

Interpersonal Emotion Regulation and Conflict Resolution Styles in Relation to Brain Fog: The Mediating Role of Emotional Self-Efficacy Among Married Working Women

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ABSTRACT

This study aimed to examine the relationships of interpersonal emotion regulation and conflict resolution styles with brain fog and to determine the mediating role of emotional self-efficacy among married working women. This descriptive-correlational study used path analysis. The statistical population consisted of married working women in Isfahan, Iran, in 2026, and 261 participants were recruited through convenience sampling. Data were collected using the 23-item Brain Fog Scale, the 20-item Interpersonal Emotion Regulation Questionnaire, the 28-item Rahim Organizational Conflict Inventory-II, and the 32-item Emotional Self-Efficacy Scale. Data were analyzed using descriptive statistics, correlation analysis, and path analysis in SPSS and AMOS. Model fit was evaluated using CMIN/df, IFI, CFI, TLI, AGFI, RMSEA, and PCLOSE, and indirect effects were examined using bootstrapping with 2,000 resamples. The final model showed acceptable fit, with CMIN/df = 3.155, IFI = .941, CFI = .939, TLI = .892, AGFI = .855, RMSEA = .080, and PCLOSE = .050. Enhancing positive affect, integrating, compromising, and obliging significantly predicted higher emotional self-efficacy. Perspective taking negatively predicted mental fatigue, whereas soothing and avoiding positively predicted mental fatigue. Soothing and avoiding positively predicted reduced cognitive sharpness, while integrating and emotional self-efficacy negatively predicted it. Soothing and avoiding positively predicted confusion, whereas integrating negatively predicted confusion. Emotional self-efficacy significantly mediated the relationships of enhancing positive affect with mental fatigue and reduced cognitive sharpness, integrating with mental fatigue and reduced cognitive sharpness, and compromising and obliging with mental fatigue and reduced cognitive sharpness. Several additional significant indirect effects were observed for confusion. The findings indicate that interpersonal emotion regulation and conflict resolution styles are associated with different dimensions of brain fog and that emotional self-efficacy is an important explanatory mechanism linking adaptive interpersonal and conflict-management processes with lower cognitive difficulties among married working women.

Keywords: Interpersonal Emotion Regulation, Conflict Resolution Styles, Brain Fog, Emotional Self-Efficacy, Married Working Women, Path Analysis

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Introduction

Cognitive efficiency is fundamental to successful functioning in both occupational and family roles, particularly for individuals who must simultaneously manage work demands, interpersonal responsibilities, emotional exchanges, and everyday decision-making. Among married working women, the convergence of

occupational pressure and family-related expectations may create a context in which cognitive and emotional resources are repeatedly taxed. Difficulties such as reduced concentration, mental fatigue, subjective confusion, slowed thinking, and diminished cognitive clarity can interfere with work performance, communication with a spouse, household management, and broader psychological functioning. In recent years, the term brain fog has increasingly been used to describe this cluster of subjective cognitive complaints. Although brain fog is not generally considered a single diagnostic entity, it has emerged as a meaningful clinical and research construct encompassing perceived problems in attention, memory, cognitive speed, clarity of thought, and mental endurance (1, 2). The growing recognition of brain fog has created a need to identify not only its physiological and neurological correlates, but also the emotional and interpersonal processes that may contribute to its development, persistence, or reduction.

The contemporary literature suggests that brain fog is multidimensional rather than a unitary experience. Large-scale evidence has characterized subjective brain fog in terms of interrelated cognitive and experiential dimensions, including difficulties in concentration, memory, mental clarity, and cognitive processing, indicating that individuals may experience brain fog through several overlapping but distinguishable manifestations (2). Clinical descriptions likewise emphasize that brain fog commonly involves experiences such as impaired concentration, forgetfulness, slowed thinking, mental fatigue, word-finding difficulty, and a subjective sense that thinking is less efficient than usual (1). Although brain fog became particularly prominent in the context of COVID-19 and post-COVID conditions, current conceptualizations increasingly recognize that the phenomenon cannot be reduced exclusively to infection-related neuropathology. A narrative review of COVID-related brain fog has highlighted possible contributions of neuroinflammation, immune dysregulation, vascular changes, fatigue, stress, and other interacting biological and psychological mechanisms (3). Similarly, findings from individuals with post-COVID syndrome indicate that subjective cognitive complaints are meaningfully related to fatigue and neuropsychiatric symptoms, underscoring the possibility that emotional and psychological factors are closely intertwined with perceived cognitive dysfunction (4).

This broader perspective is important because subjective cognitive impairment may be intensified by chronic emotional load even in the absence of a clearly identifiable neurological disorder. Cognitive functioning depends heavily on the availability of attentional and executive resources, and persistent emotional arousal, rumination, interpersonal strain, and unresolved conflict may consume these resources. This issue may be especially relevant in married working women, for whom occupational demands and intimate relationship responsibilities can coexist and interact. Role multiplicity can create opportunities for fulfillment, but it can also expose individuals to repeated emotional switching, conflict negotiation, and social demands. In modern work and family settings, individuals are also increasingly required to manage complex social interactions within digitally mediated and rapidly changing environments, where access, responsiveness, and adaptation may affect everyday functioning (5). Thus, brain fog in married working women may plausibly be understood partly through the interpersonal and emotional systems in which they operate.

One construct that may be especially important in this context is interpersonal emotion regulation. Emotion regulation has traditionally been studied as an intrapersonal process in which individuals modify the intensity, duration, expression, or interpretation of their own emotional states. However, emotions are

frequently regulated in social contexts, and people often rely on others to help them understand, modify, amplify, or soothe emotional experiences. Interpersonal emotion regulation refers to processes through which an individual uses social interaction to influence emotional states, including seeking reassurance, perspective, validation, soothing, or models for responding to emotionally charged situations. Recent work has demonstrated that individuals systematically select interpersonal emotion regulation strategies in everyday life and that these choices are influenced by social-cognitive characteristics such as empathy (6). This suggests that interpersonal emotion regulation is not merely a passive response to distress but a patterned interpersonal behavior that may have consequences for relationship functioning, psychological adjustment, and potentially cognitive load.

The effectiveness of interpersonal emotion regulation depends substantially on the specific strategy used and the relational context in which it occurs. Evidence indicates that some interpersonal strategies, such as validation and supportive engagement, may be more effective than strategies centered only on reinterpretation or advice, particularly when the recipient primarily needs emotional acknowledgment (7). Similarly, successful interpersonal emotion regulation has been associated with greater relationship closeness and enhanced inter-brain synchronization, suggesting that effective regulation between people may involve coordinated socioemotional and neurocognitive processes (8). These findings are important for understanding brain fog because interpersonal regulation may either reduce or increase cognitive demands. When social interactions successfully diminish distress and promote emotional coherence, cognitive resources may be preserved. Conversely, when emotion regulation depends excessively on reassurance, co-rumination, repeated interpersonal checking, or ineffective support seeking, emotional demands may persist and cognitive fatigue may be intensified.

Interpersonal emotion regulation also has clear relevance to close relationships. Dependence on partners for emotional regulation may shape how individuals evaluate the relationship and how secure, supported, or satisfied they feel within it. Research has shown that interpersonal emotion regulation can contribute to positive relationship perceptions, although the benefits may depend on the nature and degree of reliance on others for emotional management (9). In couple contexts, emotion regulation is especially salient during conflict, when partners must simultaneously manage their own emotions and respond to those of the other person. Daily and longitudinal evidence indicates that interpersonal emotion regulation during relationship conflict is associated with important aspects of couple well-being, including sexual well-being (10). These findings indicate that emotion regulation within intimate relationships is closely connected to broader relational adjustment and may influence the emotional climate in which cognitive functioning occurs.

The importance of interpersonal emotion regulation extends beyond relationship satisfaction. Difficulties in managing emotions through interpersonal processes have been implicated in broader patterns of psychological vulnerability. For example, interpersonal emotion regulation difficulties have been shown to mediate associations between attachment orientations and borderline personality features, suggesting that relational patterns of emotion management may serve as mechanisms linking interpersonal insecurity to psychological symptoms (11). In another line of research, interpersonal emotion regulation has been identified as a mechanism connecting self-control and forgiveness, indicating that the capacity to regulate emotion through interpersonal channels may affect how individuals respond to interpersonal offenses and maintain relationships following conflict (12). Collectively, these findings support the view that

interpersonal emotion regulation may influence both the intensity of emotional strain and the way individuals cognitively process interpersonal experiences.

Conflict resolution styles constitute another potentially important predictor of brain fog in married working women. Marital and interpersonal conflicts are inevitable, but individuals differ substantially in the ways they approach disagreement. Conflict resolution styles such as integrating, compromising, obliging, avoiding, and dominating reflect different combinations of concern for oneself, concern for the other person, cooperation, assertion, withdrawal, and accommodation. These styles may influence not only the outcome of a disagreement but also the duration of emotional activation that follows it. Integrating and compromising strategies may facilitate problem solving and closure, whereas avoidance or domination may contribute to unresolved tension, recurring rumination, or emotional exhaustion. Research has demonstrated meaningful associations among conflict management, emotion regulation, and marital adjustment, supporting the idea that the way individuals regulate emotions and manage disagreement jointly contributes to the quality of intimate relationships (13).

The relationship between emotion regulation and conflict resolution has been repeatedly observed across different populations and intervention contexts. Conflict resolution skills have been associated with emotion regulation and interpersonal forgiveness, indicating that constructive management of conflict may be closely connected to emotional flexibility and the capacity to recover from relational injury (14). Intervention research has further shown that training in conflict resolution and emotion regulation can improve positive psychological outcomes, suggesting that these skills may function together rather than as independent competencies (15). Emotion-focused interventions have likewise been found to alter both emotion regulation strategies and conflict resolution styles, reinforcing the idea that emotional processing and conflict behavior are dynamically linked (16). Comparable findings in family relationships indicate that emotion-focused approaches can improve emotional regulation and conflict resolution in parent-adolescent interactions, further supporting the cross-context relevance of this relationship (17). In addition, research involving patients with cancer has shown that emotion regulation psychotherapy can influence conflict resolution styles alongside emotional and psychological outcomes, indicating that the emotion regulation-conflict resolution connection may persist even under substantial health-related stress (18).

Within romantic relationships, conflict resolution may also act as a pathway through which emotional difficulties affect relationship outcomes. Research with adolescent couples has demonstrated that emotion regulation difficulties are associated with lower relationship satisfaction and that conflict resolution strategies contribute to explaining this association (19). Similarly, distinct profiles of emotion regulation and conflict resolution among young adults have been associated with perceived partner responsiveness and relationship satisfaction, suggesting that the combination of how individuals manage emotions and how they respond to disagreement forms a meaningful relational pattern (20). These findings are particularly relevant to married women because chronic interpersonal conflict can become a persistent source of anticipatory stress, attentional capture, and cognitive preoccupation. When conflicts remain unresolved or are managed through ineffective styles, substantial cognitive resources may be devoted to replaying conversations, anticipating future disagreements, evaluating relational threats, or suppressing emotional reactions. Such processes may plausibly contribute to mental fatigue, reduced cognitive sharpness, and subjective confusion.

Another construct that may clarify these relationships is emotional self-efficacy. Emotional self-efficacy refers to an individual's belief in her ability to understand, manage, express, and respond effectively to emotional experiences. Whereas emotion regulation describes what individuals do with emotions, emotional self-efficacy concerns the extent to which they believe they can perform these emotional tasks successfully. This distinction is theoretically important because the same interpersonal challenge may have different cognitive consequences depending on whether a person feels capable of handling it. Individuals with stronger emotional self-efficacy may be more likely to approach emotionally demanding situations with confidence, select effective regulation strategies, tolerate temporary emotional discomfort, and disengage from unproductive rumination. In contrast, low emotional self-efficacy may increase perceived threat, helplessness, and dependence on external regulation, potentially prolonging emotional activation and consuming cognitive resources.

The potential mediating role of emotional self-efficacy is also consistent with broader cognitive and relational models in which internal psychological capacities transmit the effects of executive and interpersonal factors to adjustment outcomes. Structural modeling research has demonstrated that cognitive and social-cognitive mechanisms can mediate relationships between executive functions and marital burnout, suggesting that the impact of cognitive functioning on marital well-being may be transmitted through intermediate psychological processes rather than occurring only through direct pathways (21). From a similar perspective, emotional self-efficacy may constitute a psychological bridge linking interpersonal emotion regulation and conflict resolution with brain fog. Interpersonal behaviors that foster emotional mastery may strengthen an individual's confidence in managing affective situations, whereas maladaptive interpersonal patterns may weaken such confidence. Emotional self-efficacy may then influence the degree to which interpersonal strain becomes cognitively taxing.

A mediation model is particularly plausible because interpersonal emotion regulation strategies differ in the extent to which they promote autonomy and perceived competence. Seeking perspective from others may help individuals reinterpret a stressful event and regain a sense of emotional control, while enhancing positive affect through social interaction may reinforce perceptions of one's capacity to recover from negative states. Integrating and compromising conflict styles may likewise strengthen emotional self-efficacy because they involve active communication, tolerance of affect, and collaborative problem solving. By contrast, avoidance or rigid domination may not provide comparable experiences of emotional mastery. This distinction may help explain why different emotion regulation and conflict resolution strategies show different relationships with psychological and relational outcomes in existing research (6, 9, 19).

The connection between these interpersonal variables and brain fog may also be understood through cumulative cognitive load. Emotionally demanding interpersonal situations require monitoring of one's own affect, interpretation of another person's intentions, inhibition of impulsive responses, retrieval of relevant information, decision-making, perspective taking, and selection of appropriate behavioral responses. When these demands are repeated across work and marital settings, the resulting cognitive load may become substantial. Persistent emotion regulation demands may therefore contribute to the subjective mental fatigue that is central to brain fog. The finding that post-COVID brain fog is strongly associated with fatigue and neuropsychiatric symptoms further supports the broader principle that subjective cognitive dysfunction can emerge within a network of emotional and fatigue-related processes rather than solely from isolated

cognitive impairment (4). Likewise, contemporary reviews emphasize that brain fog is likely to result from multiple interacting mechanisms, making psychosocial contributors theoretically relevant even when biological factors are also present (3).

Despite growing research on brain fog, interpersonal emotion regulation, and conflict resolution, these areas have largely developed in separate literatures. Brain fog research has focused predominantly on post-infectious, neurological, psychiatric, and fatigue-related contexts (1, 3, 4), whereas interpersonal emotion regulation research has concentrated more heavily on relationship functioning, empathy, attachment, and psychological adjustment (8, 10, 11). Similarly, studies of conflict resolution have generally examined marital adjustment, relationship satisfaction, forgiveness, emotional regulation, or intervention outcomes (13, 14, 16). Consequently, relatively little is known about whether these interpersonal and emotional variables are systematically associated with subjective cognitive symptoms such as brain fog.

This gap is especially noteworthy among married working women. Employment and marriage each create interpersonal and emotional demands, and their combination may expose women to simultaneous role expectations that require sustained emotion regulation, conflict negotiation, planning, and cognitive flexibility. Studying this population therefore provides an opportunity to examine brain fog within an ecologically meaningful context in which cognitive complaints may be shaped by everyday emotional and interpersonal processes rather than only by medical conditions. Moreover, examining multiple dimensions of interpersonal emotion regulation and conflict resolution separately may reveal that some strategies are protective while others are associated with greater cognitive burden. Including emotional self-efficacy as a mediator may further clarify the mechanism through which interpersonal strategies are translated into cognitive outcomes.

Accordingly, the present study aimed to examine the relationships of interpersonal emotion regulation and conflict resolution styles with brain fog and to test the mediating role of emotional self-efficacy among married working women.

Methods and Materials

Study Design and Participants

The present study employed a descriptive-correlational design using path analysis to investigate the relationships of interpersonal emotion regulation and conflict resolution styles with brain fog and to examine the mediating role of emotional self-efficacy among married working women. The statistical population consisted of married working women residing in Isfahan, Iran, during the spring of 2026. Because the proposed conceptual model involved several observed variables and indirect relationships requiring simultaneous estimation, sample size determination was based on recommendations for structural equation modeling and path analysis. Kline (2016) suggested that modeling studies should include at least five participants for each estimated parameter and, where possible, approximately 20 participants per parameter to obtain more stable estimates. Consistent with the sampling procedure adopted in the study, approximately 10 participants were considered for each questionnaire subscale included in the conceptual model. Participants were recruited through convenience sampling from eligible married working women who were accessible during the data collection period. Eligibility required being married, being currently employed, residing in Isfahan, having sufficient literacy to understand and complete the questionnaires, and

voluntarily agreeing to participate in the research. Questionnaires with substantial missing responses or response patterns indicating incomplete participation were excluded from the final analysis.

The research process was initiated after the study title and research proposal had been reviewed and approved by the relevant specialized academic council. Subsequently, the measurement instruments were prepared, the research hypotheses were formulated, and the conceptual model was specified according to the hypothesized relationships among interpersonal emotion regulation, conflict resolution styles, emotional self-efficacy, and brain fog. Before completing the measures, potential participants received an explanation of the purpose of the study, the general procedures involved, the voluntary nature of participation, and the confidentiality of their responses. Informed consent was obtained from all participants prior to questionnaire administration. Participants were informed that they could discontinue their participation without penalty and that their responses would be used exclusively for scientific and research purposes. No personally identifying information was included in the analytical dataset, and confidentiality was maintained throughout data collection, data entry, analysis, and reporting. Following questionnaire administration, completed instruments were reviewed, scored according to their respective scoring procedures, and entered into the statistical software for analysis. Ethical considerations observed throughout the research included voluntary participation, informed consent, protection of privacy and confidentiality, scientific use of collected information, accurate reporting of findings, and appropriate acknowledgment and citation of intellectual and scholarly sources.

Data Collection Tools

Brain Fog Scale. Brain fog was assessed using the Brain Fog Scale developed and validated by Debowska et al. (2024). The instrument consists of 23 items designed to assess subjective cognitive difficulties commonly associated with the experience of brain fog and contains three dimensions: mental fatigue, reduced cognitive sharpness, and confusion. The mental fatigue dimension contains six items and evaluates experiences of cognitive exhaustion and difficulty sustaining mental effort. The reduced cognitive sharpness dimension consists of nine items addressing perceived reductions in clarity, concentration, cognitive efficiency, and mental acuity, whereas the confusion dimension contains eight items assessing subjective experiences of disorganization, uncertainty, and difficulty processing information clearly. Items are answered using a five-point Likert-type response format, with higher scores reflecting greater perceived brain fog and more pronounced cognitive difficulties. In the original psychometric evaluation of the instrument, principal component analysis and confirmatory factor analysis supported the proposed three-factor structure. The confirmatory model demonstrated excellent fit, with a chi-square-to-degrees-of-freedom ratio of 1.16, Comparative Fit Index of .99, Tucker–Lewis Index of .99, Root Mean Square Error of Approximation of .02, and Standardized Root Mean Square Residual of .03. Internal consistency was also satisfactory, with Cronbach's alpha coefficients of .79 for mental fatigue, .80 for reduced cognitive sharpness, and .78 for confusion. The complete 23-item version of the Brain Fog Scale was administered in the present study, and both its dimensional scores and overall representation of brain fog were considered in accordance with the objectives of the proposed path model.

Interpersonal Emotion Regulation Questionnaire. Interpersonal emotion regulation was measured using the Interpersonal Emotion Regulation Questionnaire developed by Hofmann et al. (2016).

This 20-item self-report instrument was designed to assess individuals' tendency to regulate emotional experiences through interactions with other people and encompasses four dimensions: enhancing positive affect, perspective taking, soothing, and social modeling. Enhancing positive affect reflects the tendency to involve other people in increasing or maintaining positive emotional states. Perspective taking represents seeking interpersonal input to obtain alternative interpretations of emotionally significant situations. Soothing refers to seeking comfort, reassurance, and emotional support from others when experiencing distress, while social modeling reflects observing how other individuals respond to emotional circumstances and using their reactions as guides for one's own emotional regulation. Each item is rated on a five-point Likert scale ranging from 1, indicating "not at all," to 5, indicating "always." Accordingly, total scores range from 20 to 100, with higher scores representing greater use of interpersonal strategies for regulating emotions. Hofmann et al. (2016) reported strong internal consistency for the questionnaire and its dimensions, with reliability coefficients ranging from .89 to .94. The instrument was subsequently translated and standardized for use in Iran by Soleimani et al., and confirmatory factor analysis supported its proposed factorial structure in the Iranian context. An internal consistency coefficient of .88 was reported in the Iranian student sample. In the present study, Cronbach's alpha for the Interpersonal Emotion Regulation Questionnaire was .85, indicating satisfactory internal consistency.

Rahim Organizational Conflict Inventory-II. Conflict resolution styles were assessed using the Rahim Organizational Conflict Inventory-II developed by Rahim (1983). The instrument consists of 28 items designed to assess characteristic approaches to managing interpersonal conflict and differentiates five conflict-handling styles: integrating, dominating, obliging, avoiding, and compromising. The integrating style is assessed by items 1 through 7 and reflects an active attempt to consider the concerns of both parties and reach a mutually satisfactory solution through openness, information exchange, and collaborative problem solving. The dominating style is measured by items 8 through 13 and represents an approach characterized by assertiveness, pursuit of one's own interests, and relatively limited consideration of the other party's preferences. The obliging style, assessed by items 14 through 18, reflects efforts to accommodate the other party and place greater emphasis on maintaining the relationship than on satisfying one's own immediate concerns. The avoiding style consists of items 19 through 22 and represents withdrawal, postponement, or reduced engagement with conflict, whereas the compromising style, assessed by items 23 through 28, reflects attempts to identify an intermediate position in which both parties make concessions to arrive at an acceptable resolution. Responses are provided on a five-point Likert scale ranging from 1, representing "very low," to 5, representing "very high," with higher subscale scores indicating a stronger tendency to employ the corresponding conflict resolution style. In the original psychometric investigation, Rahim reported Cronbach's alpha coefficients ranging from .72 to .77 and evidence of satisfactory construct validity, with a reported coefficient of .85. Evidence concerning the psychometric adequacy of the measure has also been reported in Iranian research. Haghighi et al. reported theoretically consistent positive and negative relationships between the instrument and the Conflict Resolution Questionnaire, supporting convergent and discriminant validity, and obtained a Cronbach's alpha coefficient of .89. In the present study, the five conflict resolution styles were treated as distinct dimensions so that their respective direct and indirect relationships with brain fog could be evaluated within the proposed path model.

Emotional Self-Efficacy Scale. Emotional self-efficacy was assessed using the Emotional Self-Efficacy Scale developed by Beverly et al. (2008) on the basis of the four-branch conceptualization of emotional intelligence proposed by Salovey and Mayer (1997). The scale contains 32 items and measures individuals' beliefs regarding their capability to perceive, understand, use, and regulate emotions effectively. Rather than assessing emotional ability solely as an objective competency, the instrument focuses on perceived efficacy in dealing with emotional information and managing emotion-related demands across personal and interpersonal situations. The scale is therefore particularly suitable for examining psychological models in which confidence in emotional functioning is hypothesized to explain how broader emotional and interpersonal processes are associated with cognitive or psychological outcomes. Items are answered on a five-point Likert scale ranging from 1, "strongly disagree," to 5, "strongly agree," with higher scores indicating stronger perceived emotional self-efficacy. The original psychometric study demonstrated excellent internal consistency, with a Cronbach's alpha coefficient of .96. Temporal stability was also supported through a two-week test–retest assessment conducted with 27 participants, which yielded a reliability coefficient of .85. Evidence of construct validity was established through significant relationships with theoretically associated emotional and psychological constructs. In the present study, emotional self-efficacy was specified as the mediating variable through which interpersonal emotion regulation and conflict resolution styles were hypothesized to be indirectly related to brain fog.

Data Analysis

Following collection and screening of the questionnaires, the data were coded and analyzed using SPSS and AMOS statistical software. Analyses were conducted at both descriptive and inferential levels. Descriptive statistics were used initially to characterize the participants and summarize the distribution of the principal study variables. Frequency and percentage were calculated for categorical demographic characteristics, while mean and standard deviation were calculated for continuous variables and questionnaire scores. Before testing the hypothesized path model, the data were examined for completeness, potential data-entry errors, distributional characteristics, and the statistical assumptions relevant to correlational analysis and path analysis. Relationships among interpersonal emotion regulation, the five conflict resolution styles, emotional self-efficacy, and brain fog were initially examined using correlation coefficients. These preliminary analyses provided information concerning the direction and magnitude of the bivariate associations among the study variables and established the empirical basis for subsequent examination of the proposed structural relationships.

Path analysis was subsequently performed in AMOS to evaluate the hypothesized direct and indirect relationships among the variables. In the proposed model, interpersonal emotion regulation and conflict resolution styles were specified as predictor variables, emotional self-efficacy was specified as the mediating variable, and brain fog was specified as the principal outcome variable. Direct paths from interpersonal emotion regulation and the conflict resolution dimensions to brain fog were examined alongside paths from these predictors to emotional self-efficacy and from emotional self-efficacy to brain fog. The mediation hypothesis was evaluated by examining whether interpersonal emotion regulation and conflict resolution styles demonstrated statistically meaningful indirect relationships with brain fog through emotional self-efficacy. Standardized path coefficients were used to determine the direction and relative magnitude of the

structural relationships, and statistical significance was evaluated at an alpha level of .05. The adequacy of the proposed model was evaluated using commonly recommended goodness-of-fit indices, including the chi-square statistic and chi-square-to-degrees-of-freedom ratio, Comparative Fit Index, Tucker–Lewis Index or related incremental fit indices, Goodness-of-Fit Index, and Root Mean Square Error of Approximation. The overall interpretation of model adequacy was based on the combined pattern of these indices rather than reliance on a single statistic. Direct, indirect, and total effects were considered in interpreting the hypothesized mediation mechanism, thereby allowing assessment of the extent to which emotional self-efficacy accounted for the associations of interpersonal emotion regulation and conflict resolution styles with brain fog among married working women.

Findings and Results

A total of 261 married working women in Isfahan participated in the study. Regarding educational attainment, 47 participants (18.0%) had a high school diploma or lower education, 117 (44.8%) held a bachelor's degree, 83 (31.8%) held a master's degree, and 14 (5.4%) held a doctoral degree. Thus, the largest proportion of participants had bachelor's-level education, whereas doctoral-level education was the least frequent category. Regarding the number of children, 104 participants (40.2% of valid responses) had no children, 69 (26.4%) had one child, 56 (21.5%) had two children, 22 (8.4%) had three children, and 8 (3.1%) had four children. Information concerning the number of children was missing for two participants (0.8% of the total sample). Accordingly, women without children constituted the largest category, whereas participants with four children constituted the smallest category. The participants ranged in age from 18 to 60 years, with a mean age of 35.15 years ($SD = 9.943$).

Descriptive statistics for interpersonal emotion regulation, conflict resolution styles, brain fog, and emotional self-efficacy are presented in Table 1. The mean total score for interpersonal emotion regulation was 62.724 ($SD = 14.799$). Among conflict resolution styles, the mean scores were 27.011 for integrating, 20.303 for avoiding, 16.057 for dominating, 14.578 for compromising, and 19.866 for obliging. The mean total brain fog score was 64.889 ($SD = 16.478$), while the mean emotional self-efficacy score was 116.203 ($SD = 15.533$).

Table 1. Descriptive Statistics for the Study Variables

Variable Domain	Scale/Subscale	Mean	Standard Error	Standard Deviation
Interpersonal Emotion Regulation	Social Modeling	15.617	0.254	4.101
	Perspective Taking	14.766	0.265	4.284
	Enhancing Positive Affect	17.318	0.249	4.030
	Soothing	15.023	0.287	4.643
	Total Interpersonal Emotion Regulation	62.724	0.916	14.799
Conflict Resolution Styles	Integrating	27.011	0.271	4.382
	Avoiding	20.303	0.243	3.926
	Dominating	16.057	0.229	3.696
	Compromising	14.578	0.145	2.348
	Obliging	19.866	0.226	3.646
Brain Fog	Mental Fatigue	18.881	0.301	4.856
	Reduced Cognitive Sharpness	24.418	0.438	7.073
	Confusion	21.590	0.391	6.316
	Total Brain Fog	64.889	1.020	16.478
Emotional Self-Efficacy	Emotional Self-Efficacy	116.203	0.961	15.533

Before testing the hypothesized path model, the assumptions required for parametric analyses and path analysis were examined. These included approximate normality of the variable distributions, acceptable levels of multicollinearity, and independence of residuals. Because the study variables were derived primarily from Likert-type scales, skewness and kurtosis indices were examined in addition to the Kolmogorov–Smirnov test.

The results of the normality assessment are presented in Table 2. Skewness values for all variables fell within ± 2 , while kurtosis values fell within ± 3 , indicating acceptable univariate normality. In addition, none of the Kolmogorov–Smirnov tests was statistically significant at the .05 level. Therefore, the distributions of all study variables were considered sufficiently close to normal for subsequent parametric analyses and path modeling.

Table 2. Skewness, Kurtosis, and Kolmogorov–Smirnov Tests for Normality

Scale/Subscale	Skewness	SE of Skewness	Kurtosis	SE of Kurtosis	K–S Statistic	p
Social Modeling	-0.385	0.151	-0.328	0.300	0.042	.287
Perspective Taking	-0.277	0.151	-0.750	0.300	0.044	.398
Enhancing Positive Affect	-0.537	0.151	-0.344	0.300	0.049	.145
Soothing	-0.407	0.151	-0.748	0.300	0.043	.365
Total Interpersonal Emotion Regulation	-0.489	0.151	-0.414	0.300	0.041	.292
Integrating	-0.498	0.151	1.046	0.300	0.045	.297
Avoiding	-0.441	0.151	-0.322	0.300	0.046	.298
Dominating	-0.370	0.151	-0.700	0.300	0.045	.298
Compromising	-1.013	0.151	1.580	0.300	0.043	.385
Obliging	-0.400	0.151	0.586	0.300	0.044	.362
Mental Fatigue	-0.436	0.151	-0.117	0.300	0.052	.087
Reduced Cognitive Sharpness	-0.102	0.151	-0.704	0.300	0.049	.128
Confusion	-0.171	0.151	-0.815	0.300	0.049	.130
Total Brain Fog	-0.198	0.151	-0.701	0.300	0.041	.375
Emotional Self-Efficacy	-0.757	0.151	1.138	0.300	0.040	.392

Multicollinearity was examined using tolerance and variance inflation factor (VIF) statistics, while independence of errors was evaluated using the Durbin–Watson statistic. Because simultaneous inclusion of total scores and their corresponding subscales could artificially increase collinearity, total scores were omitted from this diagnostic analysis. As shown in Table 3, all tolerance coefficients were above .10 and all VIF values were below 10.00, indicating that multicollinearity was within acceptable limits. The Durbin–Watson statistic was 1.710, which falls within the generally acceptable interval of 1.50 to 2.50 and therefore supported the assumption of independence of residuals.

Table 3. Tolerance, Variance Inflation Factors, and Independence of Errors

Predictor	Tolerance	VIF
Social Modeling	0.328	3.046
Perspective Taking	0.323	3.100
Enhancing Positive Affect	0.502	1.991
Soothing	0.361	2.770
Integrating	0.611	1.638
Avoiding	0.705	1.419
Dominating	0.675	1.481
Compromising	0.615	1.627
Obliging	0.575	1.738
Emotional Self-Efficacy	0.777	1.287

The main hypothesis proposed that the dimensions of interpersonal emotion regulation, including enhancing positive affect, soothing, social modeling, and perspective taking, and the dimensions of conflict resolution styles, including integrating, dominating, obliging, avoiding, and compromising, would be associated with the dimensions of brain fog, including mental fatigue, reduced cognitive sharpness, and confusion, through the mediating role of emotional self-efficacy. The hypothesized model was estimated using AMOS. Nonsignificant paths were removed when their removal improved model fit, and theoretically and statistically appropriate covariances suggested by the software were incorporated in the final model.

The goodness-of-fit indices and the direct, indirect, and total standardized effects of the final model are presented in Table 4. The model yielded CMIN = 138.801 with 44 degrees of freedom, resulting in a CMIN/df ratio of 3.155. The incremental fit index was IFI = .941 and the comparative fit index was CFI = .939. The Tucker–Lewis index was TLI = .892 and the adjusted goodness-of-fit index was AGFI = .855. The RMSEA was .080 and PCLOSE was .050. Taken together, particularly the CMIN/df ratio, IFI, CFI, and RMSEA, these indices indicated an acceptable overall fit of the final path model, although the TLI and AGFI were somewhat below the conventional .90 criterion.

Table 4. Model Fit Indices and Standardized Direct, Indirect, and Total Effects in the Emotional Self-Efficacy Mediation Model

Panel A. Model Fit Indices

Fit Index	Value
CMIN	138.801
df	44
CMIN/df	3.155
IFI	.941
CFI	.939
TLI	.892
AGFI	.855
RMSEA	.080
PCLOSE	.050

Panel B. Direct, Indirect, and Total Effects

Path	Direct Effect (β)	CR	p	Indirect Effect (β)	p	Total Effect (β)	p
Enhancing Positive Affect → Emotional Self-Efficacy	.173	3.099	.007	—	—	.173	.007
Integrating → Emotional Self-Efficacy	.182	2.642	.034	—	—	.182	.034
Compromising → Emotional Self-Efficacy	.156	2.299	.048	—	—	.156	.048
Obliging → Emotional Self-Efficacy	.147	2.198	.045	—	—	.147	.045
Social Modeling → Mental Fatigue	.149	2.143	.064	—	—	.149	.064
Perspective Taking → Mental Fatigue	-.208	- 2.990	.006	—	—	-.208	.006
Soothing → Mental Fatigue	.458	6.252	.001	—	—	.458	.001
Avoiding → Mental Fatigue	.177	3.204	.003	—	—	.177	.003
Soothing → Reduced Cognitive Sharpness	.500	9.893	.001	—	—	.500	.001
Enhancing Positive Affect → Mental Fatigue	—	—	—	-.038	.004	-.038	.004
Enhancing Positive Affect → Reduced Cognitive Sharpness	—	—	—	-.033	.007	-.033	.007
Enhancing Positive Affect → Confusion	—	—	—	-.021	.045	-.021	.045
Compromising → Mental Fatigue	—	—	—	-.034	.033	-.034	.033
Compromising → Reduced Cognitive Sharpness	—	—	—	-.030	.032	-.030	.032
Compromising → Confusion	—	—	—	-.019	.066	-.019	.066
Obliging → Mental Fatigue	—	—	—	-.032	.024	-.032	.024
Obliging → Reduced Cognitive Sharpness	—	—	—	-.028	.027	-.028	.027

Obliging → Confusion	—	—	—	-.018	.047	-.018	.047
Integrating → Mental Fatigue	—	—	—	-.040	.021	-.040	.021
Integrating → Reduced Cognitive Sharpness	-.156	-3.722	.002	-.035	.018	-.191	.001
Avoiding → Reduced Cognitive Sharpness	.192	3.822	.002	—	—	.192	.002
Soothing → Confusion	.432	8.065	.001	—	—	.432	.001
Integrating → Confusion	-.179	-3.719	.003	-.022	.051	-.201	.001
Avoiding → Confusion	.138	2.505	.007	—	—	.138	.007
Emotional Self-Efficacy → Mental Fatigue	-.219	-	.002	—	—	-.219	.002
		4.025					
Emotional Self-Efficacy → Reduced Cognitive Sharpness	-.192	-	.007	—	—	-.192	.007
		3.660					
Emotional Self-Efficacy → Confusion	-.122	-2.180	.078	—	—	-.122	.078
Dominating → Confusion	.040	0.971	.434	—	—	.040	.434

Emotional self-efficacy was significantly and positively predicted by enhancing positive affect ($\beta = .173$, $p = .007$), integrating conflict resolution ($\beta = .182$, $p = .034$), compromising ($\beta = .156$, $p = .048$), and obliging ($\beta = .147$, $p = .045$). Thus, greater use of these interpersonal emotional and conflict-management strategies was associated with greater emotional self-efficacy.

With respect to mental fatigue, perspective taking showed a significant negative direct association ($\beta = -.208$, $p = .006$), whereas soothing showed a strong positive direct association ($\beta = .458$, $p = .001$) and avoiding conflict showed a positive direct association ($\beta = .177$, $p = .003$). Emotional self-efficacy was negatively associated with mental fatigue ($\beta = -.219$, $p = .002$), indicating that higher emotional self-efficacy was associated with lower mental fatigue. The direct path from social modeling to mental fatigue was not statistically significant ($\beta = .149$, $p = .064$).

For reduced cognitive sharpness, soothing demonstrated a significant positive direct effect ($\beta = .500$, $p = .001$), while integrating showed a significant negative direct effect ($\beta = -.156$, $p = .002$). Avoiding conflict was positively associated with reduced cognitive sharpness ($\beta = .192$, $p = .002$). Emotional self-efficacy was negatively associated with reduced cognitive sharpness ($\beta = -.192$, $p = .007$), indicating that stronger beliefs in one's emotional capabilities were associated with fewer subjective difficulties in cognitive clarity and sharpness.

Regarding confusion, soothing had a significant positive direct association with confusion ($\beta = .432$, $p = .001$), integrating had a significant negative association ($\beta = -.179$, $p = .003$), and avoiding showed a significant positive association ($\beta = .138$, $p = .007$). In contrast, the direct effect of dominating conflict style on confusion was not significant ($\beta = .040$, $p = .434$). Although the coefficient for emotional self-efficacy in predicting confusion was negative ($\beta = -.122$), the reported probability value did not reach the .05 significance threshold ($p = .078$).

The mediating role of emotional self-efficacy was examined using bootstrapping with 2,000 resamples. Bootstrapping directly estimates indirect effects by repeatedly resampling the observed data and does not require the indirect-effect sampling distribution to satisfy the normality assumption. In interpreting mediation, a statistically significant indirect effect in the absence of a corresponding significant direct effect was regarded as evidence consistent with full mediation, whereas significance of both direct and indirect effects was interpreted as partial mediation.

Enhancing positive affect had significant negative indirect effects on mental fatigue ($\beta = -.038$, $p = .004$), reduced cognitive sharpness ($\beta = -.033$, $p = .007$), and confusion ($\beta = -.021$, $p = .045$) through emotional self-efficacy. These findings indicated that greater enhancing of positive affect was associated with higher

emotional self-efficacy, which in turn was associated with lower levels of brain fog dimensions. Because no direct paths from enhancing positive affect to these outcomes were retained in the final model, the indirect pattern was consistent with mediation through emotional self-efficacy. In substantive terms, emotional self-efficacy operated as a protective mechanism through which enhancement of positive affect was associated with lower cognitive complaints.

Compromising also showed significant negative indirect effects on mental fatigue ($\beta = -.034$, $p = .033$) and reduced cognitive sharpness ($\beta = -.030$, $p = .032$). Its indirect effect on confusion was not statistically significant ($\beta = -.019$, $p = .066$). Thus, the relationship of compromising with mental fatigue and reduced cognitive sharpness occurred through emotional self-efficacy, supporting full mediation for these two brain fog dimensions.

Similarly, obliging demonstrated significant negative indirect effects on mental fatigue ($\beta = -.032$, $p = .024$), reduced cognitive sharpness ($\beta = -.028$, $p = .027$), and confusion ($\beta = -.018$, $p = .047$). Because corresponding direct effects were not retained in the final model, emotional self-efficacy functioned as a full mediator of the associations between obliging and these brain fog dimensions according to the reported bootstrap estimates.

Integrating had a significant indirect effect on mental fatigue through emotional self-efficacy ($\beta = -.040$, $p = .021$). Because no significant direct path from integrating to mental fatigue was retained, this finding was consistent with full mediation. For reduced cognitive sharpness, integrating had both a significant direct effect ($\beta = -.156$, $p = .002$) and a significant indirect effect through emotional self-efficacy ($\beta = -.035$, $p = .018$), resulting in a total effect of $\beta = -.191$ ($p = .001$). Emotional self-efficacy therefore partially mediated the relationship between integrating and reduced cognitive sharpness. For confusion, the direct effect of integrating was significant ($\beta = -.179$, $p = .003$), whereas its indirect effect through emotional self-efficacy narrowly failed to reach statistical significance ($\beta = -.022$, $p = .051$). The total effect nevertheless remained significant ($\beta = -.201$, $p = .001$).

Overall, the mediation findings showed that emotional self-efficacy represented an important explanatory mechanism linking selected interpersonal emotion-regulation and conflict-resolution dimensions to brain fog. In particular, emotional self-efficacy mediated the relationships of enhancing positive affect, compromising, obliging, and integrating with mental fatigue and/or reduced cognitive sharpness. The negative direction of the indirect coefficients indicated a reducing or protective pathway: strategies associated with greater emotional self-efficacy were subsequently associated with lower levels of subjective cognitive difficulty.

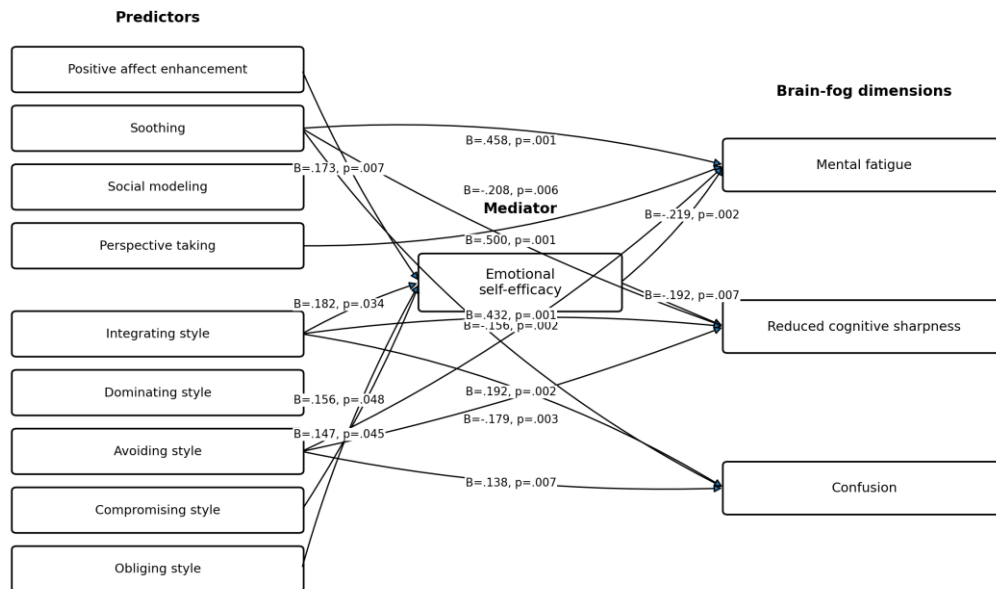


Figure 1. The Mediating Role of Emotional Self-Efficacy in the Relationships of Interpersonal Emotion Regulation and Conflict Resolution Styles With Brain Fog Dimensions

The final structural model therefore provided overall support for the principal research hypothesis that dimensions of interpersonal emotion regulation and conflict resolution styles are related to dimensions of brain fog among married working women through direct pathways and, for several predictors, through the mediating role of emotional self-efficacy. Emotional self-efficacy particularly accounted for the indirect relationships of enhancing positive affect with mental fatigue and reduced cognitive sharpness, integrating with mental fatigue and reduced cognitive sharpness, and compromising and obliging with mental fatigue and reduced cognitive sharpness. The results further demonstrated a significant indirect association of enhancing positive affect and obliging with confusion, whereas the indirect effects of compromising and integrating on confusion did not meet the conventional .05 significance criterion. Taken together, the findings supported emotional self-efficacy as a central psychological mechanism through which adaptive interpersonal emotional processes and selected conflict resolution styles may be associated with reduced manifestations of brain fog among married working women.

Discussion and Conclusion

The present study examined the relationships of interpersonal emotion regulation and conflict resolution styles with brain fog among married working women and investigated whether emotional self-efficacy mediated these relationships. Overall, the findings supported the proposed conceptual model and showed that specific interpersonal emotion regulation strategies and conflict resolution styles were associated with different dimensions of brain fog, including mental fatigue, reduced cognitive sharpness, and confusion. Emotional self-efficacy also emerged as an important mediating mechanism in several of these relationships.

More specifically, enhancing positive affect, integrating, compromising, and obliging were positively associated with emotional self-efficacy. Perspective taking was negatively associated with mental fatigue, whereas soothing and avoiding were positively associated with mental fatigue. Soothing and avoiding were also positively related to reduced cognitive sharpness, while integrating and emotional self-efficacy were negatively related to this dimension. Regarding confusion, soothing and avoiding were positively related to confusion, whereas integrating was negatively associated with it. Social modeling did not show a significant direct relationship with mental fatigue, dominating did not significantly predict confusion, and the direct association between emotional self-efficacy and confusion did not reach statistical significance. The indirect-effect analysis further indicated that emotional self-efficacy mediated several relationships involving enhancing positive affect, integrating, compromising, and obliging.

The significant positive association between enhancing positive affect and emotional self-efficacy is theoretically meaningful because interpersonal attempts to amplify or maintain positive emotions may provide individuals with repeated experiences of successful emotional management. When a person actively seeks positive emotional engagement with others and experiences an improvement in mood, this may reinforce the belief that emotional states are manageable and that interpersonal resources can be used effectively. Contemporary interpersonal emotion regulation research emphasizes that regulation is embedded in social interaction and that successful regulation can promote relational closeness and more adaptive emotional experiences (8, 9). Similarly, evidence concerning everyday interpersonal emotion regulation suggests that the effectiveness of particular strategies depends on whether they meet the recipient's emotional needs, with supportive and validating forms of interpersonal regulation often being particularly useful (7). Therefore, the current finding may indicate that married working women who more frequently use social interaction to strengthen positive affect also develop stronger confidence in their capacity to influence and manage emotional experiences.

The positive relationships of integrating, compromising, and obliging conflict resolution styles with emotional self-efficacy are also consistent with a broader literature linking constructive conflict management with adaptive emotional functioning. Integrating requires openness, cooperation, perspective taking, and attempts to satisfy the concerns of both parties, while compromising requires flexibility and willingness to reach mutually acceptable solutions. Obliging involves accommodation and sensitivity to the other person's needs. These strategies may provide interpersonal experiences in which emotional arousal can be managed without completely disrupting the relationship, thereby enhancing perceived emotional competence. Previous research has shown close relationships among emotion regulation, conflict management, and marital adjustment (13). Conflict resolution skills have also been associated with emotion regulation and interpersonal forgiveness, suggesting that adaptive responses to conflict are partly embedded in broader emotional competencies (14). Intervention studies similarly indicate that improvements in emotion regulation can be accompanied by changes in conflict resolution styles (16, 18). The present findings extend this literature by suggesting that constructive conflict styles may also be related to stronger beliefs about one's own emotional effectiveness.

Perspective taking was significantly and negatively associated with mental fatigue. This result suggests that married working women who are more likely to seek alternative perspectives from others may experience less subjective mental exhaustion. Perspective taking may reduce cognitive burden by helping

individuals reinterpret emotionally demanding circumstances, organize ambiguous information, and escape repetitive or rigid patterns of thought. Rather than relying exclusively on internal processing, obtaining another person's perspective may distribute the emotional and cognitive burden of a difficult situation. This interpretation is consistent with evidence that interpersonal emotion regulation strategies are selected in systematic ways according to social and emotional characteristics and that some interpersonal strategies facilitate adaptive emotional responding (6). Successful interpersonal regulation has also been linked to greater interpersonal synchrony and relationship closeness, indicating that effective emotional exchange can support coordinated psychological functioning (8). For married working women who must manage simultaneous occupational and family demands, perspective taking may therefore function as a cognitive-organizational resource that reduces emotional uncertainty and, consequently, mental fatigue.

In contrast, soothing was positively associated with mental fatigue, reduced cognitive sharpness, and confusion. At first glance, this finding may appear counterintuitive because seeking comfort and reassurance from others is often regarded as adaptive. However, interpersonal soothing may not always indicate successful regulation. Frequent reliance on reassurance and comfort may reflect greater baseline emotional distress, emotional dependence, repeated reassurance seeking, or difficulty regulating emotions independently. In other words, women experiencing greater cognitive and emotional strain may be more likely to seek soothing from others, producing a positive association between the strategy and brain fog dimensions. Research has emphasized that interpersonal emotion regulation is not uniformly beneficial and that its consequences depend on the type of strategy, the relational context, and the degree of dependence on others (7, 9). Excessive reliance on others for regulation may sustain attention to distress rather than resolving it, especially when reassurance must be repeatedly obtained. Such processes can consume attentional resources and may contribute to the subjective experiences of mental fatigue, reduced clarity, and confusion that characterize brain fog (1, 2).

The positive relationships of the avoiding conflict style with mental fatigue, reduced cognitive sharpness, and confusion were among the most consistent direct findings. Avoidance may provide short-term relief from confrontation, but unresolved disagreements can remain cognitively active. Individuals who withdraw from conflict may continue to think about the problem, anticipate its recurrence, suppress emotional responses, or remain uncertain about the relationship. These unresolved cognitive-emotional processes may create a persistent background demand on attention and working memory. Previous studies have demonstrated that emotion regulation difficulties and conflict resolution strategies jointly contribute to relationship functioning (19). Distinct emotion regulation and conflict resolution patterns have also been associated with perceived partner responsiveness and romantic relationship satisfaction (20). Likewise, conflict management has been linked with marital adjustment and emotion regulation (13). The present results suggest that the costs of avoidant conflict management may extend beyond relationship quality to subjective cognitive functioning. Among working women who already face substantial task demands, unresolved interpersonal tensions may increase cognitive load and contribute to experiences of brain fog.

Integrating conflict resolution showed the opposite pattern. It was negatively associated with reduced cognitive sharpness and confusion and also demonstrated an indirect negative relationship with mental fatigue through emotional self-efficacy. Integrating is generally characterized by active problem solving, direct communication, information exchange, and simultaneous consideration of both partners' concerns.

Such a strategy may facilitate emotional closure and reduce the ongoing cognitive demands created by unresolved conflict. The negative relationship with reduced cognitive sharpness suggests that constructive conflict engagement may preserve cognitive clarity by decreasing rumination and uncertainty. The negative relationship with confusion similarly indicates that collaborative resolution may organize emotionally complex situations and help individuals maintain a more coherent understanding of interpersonal problems. These findings align with research showing that adaptive conflict resolution is associated with more favorable emotional and relational outcomes (15, 17). They are also consistent with evidence that conflict resolution strategies play an important role in the association between emotion regulation difficulties and relationship satisfaction (19).

The finding that dominating conflict style did not significantly predict confusion suggests that not all apparently maladaptive conflict strategies have equivalent cognitive consequences. Dominating is characterized by assertiveness and prioritization of one's own concerns, but it may also lead to rapid or decisive termination of a conflict in some contexts. Therefore, although this style may carry relational disadvantages, its relationship with subjective cognitive confusion may depend on situational characteristics, relationship power, conflict intensity, and the partner's response. The absence of a significant direct association should therefore not be interpreted as evidence that dominating is generally adaptive. Rather, it suggests that its relationship with brain fog may be less direct than the relationships observed for avoiding or integrating. Previous literature indicates considerable heterogeneity in how emotion regulation and conflict strategies combine within romantic relationships (20), supporting the possibility that a single conflict style may have different effects across relational contexts.

Emotional self-efficacy was negatively associated with mental fatigue and reduced cognitive sharpness, indicating that women who perceived themselves as more capable of managing emotions reported fewer cognitive difficulties in these domains. Emotional self-efficacy may reduce brain fog by decreasing the subjective threat of emotionally demanding circumstances. When individuals believe they can understand and regulate emotions effectively, they may devote fewer cognitive resources to worry, self-monitoring, indecision, and repetitive emotional processing. This interpretation is compatible with broader evidence that emotional and relational processes can act as intermediary mechanisms connecting cognitive capacities with marital outcomes. For example, psychological mechanisms have been shown to mediate associations between executive functioning and marital burnout (21). More broadly, brain fog research increasingly indicates that subjective cognitive complaints are closely intertwined with fatigue and neuropsychiatric symptoms rather than being exclusively neurological phenomena (4). Reviews of brain fog similarly emphasize its multifactorial nature and the interaction of biological, psychological, and fatigue-related processes (3). Emotional self-efficacy may therefore represent one psychological resource that protects cognitive functioning under emotionally demanding conditions.

The direct association between emotional self-efficacy and confusion did not reach statistical significance. This suggests that perceived emotional competence may be more closely related to the energetic and clarity-related components of brain fog than to subjective confusion. Mental fatigue and reduced cognitive sharpness can plausibly respond to confidence in managing emotional demands because effective emotional coping may preserve attentional resources and reduce cognitive overload. Confusion, however, may depend more strongly on other factors, including situational complexity, sleep, physiological fatigue, health status,

or competing cognitive demands. The multidimensional characterization of brain fog supports the idea that its components are related but not identical (2). Clinical work likewise suggests that the subjective experience described as brain fog may include several partially independent complaints rather than a single homogeneous deficit (1). Thus, emotional self-efficacy may not exert the same strength of influence across every brain fog dimension.

The mediation findings provide an important contribution to the interpretation of the model. Enhancing positive affect showed significant negative indirect associations with mental fatigue, reduced cognitive sharpness, and confusion through emotional self-efficacy. This pattern suggests that using interpersonal relationships to strengthen positive emotional experiences may enhance beliefs about emotional competence, which are then associated with lower cognitive burden. This mechanism is broadly consistent with studies showing that successful interpersonal emotion regulation promotes positive relationship perceptions and relational closeness (8, 9). It is also consistent with evidence that interpersonal emotion regulation mechanisms can mediate associations between broader psychological characteristics and outcomes, as demonstrated in research on attachment and borderline personality features and on self-control and forgiveness (11, 12). The present study extends the relevance of interpersonal emotion regulation mediation to subjective cognitive functioning.

Emotional self-efficacy also mediated the relationships of compromising and obliging with mental fatigue and reduced cognitive sharpness, and it mediated the relationship between integrating and mental fatigue. These indirect associations suggest that constructive conflict resolution may not affect cognitive functioning solely because conflicts are objectively resolved. Rather, repeated success in handling interpersonal disagreement may strengthen a person's sense of emotional competence, which subsequently reduces cognitive strain. This interpretation is supported by intervention findings showing that conflict resolution and emotion regulation can improve together (15-17). The significant indirect effects are also compatible with research demonstrating that conflict management and emotion regulation serve as mechanisms in marital functioning (13). Thus, emotional self-efficacy appears to be one process through which interpersonal competence can translate into cognitive benefits.

For integrating and reduced cognitive sharpness, both the direct and indirect effects were significant, indicating partial mediation. This means that integrating may reduce diminished cognitive sharpness through at least two pathways. First, collaborative conflict resolution may directly decrease unresolved tension and repetitive cognitive processing. Second, it may strengthen emotional self-efficacy, which further reduces cognitive strain. The coexistence of direct and mediated pathways is theoretically plausible because interpersonal experiences can influence cognition both by altering the external social environment and by modifying internal psychological resources. Research on relationship conflict has demonstrated that interpersonal emotion regulation during conflict is associated with longitudinal aspects of couple well-being (10), while other studies indicate that emotion regulation and conflict resolution profiles jointly correspond with relationship satisfaction and perceived responsiveness (20). The current findings extend these mechanisms to subjective cognitive clarity.

The indirect effects involving confusion warrant more cautious interpretation. Enhancing positive affect and obliging showed statistically significant indirect associations with confusion through emotional self-efficacy, even though the direct path from emotional self-efficacy to confusion did not independently reach

the conventional significance threshold. Bootstrap mediation analysis can identify a significant indirect product even when an individual component path is not independently significant, because inference is based on the empirical sampling distribution of the indirect effect rather than on traditional stepwise conditions. Nevertheless, these effects should be interpreted conservatively and replicated in future samples. Their negative direction suggests that interpersonal strategies associated with greater emotional self-efficacy may still contribute to reduced confusion through a relatively small mediated pathway.

Taken together, the findings reinforce the view that brain fog should not be conceptualized solely as a neurological or post-infectious phenomenon. Although biological mechanisms are clearly important, especially in post-COVID conditions, subjective brain fog is related to fatigue and neuropsychiatric processes and may emerge from interactions among multiple systems (3, 4). For married working women, interpersonal emotional demands and conflict-management patterns may represent additional psychosocial contributors. The modern working environment also requires continuous adaptation, communication, and management of increasingly complex demands, including digitally mediated interactions (5). When these occupational demands are combined with ongoing marital and family responsibilities, ineffective regulation and unresolved conflict may increase cumulative cognitive load. Conversely, interpersonal strategies that foster emotional mastery may reduce this burden through stronger emotional self-efficacy.

Several limitations should be considered when interpreting the findings. First, the descriptive-correlational and cross-sectional design does not permit causal conclusions, and the proposed direction of relationships among interpersonal emotion regulation, conflict resolution styles, emotional self-efficacy, and brain fog cannot be established definitively. Second, convenience sampling was used and participants were limited to married working women in Isfahan, which may restrict the generalizability of the results to women in other geographical areas, occupational contexts, socioeconomic groups, or family structures. Third, all primary variables were measured using self-report questionnaires, creating the possibility of shared-method variance, recall bias, and socially desirable responding. Fourth, brain fog was assessed subjectively rather than through objective neuropsychological testing. Factors that could affect cognitive complaints, including sleep quality, occupational workload, medication use, recent illness, physical health, hormonal conditions, caregiving demands, and daily stress, were not incorporated into the model. Finally, some model-fit indices were below ideal thresholds, and several indirect effects were relatively small, particularly those involving confusion; therefore, replication of the final model is necessary.

Future studies should use longitudinal and prospective designs to determine whether interpersonal emotion regulation and conflict resolution styles predict subsequent changes in brain fog and whether changes in emotional self-efficacy precede improvements in cognitive functioning. Replication with probability-based sampling and participants from different cities, occupational groups, socioeconomic levels, and cultural contexts would increase external validity. Comparative studies could examine married and unmarried women, working and non-working women, men and women, or couples simultaneously to determine whether the identified mechanisms vary by role demands or gender. Future research should combine subjective brain fog measures with objective assessments of attention, working memory, processing speed, and executive functioning. Additional variables such as sleep quality, occupational stress, burnout, work-family conflict, marital satisfaction, rumination, anxiety, depression, physical fatigue, caregiving burden, and perceived social support could be incorporated into expanded structural models. Dyadic

analyses involving both spouses would also be valuable because interpersonal emotion regulation and conflict resolution are inherently relational processes. Finally, experimental and intervention studies could test whether improving emotional self-efficacy and constructive conflict resolution produces measurable reductions in mental fatigue and cognitive complaints.

The findings suggest that psychological and workplace interventions for married working women reporting brain fog may benefit from incorporating interpersonal and emotional components rather than focusing exclusively on cognitive symptoms. Counselors and family therapists can assess habitual conflict styles, particularly avoidance, and help clients develop more integrating and collaborative approaches to disagreement. Interventions can also strengthen perspective taking and adaptive positive-affect regulation while distinguishing constructive support seeking from excessive dependence on reassurance or soothing. Emotional self-efficacy may be directly strengthened through training in emotion identification, emotional problem solving, distress tolerance, effective communication, and successful management of emotionally demanding situations. Employee assistance programs and organizational mental health services may incorporate brief workshops addressing work-family emotional demands, conflict management, and cognitive fatigue. For women who present with persistent or severe brain fog, psychological approaches should be integrated with appropriate medical assessment so that emotional, occupational, relational, sleep-related, and physical contributors can be considered together.

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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.

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