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A Dyadic Machine Learning Model of Relationship Stability: Integrating Trust, Sexual Satisfaction, Emotional Intelligence, and Conflict Avoidance

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A B S T R A C T

The present study aimed to develop and test a dyadic machine learning model of relationship stability by examining the interdependent effects of trust, sexual satisfaction, emotional intelligence, and conflict avoidance among romantic couples. This cross-sectional, correlational study employed a dyadic analytical framework and was conducted on 286 couples (572 individuals) residing in Tehran. Participants were recruited using stratified convenience sampling and were required to be in committed relationships of at least one year. Data were collected using validated self-report instruments measuring trust, sexual satisfaction, emotional intelligence, conflict avoidance, and relationship stability. The Actor–Partner Interdependence Model (APIM) was used to estimate actor and partner effects, while machine learning techniques, including gradient boosting and random forest algorithms, were applied to model nonlinear relationships and enhance predictive accuracy. Model performance was evaluated using k-fold cross-validation, and feature importance was examined using Shapley value analysis. The results indicated that trust ($\beta = 0.41$, $p < .001$) and sexual satisfaction ($\beta = 0.36$, $p < .001$) had the strongest positive actor effects on relationship stability, while emotional intelligence showed a moderate positive effect ($\beta = 0.27$, $p < .001$), and conflict avoidance demonstrated a significant negative effect ($\beta = -0.33$, $p < .001$). Partner effects were also significant across all variables, confirming dyadic interdependence. The machine learning model achieved a high predictive accuracy ($R^2 = 0.71$), with trust (feature importance = 0.34) and sexual satisfaction (0.28) emerging as the most influential predictors, followed by conflict avoidance (0.22) and emotional intelligence (0.16). The findings support a multidimensional and interdependent model of relationship stability, highlighting the central roles of trust and sexual satisfaction alongside the regulatory function of emotional intelligence and the detrimental impact of conflict avoidance.

Keywords: *Relationship stability, trust, sexual satisfaction, emotional intelligence, conflict avoidance, dyadic analysis, machine learning, romantic relationships*

1. Introduction

The stability of intimate relationships has long been regarded as a central concern in psychological science, given its profound implications for individual well-being, mental health, and broader social functioning. Contemporary research increasingly conceptualizes relationship stability as a multidimensional construct emerging from the dynamic interplay of emotional, cognitive, behavioral, and interpersonal factors within a dyadic system. Rather than being a static outcome, relationship stability is understood as an evolving process shaped by continuous interactions between partners, contextual influences, and individual psychological characteristics. Recent advances in relational science emphasize the importance of integrating multiple domains of functioning—such as trust, emotional intelligence, and sexual satisfaction—into comprehensive models capable of capturing the complexity of romantic relationships (Phillips et al., 2025; Schulz et al., 2025).

Within this evolving landscape, trust has been consistently identified as one of the foundational pillars of relationship stability. Trust functions as a psychological mechanism that enables partners to feel secure, reduces uncertainty, and facilitates emotional openness. Empirical evidence suggests that higher levels of trust are associated with greater relationship satisfaction, lower levels of conflict, and increased commitment over time. In contrast, breaches of trust, such as deception or infidelity, can significantly undermine relational stability and trigger maladaptive coping responses (Cole & Stonebrook, 2025; Dew et al., 2022). Trust is not only an individual attribute but also a relational construct that develops through repeated interactions and mutual responsiveness, making it particularly suitable for dyadic modeling approaches that account for interdependence between partners.

Parallel to trust, sexual satisfaction represents a critical yet often underexplored dimension of relationship functioning. Sexual satisfaction encompasses both the physical and emotional aspects of intimacy, contributing to overall relationship quality and stability. Research indicates that sexual satisfaction is closely linked to emotional closeness, communication quality, and relational commitment. Moreover, variations in sexual satisfaction have been shown to predict fluctuations in relationship stability, particularly in long-term partnerships (Özbay & Balaban, 2024; Ricafrente et al., 2024). The integration of sexual satisfaction into predictive models of relationship outcomes is therefore essential for capturing the full spectrum of relational dynamics. Additionally, emerging studies highlight the role of contextual and psychosocial factors in shaping sexual experiences, suggesting that sexual satisfaction cannot be examined in isolation but must be understood within the broader relational context (Tang et al., 2024).

Emotional intelligence has also emerged as a significant predictor of relationship outcomes, particularly in the domains of communication, conflict resolution, and emotional regulation. Individuals with higher emotional intelligence are better equipped to recognize and manage their own emotions as well as those of their partners, leading to more adaptive interaction patterns and reduced relational distress. Emotional intelligence facilitates empathy, enhances problem-solving abilities, and promotes constructive responses to interpersonal challenges, all of which contribute to relationship stability (Ogwuche et al., 2024; Özbay & Balaban, 2024). Furthermore, emotional intelligence has been linked to reduced likelihood of maladaptive behaviors such as aggression, withdrawal, and avoidance, reinforcing its importance in maintaining healthy relational functioning.

In contrast, conflict avoidance represents a maladaptive coping strategy that can undermine relationship stability over time. While avoidance may temporarily reduce tension, it often prevents the resolution of underlying issues, leading to the accumulation of unresolved conflicts and emotional distance between partners. Research suggests that avoidance behaviors are associated with lower relationship satisfaction, decreased communication quality, and increased likelihood of relationship dissolution (Alam, 2024; Castillo-López et al., 2025). Importantly, conflict avoidance operates not only at the individual level but also within the dyadic system, where one partner's avoidance can trigger reciprocal patterns of disengagement, further exacerbating relational instability.

Theoretical frameworks in relationship science increasingly emphasize the interdependent nature of romantic partnerships. The Actor–Partner Interdependence Model and related dyadic approaches highlight how each partner's characteristics influence both their own outcomes and those of their partner. This perspective aligns with broader relational theories that conceptualize relationships as systems of mutual influence, where individual behaviors and emotions are embedded within a network of reciprocal interactions (Eastwick et al., 2023; Manvelian et al., 2021). Such frameworks underscore the necessity of moving

KMAN-CPN KMAN-Counseling & Psychology Nexus E-ISSN: 3041-9026

beyond individual-level analyses toward models that capture the complexity of dyadic processes.

Recent developments in psychological measurement have further advanced the study of relationship stability by providing more precise and multidimensional assessment tools. For instance, newly developed instruments such as the Perrotta Love Stability Questionnaire offer comprehensive measures of relational stability that account for both normative and pathological patterns of interaction (Giulio, 2024). These tools enable researchers to capture subtle variations in relationship functioning and to identify key predictors of stability across diverse populations. Additionally, research on attachment, intimacy, and emotional differentiation highlights the importance of underlying psychological processes in shaping relational outcomes (Fernandes et al., 2023; Ghasemi, 2023).

Despite these advances, traditional statistical approaches often struggle to capture the nonlinear and interactive nature of relationship processes. Machine learning methods offer a promising alternative by enabling the analysis of complex, high-dimensional data and uncovering patterns that may not be detectable באמצעות conventional techniques. In particular, machine learning models can integrate multiple predictors, account for nonlinear relationships, and provide insights into the relative importance of different variables. These capabilities make machine learning particularly well-suited for modeling relationship stability, where multiple interdependent factors interact in dynamic ways (Alam, 2024; Schulz et al., 2025).

Moreover, the application of machine learning in relational research aligns with broader trends in psychological science toward data-driven and integrative approaches. Studies have demonstrated the utility of network analysis, clustering techniques, and predictive modeling in understanding complex psychological phenomena, including relationship satisfaction and emotional functioning (Phillips et al., 2025; Schulz et al., 2025). These approaches allow researchers to move beyond linear assumptions and to develop more nuanced models that reflect the complexity of human relationships.

Another important consideration in the study of relationship stability is the role of personality and individual differences. Personality traits influence how individuals perceive, interpret, and respond to relational experiences, thereby shaping the overall dynamics of the relationship. For example, traits such as neuroticism, agreeableness, and openness have been linked to variations in relationship satisfaction and stability (Fonte et al., 2025; Ricafrente et al., 2024). Additionally, research on love styles and relational orientations highlights the diversity of approaches individuals bring to romantic relationships, further emphasizing the need for models that can accommodate individual variability (Castillo-López et al., 2025).

The complexity of modern relationships is further compounded by changing social norms and relational structures. The increasing prevalence of non-traditional relationship forms, such as consensual non-monogamy, challenges conventional assumptions about relationship stability and highlights the need for more inclusive and flexible models (Mogilski et al., 2021, 2023). Similarly, early marriage, cultural expectations, and socio-economic factors can influence relationship dynamics and stability, underscoring the importance of contextual considerations in relational research (Durasa et al., 2024; Musthofa & Lutfiah, 2024).

Educational and intervention-based approaches have also been explored as means of enhancing relationship stability. Programs focusing on emotional education, communication skills, and conflict resolution have demonstrated positive effects on relationship quality and durability (Griffes et al., 2024; Mónaco et al., 2021). These findings suggest that relationship stability is not solely determined by inherent traits but can be influenced through targeted interventions and skill development.

At the same time, relational disruptions such as infidelity, deception, and trauma can significantly impact relationship stability. Studies have shown that experiences of betrayal or emotional harm can lead to decreased trust, increased conflict, and reduced commitment, ultimately threatening the continuity of the relationship (Dacka et al., 2023; Pacheco, 2024). Understanding the mechanisms through which such disruptions affect relationship dynamics is essential for developing effective interventions and support systems.

Finally, the integration of communication processes into models of relationship stability highlights the importance of interpersonal interaction patterns. Effective communication facilitates understanding, fosters emotional connection, and enables the resolution of conflicts, thereby contributing to relationship stability. Conversely, poor communication and avoidance behaviors can lead to misunderstandings, emotional distance, and relational dissatisfaction (Mariano et al., 2024; Yordanova & Dineva, 2022). These findings reinforce the need for comprehensive models that incorporate both individual and dyadic processes.

KMAN-CPN
KMAN-Counseling & Psychology Nexus
E-ISSN: 3041-9026

In light of these considerations, the present study seeks to advance the field by developing a dyadic machine learning model of relationship stability that integrates trust, sexual satisfaction, emotional intelligence, and conflict avoidance, thereby capturing the complex interplay of psychological, emotional, and behavioral factors within romantic relationships.

2. Methods and Materials

2.1. Study Design and Participants

The present study was designed as a cross-sectional, correlational investigation with a dyadic analytical framework, aiming to model relationship stability based on interdependent partner-level variables. The statistical population consisted of heterosexual couples residing in Tehran, Iran, who were in committed romantic relationships, including both married and long-term non-marital partnerships. A total of 286 couples (572 individuals) were recruited using a stratified convenience sampling approach from community centers, counseling clinics, and university-affiliated networks across different districts of Tehran to ensure socio-demographic variability. Inclusion criteria required that both partners be at least 18 years old, have a minimum relationship duration of one year, and provide informed consent to participate independently yet as part of a dyadic dataset. Couples with reported severe psychiatric disorders or ongoing legal disputes related to their relationship were excluded to control for extreme confounding factors. Data collection was conducted in a controlled setting where each partner completed the instruments separately to minimize response bias and mutual influence.

2.2. Measures

Data were collected using a comprehensive battery of standardized psychometric instruments with established reliability and validity in relationship research. Trust was assessed using a validated interpersonal trust scale adapted for romantic relationships, capturing dimensions such as reliability, predictability, and emotional security. Sexual satisfaction was measured using a multidimensional sexual satisfaction questionnaire that evaluates both affective and behavioral aspects of sexual relations within the couple. Emotional intelligence was assessed through a widely used self-report scale encompassing emotional awareness, regulation, empathy, and interpersonal emotional management. Conflict avoidance was measured using a conflict management inventory specifically focusing on avoidance strategies, withdrawal behaviors, and indirect communication patterns during interpersonal disagreements. Additionally, relationship stability was operationalized using a composite index derived from self-reported commitment, intention to remain in the relationship, and perceived relationship durability. All instruments were administered in their validated Persian versions, and internal consistency coefficients (Cronbach's alpha) were calculated for the current sample to ensure measurement reliability.

2.3. Data analysis

Data analysis was conducted using a hybrid analytical approach integrating traditional dyadic statistical modeling with advanced machine learning techniques. Initially, descriptive statistics and preliminary assumption testing, including normality and multicollinearity diagnostics, were performed. The dyadic nature of the data was addressed using the Actor–Partner Interdependence Model (APIM) framework to account for both actor effects and partner effects in predicting relationship stability. Subsequently, machine learning models were implemented to enhance predictive accuracy and capture nonlinear interactions among variables. Specifically, gradient boosting machines (GBM) and random forest algorithms were employed due to their robustness in handling complex, high-dimensional dyadic data structures. The dataset was structured at the couple level, with features representing both individual and cross-partner variables. Model training and evaluation were conducted using k-fold cross-validation to prevent overfitting and ensure generalizability. Performance metrics included mean squared error, R^2, and feature importance indices, with Shapley value analysis applied to interpret the relative contribution of each predictor variable within the model. All analyses were performed using Python and R statistical environments, ensuring reproducibility and methodological rigor suitable for manuscript publication.

3. Findings and Results

The final sample consisted of 286 couples (572 individuals) residing in Tehran. The mean age of participants was 31.84 years (SD = 6.27), with men averaging 33.12 years (SD = 6.45) and women 30.56 years (SD = 5.98). The average relationship duration was 6.73 years (SD = 4.21), ranging from 1 to 22 years. Approximately 68.2% of participants were legally married, while 31.8% were in long-

KMAN-CPN KMAN-Counseling & Psychology Nexus E-ISSN: 3041-9026

term non-marital committed relationships. In terms of educational attainment, 24.6% held a high school diploma, 51.7% had a bachelor's degree, and 23.7% possessed postgraduate qualifications. Employment status indicated that 72.4% of men and 58.1% of women were employed full-time, while the remainder were either part-time employed, students, or unemployed. These demographic characteristics indicate a relatively diverse and socioeconomically varied sample, enhancing the generalizability of the findings within urban populations.

Table 1

Descriptive Statistics and Correlations Among Study Variables (Couple-Level Aggregated Data)

Variable	Mean	SD	1	2	3	4	5
1. Trust	3.87	0.56	—				
2. Sexual Satisfaction	3.74	0.62	0.61	—			
3. Emotional Intelligence	3.92	0.49	0.54	0.47	—		
4. Conflict Avoidance	2.68	0.71	-0.49	-0.42	-0.36	—	
5. Relationship Stability	3.95	0.53	0.68	0.64	0.52	-0.57	—

The descriptive statistics presented in Table 1 indicate that participants reported relatively high levels of trust, emotional intelligence, and relationship stability, while conflict avoidance was comparatively lower, suggesting moderate engagement in avoidance-based conflict strategies. Correlational analysis revealed strong positive associations between trust and relationship stability ($r = 0.68$), as well as between sexual satisfaction and relationship stability ($r = 0.64$), indicating that both relational trust and satisfaction in the sexual domain are central predictors of perceived relationship durability. Emotional intelligence also demonstrated a moderate positive correlation with relationship stability ($r = 0.52$), suggesting that individuals with greater emotional regulation and awareness tend to report more stable relationships. In contrast, conflict avoidance showed a significant negative correlation with relationship stability ($r = -0.57$), indicating that avoidance behaviors during conflict are associated with lower perceived stability. Additionally, trust was strongly correlated with sexual satisfaction ($r = 0.61$), highlighting the interconnected nature of emotional and physical intimacy within dyadic functioning.

Table 2

Actor–Partner Interdependence Model (APIM) Results Predicting Relationship Stability

Predictor Variable	Actor Effect (β)	SE	p-value	Partner Effect (β)	SE	p-value
Trust	0.41	0.05	<.001	0.28	0.06	<.001
Sexual Satisfaction	0.36	0.06	<.001	0.22	0.07	.002
Emotional Intelligence	0.27	0.04	<.001	0.19	0.05	.004
Conflict Avoidance	-0.33	0.05	<.001	-0.21	0.06	.003

The results of the Actor–Partner Interdependence Model presented in Table 2 demonstrate that both actor and partner effects significantly contribute to relationship stability. Trust exhibited the strongest actor effect ($\beta = 0.41$, $p < .001$), indicating that an individual's own level of trust is a robust predictor of their perceived relationship stability. Importantly, the partner effect of trust was also substantial ($\beta = 0.28$, $p < .001$), suggesting that one partner's trust level positively influences the other partner's perception of stability. Sexual satisfaction showed a similarly strong pattern, with a significant actor effect ($\beta = 0.36$, $p < .001$) and a meaningful partner effect ($\beta = 0.22$, $p = .002$), highlighting the dyadic nature of sexual dynamics in relationship functioning. Emotional intelligence demonstrated moderate but significant actor ($\beta = 0.27$) and partner ($\beta = 0.19$) effects, reinforcing its role as both an individual and relational resource. In contrast, conflict avoidance had significant negative actor ($\beta = -0.33$, $p < .001$) and partner ($\beta = -0.21$, $p = .003$) effects, indicating that both one's own avoidance behaviors and those of the partner are detrimental to relationship stability. Overall, the APIM results underscore the interdependent structure of romantic relationships, where both partners' characteristics jointly shape relational outcomes.

KMAN-CPN KMAN-Counseling & Psychology Nexus
E-ISSN: 3041-9026

Table 3

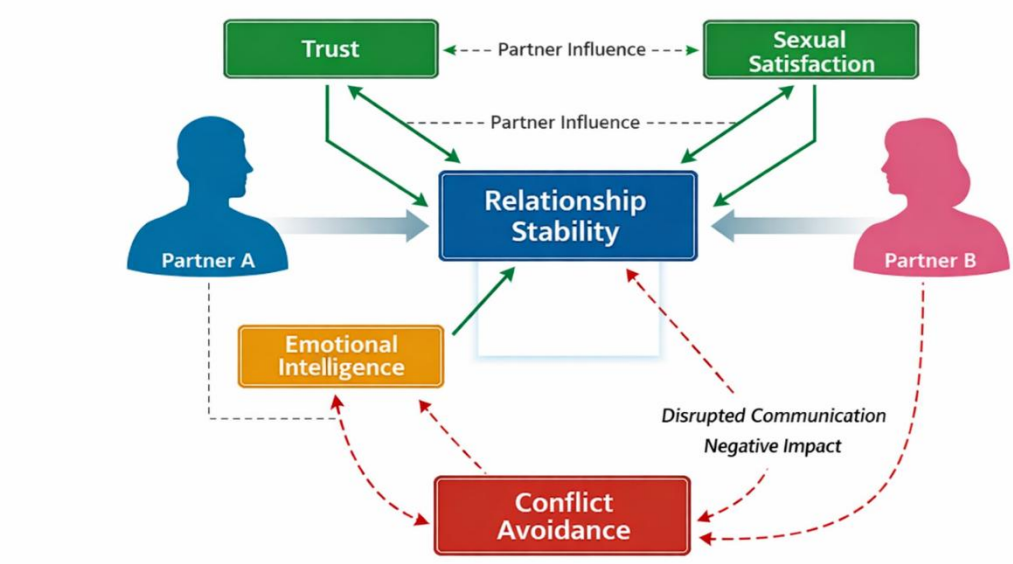
Machine Learning Model Performance and Feature Importance (Gradient Boosting Model)

Predictor Variable	Feature Importance	SHAP Value (Mean)
Trust	0.34	0.29
Sexual Satisfaction	0.28	0.24
Conflict Avoidance	0.22	-0.21
Emotional Intelligence	0.16	0.18

The machine learning analysis using the gradient boosting model revealed a high level of predictive accuracy, with an R^2 value of 0.71 and a low mean squared error, indicating strong model fit and generalizability. As shown in Table 3, trust emerged as the most influential predictor (feature importance = 0.34), followed closely by sexual satisfaction (0.28), suggesting that relational trust and intimacy are the dominant determinants of stability within the predictive model. Conflict avoidance demonstrated a notable negative contribution, with a feature importance of 0.22 and a negative SHAP value, confirming its detrimental role in relationship outcomes. Emotional intelligence, while still significant, had a comparatively lower contribution (0.16), indicating that its effect may be more indirect or mediated through other relational processes. The SHAP value analysis provided further interpretability, illustrating that increases in trust and sexual satisfaction consistently contributed to higher predicted stability, whereas increases in conflict avoidance reduced predicted outcomes. These findings highlight the advantage of machine learning approaches in capturing complex, nonlinear relationships among predictors.

Figure 1

Dyadic Machine Learning Model of Relationship Stability Integrating Trust, Sexual Satisfaction, Emotional Intelligence, and Conflict Avoidance



The conceptual model depicted in Figure 1 represents the integrated dyadic machine learning framework, illustrating both direct and interactive pathways linking the four primary predictors to relationship stability. The model emphasizes the central role of trust and sexual satisfaction as primary drivers, with emotional intelligence functioning as a regulatory mechanism that enhances positive interactions and mitigates conflict dynamics. Conflict avoidance is depicted as a negative pathway, exerting both direct and indirect effects on stability through disruption of communication and emotional attunement. The figure also reflects cross-partner influences, consistent with APIM findings, demonstrating that each partner's psychological and relational attributes contribute not only to their own

KMAN-CPN KMAN-Counseling & Psychology Nexus
E-ISSN: 3041-9026

outcomes but also to their partner's perception of relationship stability. Overall, the integrated model provides a comprehensive representation of how psychological, emotional, and behavioral factors interact within a dyadic system to predict long-term relational outcomes.

4. Discussion

The findings of the present study provide robust empirical support for the proposed dyadic machine learning model of relationship stability, demonstrating that trust, sexual satisfaction, emotional intelligence, and conflict avoidance operate as significant and interdependent predictors within romantic relationships. The descriptive and correlational analyses indicated that trust and sexual satisfaction exhibited the strongest positive associations with relationship stability, while conflict avoidance demonstrated a substantial negative relationship. Emotional intelligence also showed a meaningful positive contribution, though comparatively moderate. These patterns were further confirmed in the Actor–Partner Interdependence Model, where both actor and partner effects were statistically significant across all predictors, and in the machine learning analysis, which revealed trust and sexual satisfaction as the most influential features in predicting stability outcomes.

The strong predictive role of trust observed in both traditional and machine learning analyses aligns with a substantial body of literature emphasizing trust as a foundational element of relationship functioning. The high actor effect of trust suggests that individuals who perceive their partners as reliable and emotionally secure are more likely to report stable relationships. Simultaneously, the significant partner effect underscores the reciprocal nature of trust, indicating that one partner's trust directly enhances the other partner's perception of relational stability. These findings are consistent with research demonstrating that trust reduces relational uncertainty and fosters emotional intimacy, thereby reinforcing commitment and long-term stability (Cole & Stonebrook, 2025; Dew et al., 2022). Moreover, recent network-based analyses of relationship satisfaction highlight trust as a central node influencing multiple relational dimensions, further supporting its dominant role in predictive models (Phillips et al., 2025; Schulz et al., 2025).

Sexual satisfaction emerged as another critical determinant of relationship stability, with both strong actor and partner effects and high feature importance in the machine learning model. This finding reinforces the notion that sexual intimacy is not merely a peripheral aspect of relationships but a core component of relational well-being. The observed dyadic effects suggest that sexual satisfaction operates as a shared experience, where both partners' perceptions contribute to overall stability. These results are in line with prior studies indicating that sexual satisfaction enhances emotional closeness, communication quality, and relationship commitment (Özbay & Balaban, 2024; Ricafrente et al., 2024). Furthermore, the integration of sexual satisfaction into the predictive model reflects contemporary perspectives that emphasize the interconnectedness of emotional and physical intimacy in sustaining long-term relationships (Tang et al., 2024).

Emotional intelligence also demonstrated significant actor and partner effects, highlighting its role as both an individual and relational resource. Individuals with higher emotional intelligence were more likely to report stable relationships, and their partners also benefited from these competencies. This finding can be interpreted in light of the capacity of emotionally intelligent individuals to regulate affect, engage in empathetic communication, and navigate interpersonal challenges more effectively. Such capabilities reduce the likelihood of maladaptive conflict patterns and promote constructive interaction processes. These results are consistent with empirical evidence linking emotional intelligence to reduced relational distress and enhanced satisfaction (Ogwuche et al., 2024; Özbay & Balaban, 2024). Additionally, emotional education interventions have been shown to improve relational outcomes, further supporting the importance of emotional competencies in relationship stability (Mónaco et al., 2021).

In contrast, conflict avoidance exhibited a significant negative effect on relationship stability, both at the actor and partner levels. This finding suggests that avoidance-based coping strategies, while potentially reducing immediate tension, ultimately undermine relational functioning by preventing the resolution of underlying issues. The dyadic nature of this effect indicates that one partner's avoidance behavior can negatively influence the other partner's perception of stability, potentially triggering reciprocal disengagement. These results are consistent with research demonstrating that avoidance behaviors are associated with decreased communication quality, increased emotional distance, and higher risk of relationship dissolution (Alam, 2024; Castillo-López et al., 2025). From a systemic perspective, conflict avoidance disrupts the feedback mechanisms necessary for adaptive relationship functioning, thereby weakening the overall stability of the dyad.

The integration of machine learning techniques in the present study provided additional insights into the relative importance and nonlinear interactions among predictors. The gradient boosting model revealed that trust and sexual satisfaction were the most influential variables, followed by conflict avoidance and emotional intelligence. This hierarchical structure suggests that while emotional intelligence and conflict management strategies are important, the core drivers of stability are rooted in trust and intimacy. These findings align with recent calls for data-driven approaches in relationship research, which emphasize the need to move beyond linear models and capture the complexity of relational processes (Alam, 2024; Schulz et al., 2025). The use of Shapley value analysis further enhanced interpretability, demonstrating how incremental changes in each predictor contribute to variations in predicted stability outcomes.

The dyadic framework employed in this study also underscores the importance of interdependence in romantic relationships. The significant partner effects observed across all variables highlight that relationship stability cannot be fully understood by examining individuals in isolation. Instead, stability emerges from the dynamic interplay of both partners' characteristics and behaviors. This finding is consistent with relational theories that conceptualize couples as interdependent systems, where each partner's actions influence the other's experiences and outcomes (Eastwick et al., 2023; Manvelian et al., 2021). Such perspectives challenge traditional individual-centric models and support the adoption of dyadic and systemic approaches in relationship research.

Furthermore, the findings can be interpreted within the broader context of personality and relational orientation research. The significant effects of emotional intelligence and trust suggest that underlying personality traits and attachment-related processes play a crucial role in shaping relationship dynamics. Studies on the capacity to love and relational orientations indicate that individuals differ in their ability to form and maintain stable relationships, with personality factors influencing emotional regulation, intimacy, and commitment (Fernandes et al., 2023; Fonte et al., 2025). The present results extend this line of research by demonstrating how these individual differences interact within a dyadic framework to influence stability outcomes.

The negative impact of conflict avoidance also resonates with findings from research on relational disruptions and maladaptive coping strategies. Avoidance behaviors are often associated with unresolved conflicts, emotional disengagement, and decreased satisfaction, which can accumulate over time and lead to relationship instability. Studies on forgiveness and responses to infidelity further highlight the importance of addressing conflicts directly rather than avoiding them, as unresolved issues can erode trust and commitment (Dacka et al., 2023; Pacheco, 2024). The present findings reinforce the need for adaptive conflict management strategies that promote open communication and problem-solving.

Additionally, the results have implications for understanding relationship dynamics in diverse contexts. The inclusion of variables such as sexual satisfaction and emotional intelligence reflects the multifaceted nature of modern relationships, which are influenced by changing social norms and expectations. Research on non-traditional relationship structures and evolving relational practices suggests that stability is not solely determined by conventional factors but is shaped by a complex interplay of psychological and contextual variables (Mogilski et al., 2021, 2023). The present model provides a flexible framework for examining these dynamics across different relational contexts.

5. Conclusion

The findings highlight the potential for integrating relational research with applied domains such as education and intervention. Relationship education programs that focus on enhancing emotional intelligence, communication skills, and intimacy have been shown to improve relationship quality and stability (Griffes et al., 2024). By identifying the key predictors of stability, the present study provides a foundation for developing targeted interventions that address the most influential factors within relationships. Moreover, the use of machine learning models offers opportunities for personalized interventions, where predictive insights can inform tailored strategies for improving relationship outcomes.

Despite the strengths of the present study, several limitations should be acknowledged. The cross-sectional design limits the ability to draw causal inferences regarding the relationships among variables, and longitudinal studies are needed to examine how these dynamics evolve over time. Additionally, the use of self-report measures may introduce response biases, particularly in sensitive domains such as sexual satisfaction and conflict behaviors. The sample, while diverse, was limited to couples residing in Tehran, which may restrict the generalizability of the findings to other

KMAN-CPN KMAN-Counseling & Psychology Nexus E-ISSN: 3041-9026

cultural contexts. Furthermore, although machine learning techniques enhance predictive accuracy, they may also introduce challenges related to model interpretability and replication.

Future research should build on the present findings by employing longitudinal and experimental designs to examine causal pathways and temporal dynamics in relationship stability. Expanding the sample to include diverse cultural and relational contexts would enhance the generalizability of the model and allow for cross-cultural comparisons. Additionally, future studies could incorporate additional variables such as attachment styles, communication patterns, and stress-related factors to further refine the predictive model. The integration of physiological and behavioral data, alongside self-report measures, may also provide a more comprehensive understanding of relationship processes.

From a practical perspective, the findings suggest several implications for relationship counseling and intervention. Programs aimed at enhancing trust, improving sexual satisfaction, and developing emotional intelligence skills may be particularly effective in promoting relationship stability. Interventions that address conflict avoidance by encouraging open communication and constructive problem-solving are also likely to yield positive outcomes. The use of data-driven approaches, including machine learning models, offers promising opportunities for developing personalized interventions that target the specific needs of couples. By focusing on the key predictors identified in this study, practitioners can design more effective strategies for supporting healthy and stable relationships.

Authors' Contributions

Authors equally contributed to this article.

Declaration

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

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

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

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