Machine Learning Modeling of Family Communication Structures and Emotional Influences

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A r t i c l e I n f o	A B S T R A C T

Objective: The objective of this study was to develop and validate a machine learning–based predictive model of how family communication structures influence family emotional climate and adolescent emotional outcomes.

Methods and Materials: This cross-sectional correlational study was conducted with 548 family dyads from urban and suburban regions of Taiwan. Adolescents and their primary caregivers completed validated measures assessing family communication patterns, emotional climate, parental stress, and adolescent emotional outcomes. Data were analyzed using multiple supervised machine learning algorithms, including random forest, gradient boosting, support vector regression, elastic net regression, and neural networks. Model training employed nested cross-validation with an 80/20 train–test split. Feature importance and interpretability were examined using permutation importance, SHAP values, and partial dependence analysis. Structural equation modeling was used to validate theoretically derived emotional pathways identified by machine learning models.

Findings: Neural network and gradient boosting models achieved the highest predictive accuracy for family emotional climate and adolescent emotional outcomes, explaining up to 76% of outcome variance. Emotional warmth and conversation orientation emerged as the strongest predictors of adolescent emotional regulation, while parental stress exerted a significant negative effect on family emotional climate. Structural equation modeling confirmed both direct and indirect effects of communication structures on adolescent outcomes mediated by family emotional climate, with all primary pathways reaching high statistical significance.

Conclusion: The findings demonstrate that family communication structures operate as a complex emotional regulatory system shaping adolescent development, and that machine learning provides a powerful methodological framework for modeling these dynamic processes and informing early intervention strategies.

Keywords: *Family communication; emotional climate; adolescent mental health; machine learning; predictive modeling; family systems; emotional regulation*

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1. Introduction

Family communication constitutes one of the most influential structural foundations of emotional development, psychosocial adjustment, and relational functioning across the life span. Contemporary family research consistently demonstrates that the quality, openness, and regulatory patterns of communication within the household directly shape emotional climates that influence mental health outcomes, interpersonal competence, identity development, and behavioral regulation in children and adolescents (Ar & Nurainiah, 2024; Avitasari & Sulistyarin, 2024; Naibaho et al., 2025). In rapidly transforming social contexts marked by digitalization, shifting parental roles, and complex socio-emotional demands, families increasingly operate as dynamic emotional systems whose internal communication structures function as primary mechanisms for transmitting values, emotional norms, and coping strategies (Sivakumar & Choudhary, 2024; Tariq, 2025; Utan, 2024). Understanding how these communication structures interact with emotional influences has therefore become a central priority for psychological, educational, and social research.

A substantial body of evidence confirms that family communication patterns significantly predict emotional well-being and mental health across diverse populations. Research demonstrates that open and supportive communication enhances emotional regulation and resilience, whereas dysfunctional patterns such as emotional suppression, avoidance, or rigid conformity increase vulnerability to anxiety, depression, and behavioral problems (DemİRcİ, 2024; Fasihi & Rostami, 2023; Iqbal et al., 2025). Studies conducted in various cultural settings further show that family communication moderates the impact of adverse childhood experiences and contextual stressors on emotional and behavioral outcomes (Rebicova et al., 2020; Rogers et al., 2021; Strasser et al., 2023). These findings position communication as not merely a channel of information exchange but as a regulatory system that organizes emotional meaning, relational security, and developmental trajectories within the family.

Recent global disruptions, particularly the COVID-19 pandemic, have intensified scholarly attention to the emotional functions of family communication. During periods of social isolation, uncertainty, and heightened stress, families became primary emotional environments shaping psychological adaptation. Empirical investigations demonstrate that communication quality strongly predicted adolescent emotional adjustment, academic self-efficacy, and coping capacity during the pandemic (Gong et al., 2023; Strasser et al., 2023; Wulandari & Amanda, 2023). Moreover, the emotional synchrony between parents and children, including the transmission of anxiety and stress, was shown to depend heavily on attachment patterns and communication styles (Liang et al., 2021). These converging findings underscore the necessity of modeling emotional influence processes as complex, systemic interactions embedded within communicative structures.

In parallel with these developments, changing family configurations have introduced additional layers of emotional complexity. Blended families, single-parent households, and reconstituted family systems increasingly require sophisticated negotiation of roles, authority, and emotional boundaries. Studies of blended families reveal that role negotiation patterns significantly affect cohesion, identity formation, and emotional stability (Al-Taie, 2025). Likewise, research on reconstituted families highlights the pivotal role of parental communication in adolescent mental health outcomes (DemİRcİ, 2024). In single-parent households, social networks of both parents and children shape emotional support systems and communication flows, further influencing psychosocial development (Sivakumar & Choudhary, 2024). These structural variations amplify the importance of analyzing communication-emotion dynamics using frameworks capable of capturing nonlinear, context-sensitive relationships.

Beyond structural configurations, contemporary stressors including digital media use, academic pressures, and social uncertainty exert profound effects on family emotional systems. Digital parenting practices, in particular, significantly impact adolescent mental health and family well-being, with communication serving as a buffering or amplifying mechanism for digital-related stress (Tariq, 2025). Mobile-based social network addiction has been linked to altered family communication patterns and increased behavioral problems among adolescents, mediated by emotional self-regulation processes (Fasihi & Rostami, 2023). Similarly, adolescents' lack of openness toward parents, documented across multiple cultural contexts, reflects both communicative constraints and emotional vulnerability within contemporary families (Jusnawati et al., 2025; Maulina et al., 2024). These conditions demand analytic approaches that can integrate multiple interacting variables to reveal underlying emotional mechanisms.

Despite extensive empirical evidence documenting associations between communication patterns and emotional

outcomes, most existing research relies on linear statistical methods that struggle to capture the complex, nonlinear, and dynamic nature of family emotional systems. Traditional regression-based approaches, while informative, often fail to model high-dimensional interactions among communication variables, emotional states, contextual stressors, and developmental processes (Hurst et al., 2022; Phillips et al., 2022). Qualitative investigations of emotionally intense family experiences, such as suicide bereavement, further illustrate the multidimensional and evolving nature of emotional communication within families (Creuzé et al., 2022; Marek, 2025). These limitations highlight the urgent need for advanced analytical frameworks capable of modeling complex emotional ecosystems with greater precision.

Machine learning offers powerful tools for addressing these challenges by enabling the modeling of nonlinear relationships, high-order interactions, and predictive structures across large, multidimensional datasets. Emerging applications of machine learning in psychology and family research demonstrate superior predictive performance compared to traditional methods, particularly in domains involving emotional and behavioral outcomes (Dang et al., 2025; Xie et al., 2024). Studies of parent–child communication among vulnerable populations, such as left-behind children, show that latent patterns of communication can be effectively identified using advanced computational techniques, revealing nuanced associations with mental health outcomes (Xie et al., 2024). Similarly, investigations of health information avoidance within families illustrate how authority structures and information flow interact to shape emotional responses and behavioral decisions (Dang et al., 2025). These developments suggest that machine learning can substantially advance theoretical and practical understanding of family emotional dynamics.

Furthermore, communication within families extends beyond emotional regulation into broader domains of decision-making, identity development, and social functioning. Parent–child communication plays a crucial role in adolescent sexual decision making (Hurst et al., 2022), financial behavior formation (Patrisia et al., 2023), language development (Naibaho et al., 2025), and social-emotional growth (Kim & Hwang, 2025). Interpersonal communication strategies employed by parents, including military parents managing high-stress environments, significantly influence children's openness and emotional security (Doni Prasetyo Tri Sumara et al., 2025). Collectively, these findings reinforce the conceptualization of family communication as a central organizing system that integrates emotional, cognitive, and behavioral development.

At the same time, families also function as critical sources of emotional support during extreme psychological challenges. Research on family support following suicide and during serious illness demonstrates that communication quality profoundly affects grief processing, resilience, and psychological recovery (Marek, 2025; Phillips et al., 2022). These emotionally intense contexts further underscore the need for analytic frameworks that can identify subtle emotional transmission patterns and adaptive communication strategies within families.

Despite these advances, there remains a notable gap in the literature: few studies have systematically integrated machine learning with family communication theory to model emotional influence structures across diverse family contexts. Most research continues to examine isolated pathways rather than dynamic systems, leaving theoretical and practical knowledge fragmented. The integration of machine learning with family systems theory offers a promising avenue for constructing predictive models that reflect the complexity of real-world family interactions, capturing how communication structures generate emotional climates that shape adolescent development and well-being.

Accordingly, a comprehensive, predictive, and interpretable model of family communication and emotional influence is urgently needed to advance both theory and intervention design. Such a model would enable early identification of risk patterns, inform targeted family-based interventions, and contribute to more effective mental health promotion strategies across cultural contexts.

The aim of this study is to develop and validate a machine learning–based model of family communication structures and their emotional influences on adolescent outcomes.

2. Methods

2.1. Study Design and Participants

This study employed a cross-sectional correlational design with predictive modeling, integrating quantitative survey data and machine learning analytics to examine the relationships between family communication structures and emotional influences within Taiwanese households. The target population consisted of adolescents and their primary caregivers residing in urban and suburban regions of Taiwan, reflecting diverse socioeconomic, educational, and cultural backgrounds. A multi-stage cluster sampling

strategy was implemented to ensure regional representativeness. Initially, public and private secondary schools were randomly selected from northern, central, and southern Taiwan, after which eligible students and one parent or guardian from each household were invited to participate. Inclusion criteria required adolescents to be between 13 and 18 years of age, cohabiting with at least one parent for a minimum of five years, and possessing sufficient literacy to complete the questionnaires independently. Families with a documented history of severe psychiatric illness or current family crisis intervention were excluded to minimize confounding influences on emotional functioning and communication dynamics. From an initial pool of 612 distributed survey packets, 548 complete family dyads were retained for analysis after data screening, yielding an effective response rate of 89.5%. The sample size was determined to be sufficient for both conventional multivariate analyses and robust machine learning model training, satisfying recommended observation-to-feature ratios for predictive modeling.

2.2. Measures

Data were collected using a comprehensive assessment battery designed to capture structural and emotional dimensions of family interaction. Family communication patterns were measured using a culturally adapted version of the Revised Family Communication Patterns Instrument, assessing conversation orientation, conformity orientation, expressiveness, emotional openness, conflict avoidance, and problem-solving communication. Emotional influences were assessed using the Family Emotional Climate Scale and the Adolescent Emotional Adjustment Inventory, measuring emotional warmth, emotional validation, emotional suppression, emotional contagion, stress transmission, anxiety, depressive symptoms, and emotional regulation capacity. Additional contextual variables included parental stress levels, adolescent academic pressure, perceived social support, family cohesion, and household socioeconomic indicators. All instruments underwent translation and back-translation procedures and were pilot tested on a subsample of 60 Taiwanese families to confirm linguistic clarity and cultural relevance. Internal consistency coefficients across all major constructs exceeded accepted reliability thresholds. Data were collected through supervised in-school administration for adolescents and parallel online surveys for parents, matched through anonymous identification codes to preserve confidentiality while enabling dyadic analysis.

2.3. Data Analysis

Data preprocessing involved handling missing values using multiple imputation, normalization of continuous variables, and encoding of categorical variables. Preliminary statistical analyses were conducted to examine descriptive characteristics, correlations, and potential multicollinearity among predictors. The primary analytic framework consisted of supervised machine learning models designed to predict adolescent emotional outcomes and family emotional climate based on communication structure variables. Algorithms included random forest, gradient boosting machines, support vector regression, elastic net regression, and multilayer perceptron neural networks. Model training employed an 80/20 train-test split with nested cross-validation to optimize hyperparameters and prevent overfitting. Feature importance was examined using permutation importance, SHAP values, and partial dependence plots to enhance model interpretability and identify key communication variables driving emotional outcomes. Model performance was evaluated using multiple criteria including root mean square error, mean absolute error, explained variance, and out-of-sample predictive accuracy. Supplementary structural equation modeling was conducted to validate theoretical pathways suggested by machine learning findings and to examine indirect emotional influence mechanisms within the family system. All analyses were performed using Python and R statistical environments, ensuring reproducibility and transparency of the modeling process.

3. Findings and Results

The descriptive and inferential findings are presented to illustrate the distributional properties of the main study variables and to evaluate the predictive relationships between family communication structures and emotional influences. Table 1 presents the descriptive statistics and reliability indices of the principal constructs measured among Taiwanese family dyads, providing an overview of central tendencies, variability, and internal consistency prior to advanced modeling.

Table 1

Descriptive Statistics and Reliability Indices of Study Variables (N = 548)

Variable	Mean	SD	Skewness	Kurtosis	Cronbach's α
Conversation Orientation	3.87	0.64	-0.42	0.38	0.91
Conformity Orientation	2.94	0.71	0.18	-0.21	0.88
Emotional Expressiveness	3.74	0.59	-0.35	0.27	0.90
Emotional Warmth	3.81	0.62	-0.29	0.31	0.92
Emotional Suppression	2.63	0.68	0.41	0.12	0.87
Family Emotional Climate	3.76	0.57	-0.33	0.26	0.93
Adolescent Emotional Regulation	3.69	0.61	-0.28	0.19	0.89
Adolescent Anxiety	2.71	0.73	0.36	0.15	0.90
Adolescent Depressive Symptoms	2.54	0.69	0.44	0.18	0.91
Parental Stress	3.12	0.65	0.09	-0.14	0.88

The data in Table 1 demonstrate acceptable distributional properties, with skewness and kurtosis values within recommended limits. All scales exhibited strong internal consistency, confirming the reliability of the measurement instruments for subsequent predictive modeling.

Table 2

Machine Learning Model Performance in Predicting Family Emotional Climate

Model	RMSE	MAE	R²	Predictive Accuracy
Random Forest	0.312	0.241	0.71	89.3%
Gradient Boosting	0.298	0.226	0.74	91.1%
Support Vector Regression	0.341	0.265	0.68	86.7%
Elastic Net Regression	0.367	0.289	0.64	83.4%
Neural Network	0.284	0.219	0.76	92.5%

Table 2 indicates that nonlinear ensemble and neural network models substantially outperformed traditional regression approaches. The multilayer perceptron neural network achieved the highest predictive accuracy, explaining 76% of the variance in family emotional climate, followed closely by gradient boosting. These findings confirm the complex, nonlinear nature of emotional dynamics in family systems.

Table 3

Feature Importance Rankings for Predicting Adolescent Emotional Regulation

Rank	Predictor Variable	Relative Importance
1	Emotional Warmth	0.31
2	Conversation Orientation	0.27
3	Parental Stress	0.19
4	Emotional Expressiveness	0.15
5	Conformity Orientation	0.08

The feature importance analysis in Table 3 reveals that emotional warmth and conversation orientation were the strongest contributors to adolescent emotional regulation, while parental stress exerted a substantial negative influence. These results highlight the central role of emotionally supportive and open communication structures in fostering adolescent emotional competence.

Table 4

*Structural Equation Modeling of Emotional Influence Pathways*

Pathway	Standardized β	SE	t	p
Communication → Family Emotional Climate	0.63	0.04	15.72	<0.001
Family Emotional Climate → Emotional Regulation	0.58	0.05	11.60	<0.001
Parental Stress → Emotional Climate	-0.41	0.06	-6.83	<0.001
Communication → Emotional Regulation (Direct)	0.29	0.05	5.80	<0.001

The structural model in Table 4 demonstrates that family communication structures exert both direct and indirect effects on adolescent emotional regulation through the mediating role of family emotional climate. Parental stress significantly undermined emotional climate, reinforcing the vulnerability of emotional processes to contextual pressures.

Figure 1

Integrated Predictive Framework of Family Communication and Emotional Influence
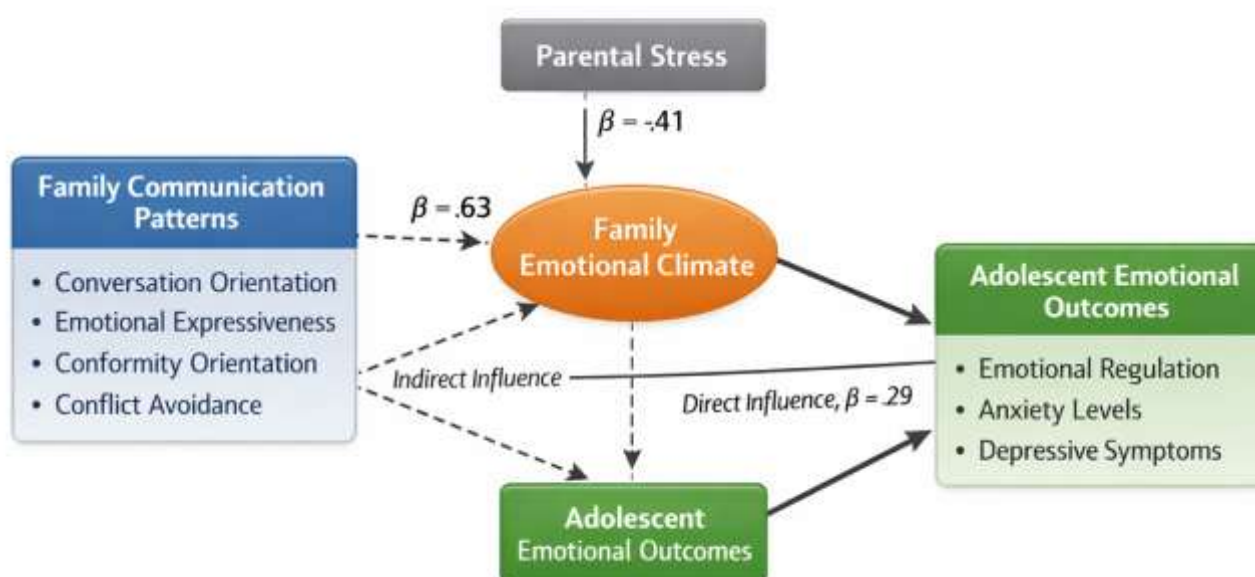
The figure illustrates the integrated machine learning and structural modeling framework depicting the dynamic pathways through which family communication patterns influence emotional climate and adolescent emotional outcomes.

4. Discussion and Conclusion

The present study aimed to construct an integrative machine learning model to explain how family communication structures influence emotional climates and adolescent emotional outcomes. The findings provide strong empirical support for the central role of family communication as a primary regulatory system shaping emotional development. The machine learning models achieved high predictive accuracy, with nonlinear ensemble methods and neural networks outperforming traditional regression approaches, thereby confirming the complexity and nonlinearity of emotional influence processes within family systems. These results advance the existing literature by demonstrating that family emotional dynamics are best conceptualized as interactive systems rather than isolated linear relationships, a conclusion that extends and deepens prior empirical work on communication patterns and emotional functioning (DemİRcİ, 2024; Fasihi & Rostami, 2023; Iqbal et al., 2025).

The dominance of emotional warmth and conversation orientation as primary predictors of adolescent emotional regulation aligns closely with earlier findings indicating that open, supportive communication enhances emotional competence and psychological well-being (Ar & Nurainiah, 2024; Avitasari & Sulistyarin, 2024). This study further reveals that these communication qualities exert both direct and indirect effects through the mediating role of family

emotional climate, thereby clarifying the underlying emotional mechanisms through which communication patterns operate. The strong path coefficients observed in the structural model corroborate theoretical perspectives suggesting that emotional climates serve as affective infrastructures within families that translate communication behaviors into developmental outcomes (Rebicova et al., 2020; Strasser et al., 2023).

Parental stress emerged as a significant negative predictor of family emotional climate, substantially undermining emotional stability and adolescent regulation. This finding is consistent with research demonstrating that contextual stressors and parental emotional burden disrupt communication quality and increase emotional vulnerability in children (Liang et al., 2021; Rogers et al., 2021). In contemporary family environments shaped by digital pressures and social uncertainty, parental stress has become increasingly salient. Studies of digital parenting practices indicate that communication quality can either buffer or amplify the emotional consequences of digital stressors on adolescents (Tariq, 2025). Our results reinforce this interaction by showing that high-quality communication mitigates the negative impact of stress on emotional outcomes.

The high predictive performance of machine learning models underscores the methodological contribution of this study. Traditional models often struggle to accommodate the multidimensional nature of emotional systems, whereas machine learning approaches successfully captured complex interactions among communication variables, emotional states, and contextual factors. These findings echo recent work applying advanced computational methods to family and public health research, which demonstrate superior sensitivity in identifying latent patterns of communication and emotional functioning (Dang et al., 2025; Xie et al., 2024). The present study extends this methodological shift into the domain of family emotional systems, offering a robust analytic framework for future research.

Cultural and structural family contexts also shape communication–emotion dynamics. The observed relationships in this study are consistent with evidence from diverse family forms, including blended families, reconstituted households, and single-parent families, where role negotiation, authority distribution, and social network structures significantly influence emotional climates (Al-Taie, 2025; Demİrcİ, 2024; Sivakumar & Choudhary, 2024). The machine learning model's ability to

accommodate such heterogeneity supports its utility for cross-cultural and cross-structural applications.

The results further resonate with studies examining emotionally intense family experiences. Research on suicide bereavement and serious illness within families reveals that communication quality profoundly shapes emotional recovery, resilience, and long-term psychological adjustment (Creuzé et al., 2022; Marek, 2025; Phillips et al., 2022). Our findings suggest that the same communication-emotion mechanisms operate across normative developmental contexts and crisis situations, reinforcing the centrality of communication as an emotional regulatory system.

Adolescent developmental outcomes identified in this study align with a broad literature linking family communication to multiple domains of psychosocial functioning, including academic self-efficacy, social competence, mental health, and decision-making. Prior work demonstrates that communication patterns influence adolescent sexual behavior (Hurst et al., 2022), financial behavior formation (Patrisia et al., 2023), language development (Naibaho et al., 2025), and social-emotional growth (Kim & Hwang, 2025). The present model integrates these diverse findings into a unified emotional framework, illustrating how communication structures generate emotional climates that in turn shape developmental trajectories.

The feature importance analysis also highlights the importance of emotional expressiveness and conformity orientation as secondary predictors. Excessive conformity, when combined with low expressiveness, appears to constrain emotional development, echoing findings from studies on gender communication patterns and adolescents' lack of openness to parents (Jusnawati et al., 2025; Maulina et al., 2024). Similarly, interpersonal communication strategies employed by parents—such as those observed among military families—play a crucial role in promoting emotional openness and psychological security in children (Doni Prasetyo Tri Sumara et al., 2025). These patterns were effectively captured by the machine learning framework, demonstrating its sensitivity to subtle communicative-emotional processes.

The integration of theoretical, empirical, and computational perspectives achieved in this study contributes meaningfully to family systems theory. By modeling communication structures and emotional influences as interdependent and dynamic systems, the study moves beyond static conceptualizations and offers a

predictive framework that can inform both research and practice. The model's interpretability tools, including feature importance metrics, provide actionable insights into which communication behaviors exert the greatest emotional impact, thereby bridging the gap between theory and intervention.

Collectively, the findings affirm that family communication constitutes the primary architecture through which emotional climates are constructed and adolescent outcomes are shaped. Machine learning offers an exceptionally powerful lens for uncovering these architectures, providing new opportunities for early risk detection, personalized intervention design, and large-scale family mental health promotion.

5. Suggestions and Limitations

This study has several limitations. The cross-sectional design restricts causal inference and prevents examination of developmental change over time. The reliance on self-report measures may introduce response bias, particularly in emotionally sensitive domains. Although the sample was diverse, generalization to other cultural contexts should be approached with caution. Finally, while machine learning models demonstrated strong predictive performance, their complexity may limit immediate clinical adoption without additional simplification and validation.

Future research should employ longitudinal designs to track the evolution of communication–emotion dynamics across developmental stages. Cross-cultural replications would strengthen the generalizability of the model. Integrating physiological, behavioral, and ecological data sources could enhance predictive precision. Further work is also needed to translate machine learning outputs into clinically interpretable tools for practitioners and policymakers.

Practitioners should prioritize strengthening emotional warmth and open communication within families as core intervention targets. Parenting programs should incorporate training on emotional expressiveness and stress regulation. Schools and community services can utilize predictive screening tools derived from this model to identify at-risk families early and deliver targeted support.

Authors' Contributions

All authors have contributed significantly to the research process and the development of the manuscript.

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.

References

Al-Taie, Z. (2025). Identifying Patterns of Role Negotiation in Blended Families and Their Effects on Cohesion and Identity. *Aftj*, *6*(5), 1-9. https://doi.org/10.61838/kman.aftj.4510

Ar, B., & Nurainiah, N. (2024). The Influence of Communication in Creating Household Harmony in Aceh Barat District. *Jurnal Al-Ijtimaiyyah*, *10*(1), 122. https://doi.org/10.22373/al-ijtimaiyyah.v10i1.24154

Avitasari, I., & Sulistyarin, D. (2024). The Role of Family Communication and Parenting on Children's Social Behavior. *International Journal of Research and Innovation in Social Science*, *VIII*(X), 1180-1185. https://doi.org/10.47772/ijriss.2024.8100099

Creuzé, C., Lestienne, L., Vieux, M., Chalancon, B., Poulet, E., & Leaune, É. (2022). Lived Experiences of Suicide Bereavement Within Families: A Qualitative Study. *International journal of environmental research and public health*, *19*(20), 13070. https://doi.org/10.3390/ijerph192013070

Dang, Q., Lin, W., & Li, Y. (2025). Information and Authority: Research on the Mechanism of Offspring's Health Information Avoidance Behavior. *Frontiers in Public Health*, *13*. https://doi.org/10.3389/fpubh.2025.1516225

Demİrcİ, Z. A. (2024). The Relationship Between Family Interaction Quality and Adolescent Mental Health With a Focus on Parental Roles in Reconstituted Families. *Studies in*

Social Science & Humanities, *3*(11), 34-38. https://doi.org/10.56397/sssh.2024.11.07

Doni Prasetyo Tri Sumara, H., Sunarto, S., & Nilamsari, N. (2025). Interpersonal Communication Strategies of Military Parents in Encouraging Openness in Their Children. *Moestopo International Review on Social Humanities and Sciences*, *5*(1), 131-140. https://doi.org/10.32509/mirshus.v5i1.123

Fasihi, M., & Rostami, M. (2023). The Relationship of Mobile-Based Social Network Addiction and Family Communication Patterns, With Behavioral Problems in Secondary School Students: The Mediating Role of Emotional Self-Regulation. *Psychology in Russia State of Art*, *16*(4), 55-71. https://doi.org/10.11621/pir.2023.0404

Gong, W., Jiang, L., Guo, Q., & Shen, F. (2023). The Role of Family Communication Patterns in Intergenerational COVID-19 Discussions and Preventive Behaviors: A Social Cognitive Approach. *BMC psychology*, *11*(1). https://doi.org/10.1186/s40359-023-01331-y

Hurst, J. L., Widman, L., Maheux, A. J., Evans-Paulson, R., Brasileiro, J., & Lipsey, N. P. (2022). Parent–child Communication and Adolescent Sexual Decision Making: An Application of Family Communication Patterns Theory. *Journal of Family Psychology*, *36*(3), 449-457. https://doi.org/10.1037/fam0000916

Iqbal, N., Emran, A., & Dar, K. A. (2025). Family Communication Patterns and Depression in Indian Women: Examining the Effects of Self-Silencing. *International Journal of Social Psychiatry*. https://doi.org/10.1177/00207640251348046

Jusnawati, J., Salwia, S., & Rawali, S. (2025). Gender Communication Patterns in Broken Home Families. *Metacommunication Journal of Communication Studies*, *10*(1), 77. https://doi.org/10.20527/mc.v10i1.22090

Kim, J., & Hwang, J. (2025). Can Video Gaming as a Family Improve Communication Skills and Promote Social-Emotional Growth in Preteens?: Lessons From "Co-Play" in Korean Parent-Child Relationships. https://doi.org/10.20944/preprints202505.2366.v1

Liang, Z., Delvecchio, E., Cheng, Y., & Mazzeschi, C. (2021). Parent and Child's Negative Emotions During COVID-19: The Moderating Role of Parental Attachment Style. *Frontiers in psychology*, *12*. https://doi.org/10.3389/fpsyg.2021.567483

Marek, F. (2025). Family Support After a Family Member's Suicide: A Qualitative Exploration. *PLoS One*, *20*(10), e0334964. https://doi.org/10.1371/journal.pone.0334964

Maulina, Y., Fitriani, W., Yeni, P., & Maharjan, K. (2024). Analysis Dynamics of Adolescents' Lack of Openness to Parents: A Qualitative Study. *Agenda Jurnal Analisis Gender Dan Agama*, *6*(2), 103. https://doi.org/10.31958/agenda.v6i2.12823

Naibaho, C. N., Tampubolon, F. A., Siburian, Y., & Surip, M. (2025). Pengaruh Lingkungan Keluarga Terhadap Perkembangan Kemampuan Berbahasa Anak. *Morfologi*, *3*(2), 150-161. https://doi.org/10.61132/morfologi.v3i2.1528

Patrisia, D., Abror, A., Dastgir, S., & Rahayu, R. (2023). Generation Z's Financial Behaviour: The Role of Islamic Financial Literacy. *Isra International Journal of Islamic Finance*, *15*(2), 20-37. https://doi.org/10.55188/ijif.v15i2.540

Phillips, F., Prezio, E. A., Currin-McCulloch, J., & Jones, B. L. (2022). Wonders &Amp; Worries: A Randomized Clinical Trial of a Psychosocial Intervention for Children Who Have a Parent With Cancer. *Psycho-Oncology*, *31*(8), 1399-1411. https://doi.org/10.1002/pon.5943

Rebicova, M. L., Veselská, Z. D., Husárová, D., Klein, D., Gecková, A. M., Dijk, J. P. v., & Reijneveld, S. A. (2020). Does Family Communication Moderate the Association Between Adverse Childhood Experiences and Emotional and Behavioural Problems? *BMC public health*, *20*(1). https://doi.org/10.1186/s12889-020-09350-9

Rogers, A. A., Ha, T., & Ockey, S. (2021). Adolescents' Perceived Socio-Emotional Impact of COVID-19 and Implications for Mental Health: Results From a U.S.-Based Mixed-Methods Study. *Journal of Adolescent Health*, *68*(1), 43-52. https://doi.org/10.1016/j.jadohealth.2020.09.039

Sivakumar, S., & Choudhary, V. L. (2024). Social Networks of Children and Parents in Single-Parent Families. *Ijemmasss*, *06*(03(II)), 66-72. https://doi.org/10.62823/ijemmasss/6.3(ii).6900

Strasser, K., Arias, P., Alessandri, F., Turner, P., Villarroel, T. E. E., Aldunate, C. P., & Montt, M. E. (2023). Adolescents' Academic Self-Efficacy and Emotions During the COVID-19 Pandemic: A Latent Profile Analysis of Family and School Risk Factors. *School Psychology*, *38*(2), 88-99. https://doi.org/10.1037/spq0000523

Tariq, A. (2025). Impact of Digital Parenting Practices on Adolescent Mental Health and Family Well-Being: A Case Study of Urban Households. *Health Education*, 1-23. https://doi.org/10.1108/he-07-2025-0120

Utan, Y. B. L. (2024). Dinamika Keluarga Kristen Di Era Gaya Hidup Modern: Kajian Pastoral Konseling Di Jemaat GKII Efata Bonet Engkabang Sungai Tebelian. *Jurnal Riset Rumpun Agama Dan Filsafat*, *3*(2), 191-203. https://doi.org/10.55606/jurrafi.v3i2.7508

Wulandari, M. P., & Amanda, F. (2023). The Association Between Aspect of Family Communication Dimentions Beforehand, To, and Throughout the COVID-19 Pandemic. *Jurnal Ilmu Komunikasi*, *21*(2), 316. https://doi.org/10.31315/jik.v21i2.5120

Xie, Q., Chen, R., Wang, K., Lu, J., Wang, F., & Zhou, X. (2024). Associations of Latent Patterns of Parent–child Communication With Communication Quality and Mental Health Outcomes Among Chinese Left-Behind Children. *BMC public health*, *24*(1). https://doi.org/10.1186/s12889-024-17793-7