses, and no data imputation was performed.

4.1. Descriptive Statistics of Demographic and Study Variables

Among the patients with IBS included in the study, 75.4% (n = 184) were women. Participants ranged in age from 18 to 66 years (mean ± SD, 30.79 ± 8.07 years).

Regarding marital status, 61.1% of participants were single, 34.0% were married, and 4.9% were divorced. Most participants (86.9%) had a university-level degree. Employment status was as follows: 45.9% (n = 112) were unemployed, including students and housewives; 32.0% (n = 78) were self-employed; and 22.1% (n = 54) were employed in office-based jobs.

Descriptive statistics for the study variables are presented in Table 1. Patients with IBS exhibited high levels of perfectionism (mean ± SD, 127.68 ± 18.30; 86.9% high, 12.7% moderate, and 0.4% low) and moderate-to-high levels of alexithymia (mean ± SD, 54.77 ± 13.11; 37.3% high, 47.5% moderate, and 15.2% low). The dominant defense style in 44.7% of the sample was neurotic (mean ± SD, 34.54 ± 9.72), followed by immature in 38.1% (mean ± SD, 114.42 ± 23.78) and mature in 17.2% (mean ± SD, 38.04 ± 10.12).

Associations between demographic and study variables were examined using chi-square tests and are reported in Table 2. Perfectionism was significantly associated only with gender, with women scoring higher than men (χ^2 = 11.43; P = 0.003). Defense styles were significantly associated only with marital status, with single individuals more likely to exhibit immature defense styles (χ^2 = 10.90; P = 0.028). Alexithymia was significantly associated with both age and education: Individuals older than 30 years (χ^2 = 9.43; P = 0.009) and

Table 1. Descriptive Statistics of Study Variables

MeasureS	Mean Score ± SD	Range
Perfectionism	127.68 ± 18.30	70 - 173
Mature defense style	38.04 ± 10.12	10 - 70
Neurotic defense style	34.54 ± 9.72	9 - 59
Immature defense style	114.42 ± 23.78	44 - 193
Alexithymia	54.77 ± 13.11	24 - 86
Difficulty identifying feelings	21.73 ± 6.30	7 - 35
Difficulty describing feelings	14.53 ± 5.24	5 - 25
Externally oriented thinking	18.50 ± 4.79	8 - 36

Table 2. Chi-Square Test Results Examining Associations Between Demographic and Study Variables [a]

Variables	Perfectionism				Defense Style				Alexithymia			
	Low	Moderate	High	χ^2, P	Mature	Neurotic	Immature	χ^2, P	Low	Moderate	High	χ^2, P
Gender				11.43, 0.003				5.17, 0.075				1.07, 0.585
Male	1 (1.7)	14 (23.3)	45 (75.0)		28 (46.7)	27 (45.0)	5 (8.3)		8 (13.3)	32 (53.3)	20 (33.3)	
Female	0 (0.0)	17 (9.2)	167 (90.8)		65 (35.3)	82 (44.6)	37 (20.1)		29 (15.8)	84 (45.7)	71 (38.6)	
Age (y)				1.23, 0.538				2.25, 0.324				9.43, 0.009
≤ 30	0 (0.0)	16 (12.2)	115 (87.8)		55 (42.0)	53 (40.5)	23 (17.6)		18 (13.7)	74 (56.5)	39 (29.8)	
> 30	1 (0.9)	15 (13.3)	97 (85.5)		38 (33.6)	56 (49.6)	19 (16.8)		19 (16.8)	42 (37.2)	52 (46.0)	
Marital status				3.80, 0.433				10.90, 0.028				9.13, 0.058
Single	0 (0.0)	19 (12.8)	130 (87.2)		62 (41.6)	55 (36.9)	32 (21.5)		18 (12.1)	80 (53.7)	51 (34.2)	
Married	1 (1.2)	9 (10.8)	73 (88.0)		26 (31.3)	48 (57.8)	9 (10.8)		18 (21.7)	29 (34.9)	36 (43.4)	
Divorced	0 (0.0)	3 (25.0)	9 (75.0)		5 (41.7)	6 (50.0)	1 (8.3)		1 (8.3)	7 (58.3)	4 (33.3)	
Education				1.43, 0.839				7.70, 0.103				10.36, 0.035
< High school	0 (0.0)	0 (0.0)	4 (100.0)		0 (0.0)	2 (50.0)	2 (50.0)		0 (0.0)	0 (0.0)	4 (100.0)	
Diploma	0 (0.0)	5 (17.9)	23 (82.1)		13 (46.4)	8 (28.6)	7 (25.0)		1 (3.6)	16 (57.1)	11 (39.3)	
University degree	1 (0.5)	26 (12.3)	185 (87.3)		80 (37.7)	99 (46.7)	33 (15.6)		36 (17.0)	100 (47.2)	76 (35.8)	
Job status				2.95, 0.566				3.92, 0.416				5.77, 0.217
Unemployed	0 (0.0)	13 (11.6)	99 (88.4)		43 (38.4)	48 (42.9)	21 (18.8)		16 (14.3)	58 (51.8)	38 (33.9)	
Self-employed	1 (1.3)	12 (15.4)	65 (83.3)		34 (43.6)	31 (39.7)	13 (16.7)		15 (19.2)	37 (47.4)	26 (33.3)	
Office-based job	0 (0.0)	6 (11.1)	48 (88.9)		16 (29.6)	30 (55.6)	8 (14.8)		6 (11.1)	21 (38.9)	27 (50.0)	

[a] Values are expressed as No. (%).

those with less than a diploma-level education (χ^2 = 10.36; P = 0.035) showed higher levels of alexithymia.

4.2. Correlational Analyses

Correlations among the study variables were examined using Pearson r and are presented in Table 3. Lower and upper 95% confidence intervals were calculated in the original analysis. P values for statistically significant correlations were as follows: P < 0.05 or P < 0.001, as reported in the text. Perfectionism was positively correlated with the total alexithymia score (r = 0.287; P < 0.001), as well as with the subscales of difficulty identifying feelings (r = 0.301; P < 0.001) and difficulty describing feelings (r = 0.288; P < 0.001). However, perfectionism was not significantly correlated with the externally oriented thinking subscale (r = 0.074; P = 0.246).

The total alexithymia score was positively correlated with both neurotic (r = 0.142; P = 0.026) and immature (r = 0.415; P < 0.001) defense styles. The association with neurotic defense style was small and may have limited practical significance, whereas the association with immature defense style was moderate in magnitude. No significant correlation was observed between alexithymia and mature defense style (r = -0.079; P = 0.217).

Table 3. Pearson R Correlation Test Results Examining Associations Between Study Variables

Measures	1	2	3	4	5	6	7	8
Perfectionism	1.000	-	-	-	-	-	-	-
Mature defense style	-0.068	1.000	-	-	-	-	-	-
Neurotic defense style	0.162	0.257	1.000	-	-	-	-	-
Immature defense style	0.330	0.305	0.467	1.000	-	-	-	-
Alexithymia	0.287	-0.079	0.142	0.415	1.000	-	-	-
Difficulty identifying feelings	0.301	-0.025	0.250	0.453	0.847	1.000	-	-
Difficulty describing feelings	0.288	0.001	0.104	0.369	0.835	0.584	1.000	-
Externally oriented thinking	0.074	-0.185	-0.053	0.136	0.708	0.361	0.422	1.000

Table 4. Fit Statistics of Ordinal Logistic Regression Predicting Alexithymia

Statistic	Chi-square	Degrees of Freedom	P Value
Pearson chi-square	514.229	472	0.087
Deviance chi-square	419.757	472	0.960

All alexithymia subscales were positively correlated with immature defense style ($r > 0.136$; $P < 0.05$), suggesting a consistent relationship between maladaptive defense patterns and difficulties in emotional processing. In contrast, neurotic defense style was positively associated only with difficulty identifying feelings ($r = 0.250$; $P < 0.001$), whereas mature defense style was negatively associated with externally oriented thinking ($r = -0.185$; $P = 0.004$).

Finally, perfectionism was positively correlated with neurotic ($r = 0.162$; $P = 0.011$) and immature ($r = 0.330$; $P < 0.001$) defense styles, but not with mature defense style ($r = -0.068$; $P = 0.289$). These findings informed the subsequent regression analysis examining the combined effects of perfectionism, defense styles, and demographic variables on alexithymia.

4.3. Regression Analysis

Model fit indices are presented in Table 4, and parameter estimates are shown in Table 5. Ordinal logistic regression analysis was conducted to predict alexithymia based on perfectionism, defense styles, and demographic variables. The overall model significantly predicted alexithymia (-2 log likelihood = 419.757; $\chi^2 = 71.844$; df = 12; $P < 0.001$). According to the Nagelkerke pseudo R^2, the model explained 29.4% of the variance in alexithymia. The goodness-of-fit statistics (Pearson χ^2(df = 472) = 514.229; P = 0.087; Deviance χ^2(df = 472) = 419.757; P = 0.960) indicated adequate model fit.

After establishing model fit and overall significance, the coefficients of individual predictors were examined and are reported in Table 5. The results indicated that perfectionism significantly predicted higher odds of alexithymia (OR = 1.021; P = 0.011; 95% CI, 1.005 - 1.037). Among the defense styles, only the immature style significantly predicted alexithymia, with higher scores associated with increased odds (OR = 1.037; $P < 0.001$; 95% CI, 1.022 - 1.053). Among the demographic variables, only employment status significantly predicted alexithymia. Compared with patients with IBS who had office-based jobs, those who were self-employed (OR = 0.362; P = 0.008; 95% CI, 0.172 - 0.763) or unemployed, including students and housewives (OR = 0.426; P = 0.020; 95% CI, 0.208 - 0.872), had lower odds of alexithymia. In summary, higher perfectionism and immature defense style were significant predictors of alexithymia, whereas employment status showed a protective association.

5. Discussion

Alexithymia has been reported as a prominent psychological feature in patients with psychosomatic disorders and IBS, and its effects on disease severity and treatment outcomes have been well documented (19). Despite decades of research, the complexity of alexithymia continues to pose challenges for both understanding and treatment (20).

The present study considered perfectionism and defense mechanisms to be significant factors influencing alexithymia in patients with IBS. The results indicated a positive association between perfectionism

Table 5. Parameter Estimates of Ordinal Logistic Regression Predicting Alexithymia

Measure	B	Standard Error	Wald	df	P Value	Odds Ratio	95% CI Lower	95% CI Upper
Perfectionism	0.021	0.008	6.427	1	0.011	1.021	1.005	1.037
Defense style								
Mature	-0.023	0.014	2.528	1	0.112	0.977	0.950	1.005
Neurotic	-0.006	0.016	0.131	1	0.717	0.994	0.964	1.026
Immature	0.037	0.008	23.422	1	< 0.001	1.037	1.022	1.053
Age (y)								
≤ 30	-0.492	0.320	2.365	1	0.124	0.611	0.327	1.145
> 30		Reference group				1.000	-	-
Gender								
Male	0.037	0.323	0.013	1	0.908	1.038	0.551	1.955
Female		Reference group				1.000	-	-
Marital status								
Single	0.056	0.658	0.007	1	0.932	1.058	0.292	3.839
Married	0.024	0.657	0.001	1	0.970	1.025	0.283	3.711
Divorced		Reference group				1.000	-	-
Education								
Diploma	0.747	0.430	3.027	1	0.082	2.111	0.910	4.899
University degree		Reference group				1.000	-	-
Job status								
Unemployed	-0.853	0.366	5.446	1	0.020	0.426	0.208	0.872
Self-employed	-1.016	0.380	7.136	1	0.008	0.362	0.172	0.763
Office-based job		Reference group				1.000	-	-

and alexithymia, suggesting that higher levels of perfectionism are associated with increased alexithymic traits. This finding aligns with previous research identifying perfectionism as a transdiagnostic process that contributes to vulnerability to and persistence of mental health problems (12). However, the correlation coefficient in the present study (r = 0.287) was modest, suggesting that although perfectionism plays a role, it is likely only one component of a broader constellation of risk factors.

Immature defenses showed a strong association with alexithymia (OR = 1.037; P < 0.001), particularly in the domains of difficulty identifying and describing feelings. This finding is consistent with previous research on maladaptive psychological processes (12); however, the larger effect size in the present study suggests that maladaptive emotion-regulation strategies may be especially relevant in IBS. Neurotic defense styles were also positively associated with alexithymia, although to a lesser degree, which may indicate partially adaptive functions in certain contexts. Overall, these associations underscore the role of maladaptive defense mechanisms in emotional-processing difficulties, supporting prior research linking such defenses to reduced emotional awareness and regulation.

Previous studies in the general population have reported that severe alexithymia is more prevalent in older individuals and those with lower educational levels (21). Similar findings were observed in the present study. Another novel finding was the inverse association between certain occupational statuses and alexithymia, with self-employment and unemployment or student status associated with lower odds than office-based work. This finding highlights the importance of considering occupational factors in psychological assessments and interventions for IBS.

By assessing perfectionism and defense styles together, this study offers a more integrated understanding of psychological vulnerability in IBS. Previous research has largely examined these factors separately; the present results demonstrate that both contribute to alexithymia and should be considered in tailored interventions.

Because understanding the factors affecting alexithymia may aid in its management, modifying defense styles and managing perfectionism may be associated with lower levels of alexithymia in patients with IBS. CBT, which focuses on modifying maladaptive thought patterns, behaviors, and emotional labeling, is effective in reducing perfectionism and improving emotional regulation (3). Additionally, psychodynamic

therapy, which addresses underlying defense mechanisms and unconscious processes, may help patients develop more adaptive coping strategies and reduce alexithymic traits.

5.1. Limitations

Although this study provides valuable insights, it has several limitations. The cross-sectional design precludes causal inference, and the self-report nature of the questionnaires may introduce bias. The use of convenience sampling and the inclusion of only Iranian participants may limit the generalizability of the findings. Future longitudinal studies are needed to establish causal relationships and explore the long-term effects of therapeutic interventions. Investigating other potential mediating variables, such as emotion-regulation strategies and social support, may provide deeper insight into factors contributing to alexithymia in IBS.

5.2. Conclusions

This study demonstrated significant associations between perfectionism, defense styles, and alexithymia in patients with IBS. Higher levels of perfectionism and immature defense styles were associated with increased alexithymia, highlighting the potential relevance of psychological factors in the clinical profile of IBS. Although these findings should be interpreted with caution given the study design, they may inform future research on targeted psychological interventions aimed at improving emotional processing in this population.

Footnotes

AI Use Disclosure: The authors declare that no generative AI tools were used in the creation of this article.

Authors' Contribution: A.P. and K.M. contributed to the study concept and design. R.J. and A.P. contributed to the analysis and interpretation of data. R.J. and A.E. drafted the manuscript. A.P. and R.J. critically revised the manuscript for important intellectual content. R.J. performed the statistical analysis.

Conflict of Interests Statement: The authors declare no conflict of interest.

Data Availability: The dataset presented in the study is available on request from the corresponding author during submission or after publication. The data are not publicly available due to privacy concerns.

Ethical Approval: The study protocol was approved by the Ethics Committee of Guilan University with the ethical code of IR.GUMS.REC.1401.168.

Funding/Support: The present study received no funding/support.

Informed Consent: Written informed consent was obtained from the participants.

References

1. Hungin APS, Chang L, Locke GR, Dennis EH, Barghout V. Irritable bowel syndrome in the United States: prevalence, symptom patterns and impact. *Aliment Pharmacol Ther*. 2005;**21**(11):1365-1375. [PubMed ID: 15932367]. [PubMed Central ID: PMC1366056]. https://doi.org/10.1111/j.1365-2036.2005.02463.x.
2. Savas LS, White DL, Wieman M, Daci K, Fitzgerald S, Laday Smith S, et al. Irritable bowel syndrome and dyspepsia among women veterans: prevalence and association with psychological distress. *Aliment Pharmacol Ther*. 2009;**29**(1):115-125. [PubMed ID: 18785989]. [PubMed Central ID: PMC2939246]. https://doi.org/10.1111/j.1365-2036.2008.03847.x.
3. Black CJ, Ford AC. Best management of irritable bowel syndrome. *Frontline Gastroenterol*. 2021;**12**(4):303-315. [PubMed ID: 34249316]. [PubMed Central ID: PMC8231425]. https://doi.org/10.1136/flgastro-2019-101298.
4. Farahi S, Naziri G, Davodi A, Fath N. The mediating role of cognitive emotion regulation strategies in the relationship between early maladaptive schemas, alexithymia, and emotional intelligence with somatic symptoms in people with somatic symptoms disorder. *J Pract Clin Psychol*. 2023;**11**(3):187-200. https://doi.org/10.32598/jpcp.11.3.887.1.
5. Vicario M, Alonso C, Guilarte M, Serra J, Martínez C, González-Castro AM, et al. Chronic psychosocial stress induces reversible mitochondrial damage and corticotropin-releasing factor receptor type-1 upregulation in the rat intestine and IBS-like gut dysfunction. *Psychoneuroendocrinology*. 2012;**37**(1):65-77. [PubMed ID: 21641728]. https://doi.org/10.1016/j.psyneuen.2011.05.005.
6. Quilty LC, Taylor GJ, McBride C, Bagby RM. Relationships among alexithymia, therapeutic alliance, and psychotherapy outcome in major depressive disorder. *Psychiatry Res*. 2017;**254**:75-79. [PubMed ID: 28456025]. https://doi.org/10.1016/j.psychres.2017.04.047.
7. Movahedi N, Hosseinian S, Rezaeian H, Nooripour R. Mediating role of alexithymia in relationship between cyberbullying and psychotic experiences in adolescents. *BMC Psychol*. 2024;**12**(1). 465. [PubMed ID: 39217387]. [PubMed Central ID: PMC11366138]. https://doi.org/10.1186/s40359-024-01960-x.
8. Nikmanesh Z, Darvish Molla M, Mehranfard M. The mediating role of alexithymia in the relationship between defense mechanisms and tendency to high-risk behaviors among adolescents. *J Health Res*. 2021;**11**(1):29-36. https://doi.org/10.32598/JRH.11.1.363.6.
9. Marsero S, Ruggiero GM, Scarone S, Bertelli S, Sassaroli S. The relationship between alexithymia and maladaptive perfectionism in eating disorders: a mediation moderation analysis methodology. *Eat Weight Disord*. 2011;**16**(3):182-187. [PubMed ID: 22290034]. https://doi.org/10.1007/BF03325130.
10. Constantinides P, Beck SM. Toward developing a scale to empirically measure psychotic defense mechanisms. *J Am Psychoanal Assoc*. 2010;**58**(6):1159-1188. [PubMed ID: 21364183]. https://doi.org/10.1177/0003065110396875.

11. Frost RO, Marten P, Lahart C, Rosenblate R. The dimension of perfectionism. *Cogn Ther Res*. 1990;**14**(5):449-468. https://doi.org/10.1007/BF01172967.
12. Lenzo V, Barberis N, Cannavò M, Filastro A, Verrastro V, Quattropani MC. Perfectionism as a transdiagnostic process: a clinical review. *Clin Psychol Rev*. 2011;**31**(2):203-212. [PubMed ID: 32051622]. https://doi.org/10.1708/3301.32715.
13. Claus N, Limburg K, Egan S, Shafran R, Ehring T, Takano K, et al. The transdiagnostic role of perfectionism: insights from longitudinal network analyses in a sample of college-age women. *Behav Ther*. 2026;**57**(3):589-607. [PubMed ID: 42097796]. https://doi.org/10.1016/j.beth.2025.11.002.
14. Andrews G, Singh M, Bond M. The Defense Style Questionnaire. *J Nerv Ment Dis*. 1993;**181**(4):246-256. [PubMed ID: 8473876]. https://doi.org/10.1097/00005053-199304000-00006.
15. Preece DA, Becerra R, Allan A, Robinson K, Chen W, Hasking P, et al. Assessing alexithymia: psychometric properties of the Perth Alexithymia Questionnaire and 20-item Toronto Alexithymia Scale in United States adults. *Pers Individ Dif*. 2020;**166**. 110138. https://doi.org/10.1016/j.paid.2020.110138.
16. Besharat MA. Reliability and factorial validity of a Farsi version of the 20-item Toronto Alexithymia Scale with a sample of Iranian students. *Iran J Med Sci*. 2007;**101**(1):209-220. [PubMed ID: 17958129]. https://doi.org/10.2466/pr0.101.1.209-220.
17. Purdon C, Antony MM, Swinson RP. Psychometric properties of the Frost Multidimensional Perfectionism Scale in a clinical anxiety disorders sample. *J Clin Psychol*. 1999;**55**(10):1271-1286. [PubMed ID: 11045776]. https://doi.org/10.1002/(SICI)1097-4679(199910)55:10<1271::AID-JCLP8>3.0.CO.
18. Akhavan Abiri F, Shairi MR, Gholami Fesharaki M. The investigation of psychometric properties of Frost Multidimensional Perfectionism Scale. *Shenakht J Psychol Psychiatry*. 2019;**6**(1):87-106. https://doi.org/10.29252/shenakht.6.1.87.
19. Kano M, Endo Y, Fukudo S. Association between alexithymia and functional gastrointestinal disorders. *Front Psychol*. 2018;**9**. 599. [PubMed ID: 29922191]. [PubMed Central ID: PMC5996925]. https://doi.org/10.3389/fpsyg.2018.00599.
20. Samur D, Tops M, Schlinkert C, Quirin M, Cuijpers P, Koole SL. Four decades of research on alexithymia: moving toward clinical applications. *Front Psychol*. 2013;**4**. [PubMed ID: 24312069]. [PubMed Central ID: PMC3832802]. https://doi.org/10.3389/fpsyg.2013.00861.
21. Pasini A, Chiaie RD, Seripa S, Ciani N. Alexithymia as related to sex, age, and educational level: results of the Toronto Alexithymia Scale in 417 normal subjects. *Compr Psychiatry*. 1992;**33**(1):42-46. [PubMed ID: 1555409]. https://doi.org/10.1016/0010-440X(92)90078-5.