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Bayesian Network Modeling of Marital Conflict: Attachment Styles, Communication Patterns, Emotional Reactivity, and Cognitive Distortions

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A B S T R A C T

Objective: The present study aimed to develop and validate a Bayesian network model to examine the probabilistic relationships among attachment styles, communication patterns, emotional reactivity, cognitive distortions, and marital conflict in married adults.

Methods and Materials: This cross-sectional correlational study was conducted on 486 married individuals (243 couples) residing in Canada, selected through community-based and online recruitment strategies. Participants met inclusion criteria including a minimum of two years of marital duration and absence of severe psychiatric conditions. Data were collected using validated instruments, including the Revised Conflict Tactics Scales (CTS2) for marital conflict, the Experiences in Close Relationships-Revised (ECR-R) for attachment styles, the Communication Patterns Questionnaire (CPQ), the Emotional Reactivity Scale (ERS), and the Cognitive Distortions Scale (CDS). Data preprocessing included missing value imputation and normalization procedures. Bayesian network modeling was conducted using a hybrid structure-learning approach combining constraint-based and score-based algorithms. Parameter estimation was performed using maximum likelihood and Bayesian methods. Model validation included 10-fold cross-validation, bootstrapping, and evaluation of predictive accuracy indices.

Findings: The Bayesian network revealed that demand-withdraw communication (β = 0.73), emotional reactivity (β = 0.71), and cognitive distortions (β = 0.69) were the strongest direct predictors of marital conflict, while constructive communication showed a significant negative effect (β = -0.66). Attachment anxiety exerted indirect effects through emotional reactivity (β = 0.64), whereas attachment avoidance influenced conflict via demand-withdraw patterns (β = 0.58). Emotional reactivity also significantly predicted cognitive distortions (β = 0.62), indicating a mediating pathway. The model demonstrated high predictive

performance (AUC = 0.87, accuracy = 0.81), confirming strong discriminative capacity and structural stability.

Conclusion: The findings highlight marital conflict as a multifactorial phenomenon emerging from dynamic interactions among emotional, cognitive, and communication processes, with attachment styles functioning as distal vulnerabilities. The Bayesian network approach provides a robust framework for capturing these complex interdependencies and offers valuable implications for targeted and personalized interventions in couple therapy.

Keywords: *Marital Conflict, Bayesian Network Modeling, Attachment Styles, Emotional Reactivity, Cognitive Distortions, Communication Patterns*

1. Introduction

Marital conflict represents a multidimensional and dynamic phenomenon that has long been recognized as a central determinant of individual well-being, relational stability, and broader psychosocial functioning. Contemporary research consistently emphasizes that marital conflict is not merely the presence of disagreement between partners, but rather a complex interaction of emotional, cognitive, and behavioral processes that unfold over time within relational systems. These processes are embedded in broader interpersonal contexts, including patterns of attachment, communication styles, and emotional regulation capacities, all of which jointly shape the trajectory and intensity of conflict experiences (Talib et al., 2025; Uchino et al., 2025). Understanding marital conflict, therefore, requires integrative models that can simultaneously capture multiple interdependent variables and their probabilistic relationships rather than relying on linear or isolated explanations.

Attachment theory provides one of the most robust frameworks for explaining variability in marital conflict. Adult attachment styles, typically conceptualized along the dimensions of anxiety and avoidance, influence how individuals perceive, interpret, and respond to relational stressors. Individuals high in attachment anxiety tend to exhibit hyperactivating strategies characterized by fear of abandonment, heightened sensitivity to rejection, and emotional flooding during interpersonal disagreements. In contrast, those high in attachment avoidance often employ deactivating strategies, including emotional withdrawal, suppression, and reluctance to engage in conflict resolution processes (Kornaszewska-Polak, 2021; Uluyol & Özen-Çıplak, 2024). Empirical findings demonstrate that these attachment-related tendencies are strongly associated with maladaptive conflict behaviors, including escalation, avoidance, and breakdowns in communication. For instance, attachment anxiety has been linked to increased emotional reactivity and conflict intensity, while avoidance predicts disengagement and demand-withdraw patterns within marital interactions (Manevich et al., 2022; Morgan & Woodin, 2025).

Communication patterns constitute another critical domain influencing marital conflict. Constructive communication, characterized by openness, validation, and collaborative problem-solving, has been shown to mitigate the negative impact of relational stress and promote marital satisfaction. Conversely, maladaptive communication patterns, particularly the demand-withdraw dynamic, are consistently associated with higher levels of conflict and relational dissatisfaction. In this pattern, one partner pursues discussion or change while the other withdraws, creating a cyclical and self-reinforcing interaction that exacerbates tension and reduces mutual understanding (Misurell & Schwartz, 2024; Talib et al., 2025). The persistence of such dysfunctional communication cycles has been identified as a key mechanism underlying chronic marital conflict and has significant implications for both psychological well-being and relationship stability.

Emotional reactivity represents a core affective mechanism through which attachment and communication patterns exert their influence on marital conflict. Individuals differ in their sensitivity, intensity, and duration of emotional responses to interpersonal stimuli, and these differences play a pivotal role in shaping conflict dynamics. High emotional reactivity is associated with rapid escalation of negative affect, reduced capacity for emotional regulation, and increased likelihood of maladaptive responses during conflict episodes. Research indicates that emotional flooding, often observed in individuals with insecure attachment styles, can overwhelm cognitive processing and impair constructive communication, thereby intensifying conflict interactions (Morgan & Woodin, 2025; Nassif et al., 2024). Moreover, emotional dysregulation has been implicated in a range of relational difficulties, including heightened conflict frequency and severity, suggesting that it functions as a central mediator linking individual

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vulnerabilities to interpersonal outcomes (Mavroudis et al., 2025).

Cognitive distortions further contribute to the complexity of marital conflict by shaping how individuals interpret and respond to their partner's behavior. Distorted cognitive processes, such as catastrophizing, mind-reading, and overgeneralization, can lead to biased perceptions of intent and amplify negative emotional responses. These maladaptive thought patterns are often rooted in underlying schemas and are reinforced through repeated interpersonal experiences, creating a feedback loop that sustains conflict over time. Evidence suggests that cognitive distortions are closely linked to both attachment insecurity and emotional reactivity, serving as a cognitive lens through which relational events are filtered and evaluated (Camadan, 2025; Čepukienė & Neophytou, 2024). As such, they play a critical role in maintaining maladaptive interaction patterns and exacerbating relational distress.

Recent research has also highlighted the importance of contextual and contemporary factors in shaping marital conflict. The increasing integration of digital technologies into daily life, for example, has introduced new sources of relational strain, such as partner phubbing and techno-emotional projection, which can disrupt communication and increase perceived neglect within relationships (Ni et al., 2025; Saracini et al., 2025). Similarly, life transitions, such as the transition to parenthood, have been identified as periods of heightened vulnerability for conflict, particularly when combined with pre-existing attachment insecurities and emotional regulation difficulties (Morgan & Woodin, 2025). These findings underscore the need for models that can accommodate both traditional psychological variables and emerging contextual influences.

Intergenerational and developmental perspectives further enrich our understanding of marital conflict by highlighting the role of early relational experiences in shaping adult relationship functioning. Research grounded in family systems theory indicates that patterns of relational dysfunction can be transmitted across generations, influencing attachment styles, communication behaviors, and cognitive schemas in adulthood (Čepukienė & Neophytou, 2024; Neoh et al., 2023). Additionally, experiences of emotional insecurity during childhood have been linked to lower self-esteem and higher levels of marital conflict in later life, suggesting that early developmental processes have enduring effects on relational outcomes (Lee, 2022). These findings emphasize the importance of considering both proximal and distal factors in the study of marital conflict.

Clinical and therapeutic research provides further evidence of the multifaceted nature of marital conflict and the need for integrative approaches to intervention. Interventions such as Integrative Behavioral Couple Therapy (IBCT) have demonstrated effectiveness in addressing both behavioral and emotional components of conflict, highlighting the importance of targeting multiple domains simultaneously (Talib et al., 2025). Similarly, therapeutic approaches for high-conflict families emphasize the role of emotional regulation, communication restructuring, and cognitive reframing in reducing conflict intensity and improving relational functioning (Misurell & Schwartz, 2024; Yakeley, 2021). These approaches align with contemporary perspectives that view marital conflict as an emergent property of complex, interacting systems rather than a product of isolated variables.

Despite the substantial body of research on marital conflict, significant methodological limitations remain. Traditional statistical approaches, such as regression and structural equation modeling, often assume linearity and independence among variables, which may not adequately capture the dynamic and reciprocal nature of relational processes. Recent calls within the literature advocate for the use of more sophisticated analytical frameworks that can model complex, non-linear interactions and probabilistic dependencies among multiple variables (Farrell et al., 2021). Bayesian network modeling represents one such approach, offering the capacity to identify conditional dependencies, infer causal pathways, and model the joint distribution of variables within a unified framework. This approach is particularly well-suited for studying marital conflict, given its inherently multifactorial and dynamic nature.

Moreover, the integration of insights from health psychology and interpersonal research further underscores the significance of marital conflict as a determinant of broader outcomes, including physical health, mental health, and overall quality of life. High levels of marital conflict have been associated with increased stress, poorer sleep quality, and adverse health outcomes, highlighting the far-reaching implications of relational dysfunction (Uchino et al., 2025; Xie & Feeney, 2024). Additionally, specific relational stressors, such as infidelity, have been shown to involve complex emotional and cognitive processes that further complicate conflict dynamics and relational recovery (Shrestha et al., 2023). These findings reinforce the need for comprehensive models that can account for the interplay

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between psychological, relational, and health-related variables.

Emerging research also points to the role of individual psychopathology and relational vulnerabilities in shaping marital conflict. Conditions such as relationship obsessive-compulsive disorder and substance use disorders have been linked to heightened conflict through mechanisms involving cognitive distortions, emotional dysregulation, and attachment insecurity (Nassif et al., 2024; Zarifi, 2026). Furthermore, broader relational contexts, including social support and interpersonal connectedness, play a moderating role in buffering or exacerbating conflict dynamics, suggesting that marital conflict cannot be fully understood in isolation from the wider social environment (Camadan, 2025; Uchino et al., 2025).

In sum, the literature converges on the view that marital conflict is a complex, multidetermined phenomenon arising from the interaction of attachment-related vulnerabilities, communication patterns, emotional processes, and cognitive mechanisms, all embedded within broader relational and contextual systems. However, existing research has yet to fully integrate these domains within a unified analytical framework capable of capturing their dynamic interdependencies. Therefore, the present study aims to develop and test a Bayesian network model of marital conflict by examining the probabilistic relationships among attachment styles, communication patterns, emotional reactivity, and cognitive distortions.

2. Methods and Materials

2.1. Study Design and Participants

The present study employed a cross-sectional, correlational design grounded in advanced probabilistic modeling to investigate the complex interrelationships among attachment styles, communication patterns, emotional reactivity, cognitive distortions, and marital conflict. The study population consisted of married adults residing in Canada, recruited through a combination of community outreach, online platforms, and counseling centers to ensure heterogeneity in demographic and relational characteristics. A total of 486 participants (243 couples) were included in the final sample, all of whom had been legally married for at least two years and were between the ages of 25 and 55. Inclusion criteria required participants to have sufficient proficiency in English to complete the assessment instruments and no self-reported diagnosis of severe psychiatric disorders that could impair reliable self-reporting. Prior to participation, all individuals provided informed consent in accordance with ethical standards for human subject research, and confidentiality of responses was strictly maintained. Efforts were made to ensure gender balance and representation across different socioeconomic strata, thereby enhancing the generalizability of findings within the Canadian marital context.

2.2. Measures

Data collection was conducted using a battery of well-established and psychometrically validated instruments widely used in marital and clinical psychology research. Marital conflict was assessed using the Revised Conflict Tactics Scales (CTS2), which captures multiple dimensions of conflict behaviors including negotiation, psychological aggression, and physical conflict. Attachment styles were measured using the Experiences in Close Relationships-Revised (ECR-R) questionnaire, providing continuous scores on attachment anxiety and attachment avoidance dimensions. Communication patterns within the marital relationship were evaluated using the Communication Patterns Questionnaire (CPQ), which assesses constructive communication, demand-withdraw patterns, and mutual avoidance. Emotional reactivity was measured through the Emotional Reactivity Scale (ERS), capturing sensitivity, intensity, and persistence of emotional responses. Cognitive distortions were assessed using the Cognitive Distortions Scale (CDS), which evaluates maladaptive thinking patterns such as catastrophizing, overgeneralization, and personalization in interpersonal contexts. All instruments demonstrated strong internal consistency in previous research, and reliability coefficients were re-evaluated in the current sample to confirm acceptable psychometric properties. Data were collected via a secure online survey system, allowing participants to complete the questionnaires independently while minimizing social desirability bias.

2.3. Data analysis

Data analysis was conducted using a Bayesian network modeling approach to capture the probabilistic dependencies and conditional relationships among the study variables. Initially, data preprocessing procedures were applied, including missing data imputation using expectation-maximization algorithms, assessment of normality, and standardization of continuous variables. The Bayesian network structure was learned using a hybrid approach combining constraint-based algorithms (such as the PC

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algorithm) and score-based methods (such as hill-climbing optimization with Bayesian Information Criterion scoring) to ensure both theoretical plausibility and empirical robustness. Parameter learning was subsequently performed using maximum likelihood estimation and Bayesian estimation techniques to derive conditional probability distributions for each node in the network. Model validation was conducted through k-fold cross-validation (k = 10) to assess predictive accuracy and generalizability, along with bootstrapping procedures to evaluate the stability of network edges. Sensitivity analysis and probabilistic inference were further employed to identify the most influential variables and pathways contributing to marital conflict, enabling the examination of both direct and indirect effects within the network. All analyses were performed using specialized statistical software, including R (packages such as bnlearn and gRain), ensuring reproducibility and methodological rigor.

3. Findings and Results

The final sample consisted of 486 participants (243 married couples) residing in Canada. The mean age of participants was 38.74 years (SD = 7.92), with ages ranging from 25 to 55 years. Of the participants, 51.2% were female and 48.8% were male. The average duration of marriage was 11.36 years (SD = 6.18), indicating that the sample included both mid-term and long-term marital relationships. In terms of educational attainment, 28.4% held a bachelor's degree, 41.7% had completed graduate-level education, 19.5% had college diplomas, and 10.4% reported high school as their highest level of education. Employment status indicated that 72.6% were employed full-time, 14.8% part-time, and 12.6% were either unemployed or homemakers. Regarding family structure, 68.9% reported having at least one child, while 31.1% had no children. This demographic distribution suggests a relatively diverse and representative sample of married adults within the Canadian sociocultural context.

Table 1

Descriptive Statistics and Correlations Among Study Variables

Variable	M	SD	1	2	3	4	5	6	7
1. Attachment Anxiety	3.42	0.86	—						
2. Attachment Avoidance	3.18	0.79	0.41	—					
3. Constructive Communication	3.76	0.72	-0.38	-0.44	—				
4. Demand-Withdraw Pattern	3.09	0.81	0.46	0.39	-0.52	—			
5. Emotional Reactivity	3.51	0.77	0.49	0.33	-0.41	0.47	—		
6. Cognitive Distortions	3.27	0.74	0.45	0.37	-0.43	0.44	0.51	—	
7. Marital Conflict	3.34	0.82	0.52	0.46	-0.55	0.58	0.54	0.57	—

As shown in Table 1, marital conflict demonstrated strong positive correlations with attachment anxiety (r = 0.52), attachment avoidance (r = 0.46), demand-withdraw communication (r = 0.58), emotional reactivity (r = 0.54), and cognitive distortions (r = 0.57), while it was negatively correlated with constructive communication (r = -0.55). Emotional reactivity and cognitive distortions also exhibited a substantial positive association (r = 0.51), indicating a potential synergistic role in amplifying conflict dynamics. Constructive communication showed moderate negative correlations with all maladaptive variables, suggesting its protective function within marital interactions. Overall, the pattern of correlations provides preliminary support for the hypothesized network structure, with both emotional and cognitive variables closely intertwined with maladaptive communication patterns and conflict outcomes.

Table 2

Bayesian Network Edge Strengths and Directed Relationships

From	To	Edge Strength	Direction Probability
Attachment Anxiety	Emotional Reactivity	0.64	0.89
Emotional Reactivity	Marital Conflict	0.71	0.92
Cognitive Distortions	Marital Conflict	0.69	0.91
Attachment Avoidance	Demand-Withdraw	0.58	0.87
Demand-Withdraw	Marital Conflict	0.73	0.94
Constructive Communication	Marital Conflict	-0.66	0.90
Emotional Reactivity	Cognitive Distortions	0.62	0.88

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The results in Table 2 indicate that the strongest direct predictors of marital conflict within the Bayesian network were demand-withdraw communication (edge strength = 0.73), emotional reactivity (0.71), and cognitive distortions (0.69). Constructive communication exhibited a strong inverse effect (-0.66), confirming its buffering role. Attachment anxiety showed a robust indirect pathway through emotional reactivity, while attachment avoidance influenced conflict primarily via demand-withdraw patterns. The high direction probabilities across edges suggest stability and consistency in the learned network structure, supporting the theoretical plausibility of the modeled relationships.

Table 3

Centrality Indices of Network Variables

Variable	Strength	Closeness	Betweenness
Attachment Anxiety	1.84	0.62	0.41
Attachment Avoidance	1.52	0.58	0.33
Constructive Communication	1.67	0.61	0.39
Demand-Withdraw Pattern	2.03	0.66	0.47
Emotional Reactivity	2.21	0.69	0.52
Cognitive Distortions	2.09	0.67	0.49
Marital Conflict	2.45	0.72	0.58

As indicated in Table 3, marital conflict emerged as the most central node in the network (strength = 2.45, closeness = 0.72, betweenness = 0.58), followed closely by emotional reactivity and cognitive distortions. These findings suggest that emotional reactivity serves as a key intermediary mechanism linking attachment styles to maladaptive cognitions and conflict behaviors. Demand-withdraw communication also demonstrated high centrality, reinforcing its pivotal role in conflict escalation processes. In contrast, attachment avoidance showed comparatively lower centrality, indicating a more indirect influence within the network.

Table 4

Model Fit and Predictive Performance Indices

Index	Value
Log-Likelihood	-1123.47
BIC	2345.62
AUC (Conflict Prediction)	0.87
Accuracy	0.81
Sensitivity	0.84
Specificity	0.78

The indices reported in Table 4 demonstrate that the Bayesian network model achieved a high level of predictive performance, with an AUC of 0.87 indicating strong discriminative ability in predicting elevated marital conflict. The overall classification accuracy of 0.81, along with balanced sensitivity (0.84) and specificity (0.78), suggests that the model effectively captures both high-risk and low-risk cases. The BIC value indicates an optimal balance between model complexity and fit, supporting the robustness of the final network structure.

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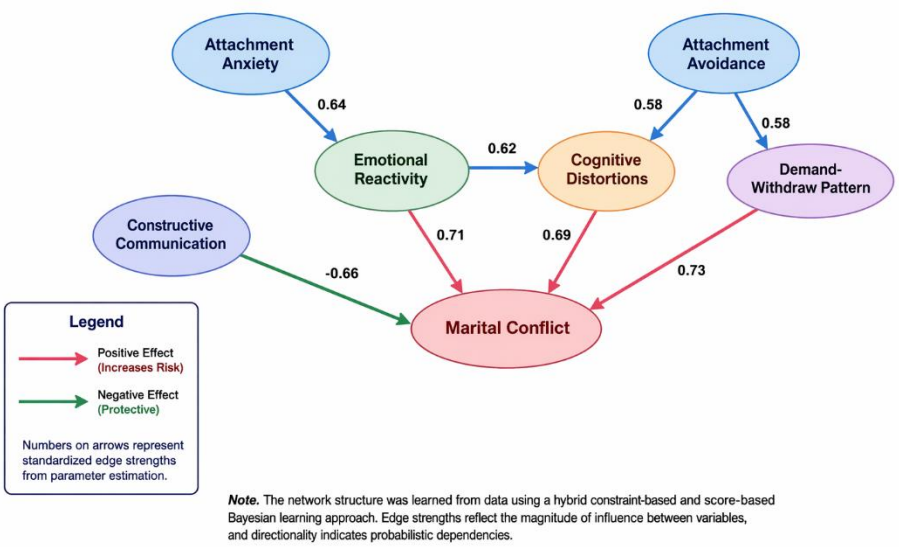
Figure 1

Bayesian Network Structure of Marital Conflict and Associated Psychological Variables



Note. The network structure was learned from data using a hybrid constraint-based and score-based Bayesian learning approach. Edge strengths reflect the magnitude of influence between variables, and directionality indicates probabilistic dependencies.

The graphical representation of the Bayesian network illustrates a densely interconnected system in which emotional reactivity and cognitive distortions occupy central positions, acting as key mediators between attachment styles and marital conflict. Directed edges indicate that attachment anxiety primarily influences conflict through heightened emotional reactivity, whereas attachment avoidance operates through maladaptive communication patterns, particularly demand-withdraw dynamics. Constructive communication appears as a protective node with inhibitory connections to marital conflict, counterbalancing the effects of maladaptive pathways. The network structure highlights multiple indirect pathways converging on marital conflict, underscoring the multifactorial and probabilistic nature of marital dynamics.

4. Discussion

The present study aimed to model marital conflict using a Bayesian network framework by integrating attachment styles, communication patterns, emotional reactivity, and cognitive distortions into a unified probabilistic system. The findings revealed a highly interconnected structure in which emotional reactivity, cognitive distortions, and maladaptive communication patterns emerged as central mechanisms underlying marital conflict. Specifically, the results indicated that demand-withdraw communication, emotional reactivity, and cognitive distortions exerted the strongest direct effects on marital conflict, while attachment anxiety and avoidance influenced conflict primarily through indirect pathways. Constructive communication, in contrast, demonstrated a robust inverse relationship with marital conflict, functioning as a protective factor within the network. These findings underscore the multifactorial and dynamic nature of marital conflict and provide empirical support for the utility of Bayesian network modeling in capturing complex relational processes.

The prominent role of emotional reactivity as a central node in the network is consistent with prior research emphasizing its critical function in conflict escalation. Individuals characterized by high emotional sensitivity and intensity are more likely to experience rapid affective arousal during interpersonal disagreements, which can impair cognitive processing and reduce the effectiveness of communication strategies. The present findings align with evidence suggesting that emotional flooding, particularly among individuals with insecure attachment styles, contributes to heightened conflict intensity and reduced capacity for resolution (Morgan & Woodin, 2025). Furthermore, emotional dysregulation has been identified as a key mechanism linking individual vulnerabilities to interpersonal dysfunction, reinforcing the observed centrality of emotional reactivity in the current model (Mavroudis et al., 2025). These results highlight the importance of targeting emotional regulation processes in both research and clinical interventions aimed at reducing marital conflict.

Cognitive distortions also emerged as a significant predictor of marital conflict, both directly and indirectly through their interaction with emotional reactivity. This

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finding is consistent with theoretical models that emphasize the role of maladaptive cognitive schemas in shaping interpersonal perceptions and responses. Distorted thinking patterns, such as catastrophizing and personalization, can amplify negative interpretations of partner behavior, thereby intensifying emotional reactions and conflict behaviors. The observed association between cognitive distortions and marital conflict is supported by empirical research demonstrating that interpersonal cognitive distortions are closely linked to relational dissatisfaction and maladaptive interaction patterns (Camadan, 2025). Additionally, the interplay between cognitive distortions and emotional reactivity observed in the present study aligns with evidence suggesting that cognitive and emotional processes operate in a reciprocal manner, reinforcing each other over time and contributing to the persistence of conflict dynamics (Čepukienė & Neophytou, 2024).

The findings related to communication patterns further reinforce the central role of interactional processes in marital conflict. The demand-withdraw pattern emerged as one of the strongest direct predictors of conflict, highlighting its significance as a maladaptive communication dynamic. This pattern, characterized by one partner's pursuit of engagement and the other's withdrawal, creates a cyclical interaction that escalates tension and undermines mutual understanding. The present results are consistent with previous studies demonstrating that demand-withdraw dynamics are strongly associated with relational distress and conflict escalation (Misurell & Schwartz, 2024; Talib et al., 2025). In contrast, constructive communication exhibited a protective effect, indicating that open, collaborative, and supportive interaction styles can mitigate the negative impact of other risk factors. This finding aligns with research emphasizing the role of effective communication in promoting marital satisfaction and buffering against conflict-related stress (Talib et al., 2025).

Attachment styles, although not the strongest direct predictors of marital conflict, played a crucial indirect role within the network. Attachment anxiety was found to influence conflict primarily through increased emotional reactivity, while attachment avoidance exerted its effects through maladaptive communication patterns, particularly demand-withdraw dynamics. These findings are consistent with attachment theory, which posits that individuals with anxious attachment are prone to hyperactivating strategies, including heightened emotional responses, whereas avoidant individuals tend to employ deactivating strategies, such as withdrawal and disengagement (Kornaszewska-Polak, 2021; Uluyol & Özen-Çıplak, 2024). Empirical studies have similarly demonstrated that attachment insecurity is associated with increased conflict and reduced relationship satisfaction, particularly through its impact on emotional and behavioral processes (Manevich et al., 2022; Morgan & Woodin, 2025). The indirect pathways identified in the present study highlight the importance of considering attachment as a foundational vulnerability that shapes downstream processes rather than as a direct determinant of conflict.

The integration of these variables within a Bayesian network framework provides a more nuanced understanding of marital conflict compared to traditional linear models. By capturing conditional dependencies and probabilistic relationships, the model illustrates how multiple pathways converge on marital conflict, reflecting its inherently complex and dynamic nature. This approach responds to recent calls in the literature for more sophisticated analytical methods capable of modeling the interplay among psychological variables in relational contexts (Farrell et al., 2021). The high predictive accuracy of the model further supports its validity and suggests that Bayesian networks may serve as a valuable tool for both research and clinical applications.

The findings also resonate with broader relational and contextual research. For instance, the role of emotional and cognitive processes in shaping relational outcomes is consistent with evidence linking relationship dynamics to health and well-being (Uchino et al., 2025; Xie & Feeney, 2024). High levels of marital conflict have been associated with increased stress, poorer sleep quality, and adverse health outcomes, underscoring the importance of understanding and addressing the underlying mechanisms of conflict. Additionally, contemporary relational stressors, such as partner phubbing and technology-related disruptions, may interact with the variables examined in the present study, further complicating conflict dynamics (Ni et al., 2025; Saracini et al., 2025). Although these factors were not directly included in the model, their relevance highlights the need for future research to incorporate emerging contextual influences.

Intergenerational and developmental perspectives also provide important context for interpreting the findings. The influence of attachment styles on emotional and communication processes can be traced to early relational experiences, which shape individuals' expectations and behaviors in adult relationships. Research has demonstrated that patterns of relational dysfunction can be transmitted

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across generations, influencing attachment, cognition, and communication in adulthood (Čepukienė & Neophytou, 2024; Neoh et al., 2023). Furthermore, childhood emotional insecurity has been linked to higher levels of marital conflict later in life, suggesting that early developmental processes have enduring effects on relational functioning (Lee, 2022). These findings support the conceptualization of marital conflict as an outcome of both current relational dynamics and historical developmental influences.

Clinical implications of the findings are substantial. The identification of emotional reactivity, cognitive distortions, and communication patterns as central mechanisms suggests that interventions targeting these domains may be particularly effective in reducing marital conflict. Existing therapeutic approaches, such as Integrative Behavioral Couple Therapy, emphasize the importance of addressing both behavioral and emotional processes, aligning with the present findings (Talib et al., 2025). Similarly, interventions focusing on cognitive restructuring and emotional regulation have been shown to improve relational functioning and reduce conflict intensity (Misurell & Schwartz, 2024; Yakeley, 2021). The network model provides a framework for identifying key intervention targets and tailoring treatment strategies to the specific needs of couples.

5. Conclusion

At the same time, the findings highlight the importance of considering individual differences and contextual factors in understanding marital conflict. For example, specific relational challenges, such as infidelity or substance use, may interact with the variables examined in the present study, leading to unique conflict dynamics (Nassif et al., 2024; Shrestha et al., 2023). Additionally, broader social and environmental factors, including social support and connectedness, may moderate the relationships among variables, further influencing conflict outcomes (Camadan, 2025; Uchino et al., 2025). These considerations underscore the need for comprehensive and context-sensitive approaches to both research and intervention.

6. Limitations & Suggestions

Despite its contributions, the present study is not without limitations. The cross-sectional design precludes causal inferences and limits the ability to examine temporal dynamics and changes in marital conflict over time. Although Bayesian network modeling allows for the estimation of probabilistic dependencies, it does not establish definitive causal relationships. The reliance on self-report measures may also introduce biases, including social desirability and shared method variance. Additionally, the sample, while diverse, was limited to married individuals in Canada, which may restrict the generalizability of findings to other cultural contexts. Finally, the study focused on a limited domain of variables did not include other potentially relevant factors, such as personality traits or external stressors, which may also influence marital conflict.

Future research should address these limitations by employing longitudinal designs to examine the temporal dynamics of marital conflict and the stability of the identified network structure over time. Incorporating multimethod assessments, including observational and physiological measures, would enhance the validity of findings and provide a more comprehensive understanding of relational processes. Expanding the model to include additional variables, such as personality traits, stress, and cultural factors, could further enrich the analysis and improve predictive accuracy. Moreover, future studies should explore the applicability of Bayesian network modeling in diverse populations and relational contexts, including non-married couples and cross-cultural samples, to enhance the generalizability of findings.

From a practical perspective, the findings of the present study have important implications for the development and implementation of interventions aimed at reducing marital conflict. Clinicians and practitioners can use the identified network structure to prioritize intervention targets, focusing on emotional regulation, cognitive restructuring, and communication skills training. The probabilistic nature of the model also allows for personalized intervention strategies, tailored to the specific configuration of risk and protective factors in each couple. Additionally, preventive interventions that address attachment-related vulnerabilities and promote healthy communication patterns may help reduce the likelihood of conflict escalation. Overall, the integration of advanced modeling techniques with established psychological theories offers a promising direction for enhancing both the understanding and treatment of marital conflict.

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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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Authors' Contributions

All authors equally contributed in this article.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

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