

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

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1. Round 1

1.1. Reviewer 1

Reviewer:

In the methods section, the statement “selected through community-based and online recruitment strategies” is insufficiently detailed, as it does not specify sampling frames, recruitment platforms, or response rates; providing these details is essential to assess potential sampling bias and external validity, especially given the dyadic nature of the data.

The inclusion criterion “absence of severe psychiatric conditions” requires operationalization; the manuscript does not indicate whether this was assessed via clinical interview, self-report screening, or medical history, which raises concerns about construct validity and potential confounding variables.

In Table 2, the concept of “Direction Probability” is introduced but not theoretically or computationally defined; readers unfamiliar with Bayesian network bootstrapping would benefit from a brief explanation of how this metric was calculated.

The centrality analysis in Table 3 includes “strength, closeness, betweenness,” which are typically associated with network psychometrics rather than classical Bayesian networks; the authors should justify the integration of graph-theoretic centrality metrics and cite methodological precedents.

The model evaluation section reports “AUC = 0.87, accuracy = 0.81,” but it does not specify the classification threshold used or whether class imbalance was addressed; these omissions limit the interpretability of predictive performance.

Authors revised and uploaded the document.

1.2. Reviewer 2

Reviewer:

In the measures section, the sentence “All instruments demonstrated strong internal consistency in previous research, and reliability coefficients were re-evaluated in the current sample” should be followed by explicit Cronbach’s alpha (or omega) values for each scale in the current sample to allow readers to evaluate measurement reliability empirically.

The data preprocessing description “missing value imputation and normalization procedures” lacks technical transparency; the manuscript should specify the proportion of missing data, the mechanism (MCAR, MAR, MNAR), and the exact normalization technique used (e.g., z-score standardization), as these choices influence downstream Bayesian estimation.

In the data analysis section, the phrase “hybrid structure-learning approach combining constraint-based and score-based algorithms” is appropriate, but it would benefit from justification for algorithm selection (e.g., why PC + hill-climbing was preferred) and reporting of hyperparameters or stopping criteria to ensure methodological rigor.

The statement “parameter estimation was performed using maximum likelihood and Bayesian methods” is ambiguous, as it is unclear whether these were used sequentially, comparatively, or in a hybrid framework; the manuscript should clarify the estimation pipeline and rationale.

In the findings, the reporting “($\beta = 0.73$), ($\beta = 0.71$), ($\beta = 0.69$)” for Bayesian network edges is potentially misleading because Bayesian networks typically report conditional probabilities or edge strengths rather than standardized regression coefficients; the authors should clarify how these β values were derived and whether they represent standardized effects or edge weights.

Table 1 reports correlations such as “ $r = 0.58$ ” between demand-withdraw and marital conflict, but the manuscript does not report significance levels (p-values) or confidence intervals; including these would strengthen inferential transparency.

The interpretation “indicating a potential synergistic role in amplifying conflict dynamics” (following the correlation between emotional reactivity and cognitive distortions) is speculative; the authors should either support this claim with mediation analysis or rephrase it to avoid causal implications from correlational data.

Authors revised and uploaded the document.

2. Revised

Editor’s decision after revisions: Accepted.

Editor in Chief’s decision: Accepted.