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Design and elaboration of a qualitative model of technology-based parenting programs: Experiences, challenges, and strategies among parents of secure six-years-old preschool children in Shiraz, Iran

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Abstract

The family, as the first social institution, plays a fundamental role in the cognitive, emotional, and social development of the child. The present study was conducted with the aim of designing and elaborating a qualitative model of technology-based parenting programs among parents of secure six-year-old preschool children in Shiraz, Iran.

This study was conducted using a qualitative approach and the grounded theory method. The research population included parents of preschool children, family psychologists, educational counselors, and developers of educational technologies. Data were collected through semi-structured interviews, focus group discussions, and analysis of educational documents, and were analyzed using MAXQDA software through three stages of open, axial, and selective coding. In total, 35 participants were selected purposefully and theoretically, and the sampling process continued until theoretical saturation was achieved.

The results indicated that the designed model led to an increase in supportive and emotional parenting styles, a reduction in controlling behaviors, an improvement in communication skills, better emotion management, and strengthened parent–child interactions. After implementing the program, parents were able to better recognize their child's emotional needs and create a safe and calm environment for their growth. However, the model had no significant effect on the avoidant-support parenting style, indicating this dimension's resistance to technology-based interventions, particularly in low-access areas.

Overall, the findings indicate that the technology-based parenting model can serve as an effective tool for promoting family mental health and improving the educational environment of preschool children. This model can be utilized as a practical framework in preschool centers, family counseling settings, and parent education programs.

Keywords: Technology-based parenting, Qualitative model, Grounded theory, Preschool children, Family mental health

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Introduction

In shaping a child's psychological and social well-being, as well as in the development of values, beliefs, and behaviors (1, 2). A child's initial understanding of the world, social norms, and responsibilities is largely formed through close and nurturing interactions with family members (3, 4). Serving as the primary context for growth, the family not only transmits knowledge and culture but also provides a framework for the development of emotional, social, and cognitive skills (5, 6).With the onset of the twentieth and twenty-first centuries, profound social, economic, and cultural changes have reshaped family values, beliefs, and norms (7, 8). These transformations have significantly affected family structures and parenting roles, presenting modern parents with new challenges and opportunities (9, 10). Parenting, defined as a set of relatively stable patterns of parental behavior in interaction with children, exerts a profound influence on the emotional, cognitive, and behavioral development of the child (11, 12).Common parenting styles include authoritative, authoritarian, permissive, and neglectful approaches, each carrying distinct implications for a child's psychological well-being and behavior (13, 14). Research indicates that controlling and inappropriate parenting practices can lead to behavioral problems, anxiety, reduced self-esteem, and psychological disorders in children (15, 16). In contrast, authoritative and supportive parenting fosters a sense of security, enhances social competencies, and strengthens children's self-efficacy (17, 18). The role of parenting is especially critical during the preschool and early childhood years, a sensitive period for the child's psychological, cognitive, and social development (19, 20). Parent–child relationships, and support effective child-rearing (21, 22). Additionally, the cultural diversity and social values present in each society significantly influence parenting styles, resulting in the development of different educational approaches (23, 24). In today's world, characterized by advances in digital technologies and the emergence of innovative educational tools, many parents are still not fully familiar with these technologies (25). Tools such as the Internet, artificial intelligence, mobile applications, and online educational platforms can facilitate parental training and support, but they cannot entirely replace traditional parenting methods (26, 27). Nevertheless, the benefits of these technologies are undeniable, including easy access, cost reduction, opportunities for continuous learning, and the ability to learn anytime and anywhere without geographical limitations (28, 29). Given these factors, designing and validating qualitative models of technology-based parenting programs is both necessary and essential; the effectiveness and usability of such programs can promote the growth of both parents and children, enhance parental educational skills, and improve family mental health. At the same time, challenges such as reduced face-to-face interaction, parental resistance to technology use, security concerns, and privacy protection must also be considered.

Event research has focused on identifying effective strategies to overcome barriers and improve the quality of parenting education. Evidence-based parenting programs have been shown to enhance parental skills, reduce children's behavioral challenges, and promote family mental well-being. Recognizing the importance of these outcomes, this study aims to develop a qualitative model to strengthen technology-based parenting practices for six-year-old preschool children in Shiraz Province. By integrating successful strategies and experiences while addressing existing challenges, the model seeks to enhance the mental health of children and families and contribute to a healthier, more balanced society. Titled *"Designing and Explaining a Qualitative Model of Technology-Based Parenting Programs: Experiences, Challenges, and Strategies,"* this research provides practical insights and a usable framework for improving technology-driven parenting interventions.

Methods

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This study employed a qualitative design grounded in Grounded Theory to explore and elucidate complex processes and underlying concepts within the lived experiences of secure six-year-old preschool children in Shiraz. The primary aim was to develop a conceptual model for technology-based parenting programs, with a focus on the characteristics of secure parents in their interactions with preschool-aged children. Grounded Theory provided a systematic framework for extracting emerging concepts from field data and organizing them coherently. The research population consisted of parents of preschool children, family psychologists, educational technology developers, educational counselors, and parenting researchers. Purposive sampling was initially conducted based on expertise, experience, and direct relevance to the research topic, followed by theoretical sampling to select participants according to the evolving theory and concept development. A total of 35 participants were included, and data collection continued until theoretical saturation was achieved—i.e., when no new information emerged from additional data. Data were collected from three main sources: (1) semi-structured interviews with open-ended questions, (2) focus group discussions with key stakeholders, and (3) analysis of relevant documents, reports, educational programs, and digital parenting content. Interviews were conducted in multiple stages, allowing participants to express their experiences freely, and questions were iteratively refined based on preliminary findings to elicit deeper insights. Focus group discussions facilitated the identification of collective perspectives and group interactions in the context of technology-based parenting, while document analysis supported data triangulation and enhanced credibility. All interviews were audio-recorded with informed consent and fully transcribed. Data analysis was conducted concurrently with data collection using MAXQDA software and followed the three coding stages of Grounded Theory: open, axial, and selective coding. During open coding, data were segmented into small conceptual units, initial codes were extracted, and preliminary concepts were identified as mental labels and logical propositions. In axial coding, relationships between codes were examined, and subcategories were organized based on semantic similarities. Selective coding involved identifying the central phenomenon, around which all categories were integrated. By synthesizing categories, the final theory emerged. Throughout the process, the researcher employed both inductive and deductive reasoning iteratively to ensure theoretical coherence and analytical depth. To enhance the trustworthiness and validity of findings, multiple strategies were applied, including member checking, wherein preliminary findings and models were shared with participants for feedback to ensure alignment with their perspectives. Peer review by independent researchers minimized potential bias. All stages—from data collection to analysis and reporting—were meticulously documented to ensure transparency and reproducibility. The use of multiple data sources (interviews, focus groups, and document analysis) further enriched the data and strengthened validity. As a complementary measure, a standardized questionnaire was administered, whose validity and reliability had been previously verified by Suleiman et al. (2014). The KMO index was 0.83, and Bartlett's test of sphericity was significant, confirming sample adequacy and suitability for factor analysis. Exploratory Factor Analysis with Varimax rotation identified four factors, explaining 72.48% of the total variance. Cranach's alpha indicated satisfactory internal consistency, and test-retest reliability was 0.87. Confirmatory Factor Analysis supported the exploratory results, and significant correlations between questionnaire scores and maternal emotion scales, as well as the SDQ, confirmed convergent, discriminant, and concurrent validity.

Results

The findings of the present study indicate that the qualitative model of technology-based parenting programs can play an effective role in

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enhancing the behavioral skills of parents of six-year-old preschool children in Shiraz. Implementation of this model led to an increase in supportive and emotional parenting styles and a reduction in negative, controlling, and stress-inducing behaviors in parent–child interactions. By employing techniques such as positive reinforcement, providing logical explanations, establishing clear rules, and managing emotions, parents were able to create a calmer and more interactive family environment and demonstrate greater flexibility in coping with stressful situations.

Furthermore, parents developed a better ability to identify the emotional needs of their children and provide supportive responses, thereby creating a safe and nurturing environment that facilitates the psychological, social, and emotional development of children. For example, dedicating focused and uninterrupted time for parent–child interactions enhanced children's sense of self-worth and encouraged their active participation in daily activities.

Analysis of data from interviews, focus group sessions, and written documents revealed that integrating traditional parenting education with modern educational technologies—including digital content and interactive applications—can enhance parents' skills in managing children's emotions and behaviors, elevating the quality and effectiveness of parent–child interactions. Consequently, this qualitative model not only strengthens practical parenting skills but also supports the psychological, social, and emotional growth of children. It can serve as an effective framework for preschool centers, family counseling services, and child mental health and educational policies. By fostering a safe, calm, and constructive environment, the model provides an optimal setting for nurturing six-year-old preschool children and guiding family interactions toward positive developmental outcomes.

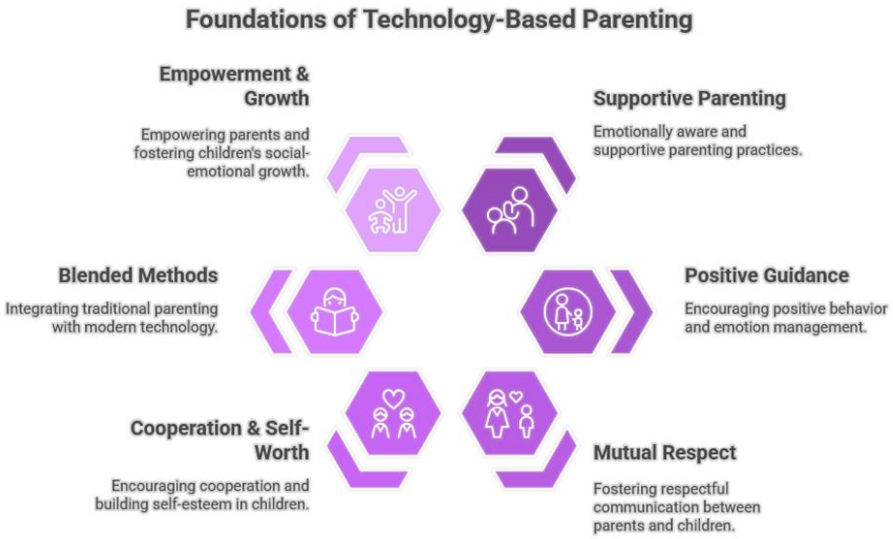

Figure 1. Qualitative Model of Technology-Based Parenting Program for Secure Six-Year-Old Preschool Children in Shiraz Province

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Translation

The findings also indicated that the qualitative model of technology-based parenting programs did not have a significant effect on the avoidant parenting style among parents of six-year-old preschool children in Shiraz. In other words, implementing this model did not lead to a notable change in parents' tendency to reduce supportive interactions or to avoid emotional engagement with their children. This suggests that, while the model enhances supportive and emotional parenting styles and improves parent–child interactions, certain aspects of parenting—such as avoidance of support—may be more resistant to technology-based interventions and require further investigation and more targeted strategies to effectively influence this dimension of parental behavior.

Discussion

The present study aimed to examine the impact of a qualitative technology-based parenting program model on the skills and behaviors of parents of six-year-old preschool children in Shiraz. The findings indicated that this model has a significant ability to enhance supportive and emotional parenting styles and can reduce negative, controlling, and stressful behaviors in parent-child interactions. By utilizing encouraging techniques, providing logical explanations, establishing clear rules, and managing emotions, parents were able to engage in more positive and flexible interactions with their children in virtual spaces, thereby creating a calmer and more supportive family environment.

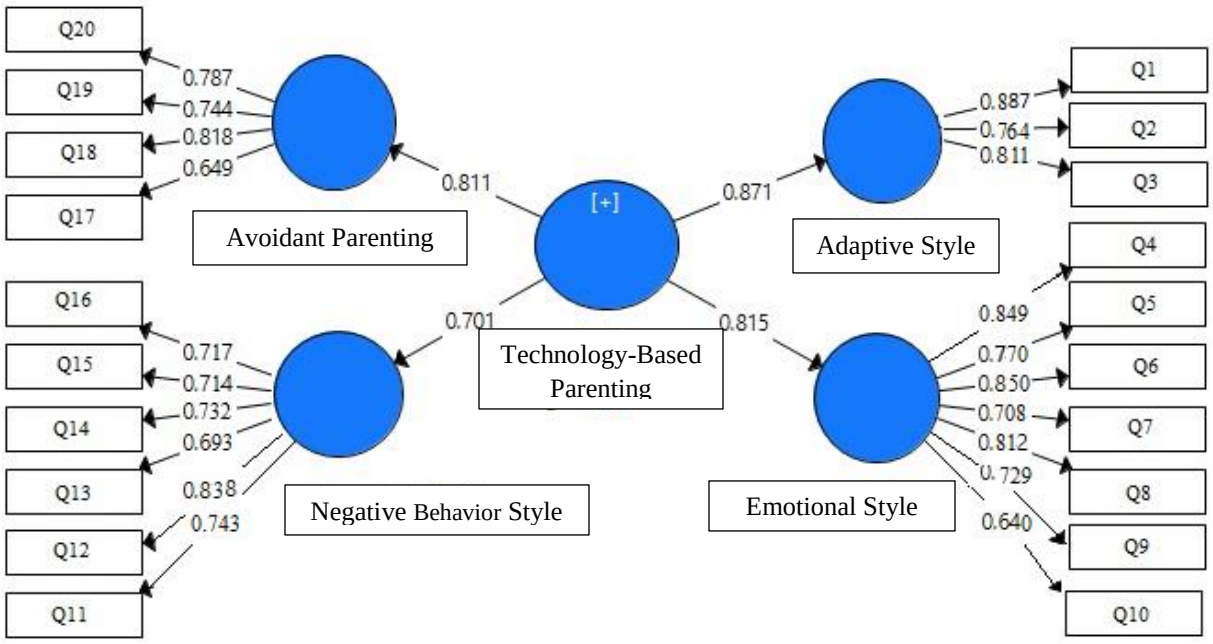

Figure 2. Fit of the Secure Parenting Styles Model

These results align with previous studies emphasizing the positive effects of technology-based interventions on supportive parenting skills and parental emotion regulation (22, 23).A notable finding of the study was the increased ability of parents to identify the emotional needs of their children and provide supportive responses, creating a safe and calm family environment that significantly promotes children's psychological, social, and emotional development. For example, dedicating specific, uninterrupted time for parent-child interaction enhances children's sense of self-worth and active participation in daily activities, which is consistent with previous studies on parent-child interaction through digital interventions

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(24).However, the results showed that the qualitative technology-based parenting program model did not have a significant effect on avoidant parenting styles. In other words, the implementation of this model did not lead to a meaningful change in parents' tendency to reduce supportive interaction or avoid emotional connection with the child. This finding suggests that certain stable dimensions of parenting, such as avoidance of support, are more resistant to technology-based interventions and require a combination of face-to-face training, social support, and long-term behavioral programs (25).The limitations of the present study include a relatively small sample size, geographical focus on a single city, lack of full control over environmental variables, and individual differences among parents, which may directly affect the generalizability of the findings. Additionally, the use of parent self-report tools may have introduced response biases.

Conclusion

Based on the results, it can be concluded that the qualitative technology-based parenting program model can effectively enhance supportive and emotional parenting styles, improve parent-child interaction, and provide a safe and calm family environment conducive to children's psychological, social, and emotional development. This model can serve as an efficient framework for designing modern educational and counseling programs in preschools and for families with specific needs.

Practical Recommendations

It is recommended that preschools and family counseling centers utilize this model, provide training to parents on emotion management and creating a supportive environment, and pay special attention to avoidant parenting styles through supplementary face-to-face programs.

Research Recommendations

Future research should consider longitudinal studies to examine long-term effects, expand samples across different geographical regions, and employ multi-method and mixed-method (qualitative and quantitative) assessments to gain a deeper understanding of the model's impact (24, 25).

Ethical Approval

This study was conducted in accordance with the ethical standards of the research committee of Islamic Azad University, Marvdasht Branch, and with the 1964 Helsinki Declaration and its later amendments. Ethical approval code: IR.IAU.M.REC.1402.152

Authorship

FN, HB, MZ and NSS contributions to the conception and design of the study, or acquisition of data, or analysis and interpretation of data and drafting the article or revising it critically for important intellectual content. All authors approved the final version of the manuscript to be submitted.

Conflict of Interest

The authors declare that they have no conflicts of interest.

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