### **ORIGINAL RESEARCH**



# Factors influencing the confidence of fathers in their paternal role during early childhood

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### Abstract

**Background**: This study explores the factors influencing the paternal role confidence of fathers with young children aged 1 to 3 years in Korea from 01 June to 10 July 2024. Methods: The research examines the relationship between positive parenting behaviors, parenting stress, and paternal role confidence, with a focus on how these variables differ according to the general characteristics of fathers, such as age, income, and the developmental stage of the child. Results: The study found that higher paternal role confidence is positively correlated with active positive parenting behaviors and negatively correlated with parenting stress. Significant differences in positive parenting behaviors and stress were observed across different age groups of fathers and children, suggesting that these factors should be considered when developing support programs aimed at enhancing paternal role confidence. By situating the study in South Korea, the findings provide insights into how cultural and societal factors shape paternal experiences, particularly in a context of evolving family dynamics and gender roles. Conclusions: The findings highlight the importance of reducing parenting stress and promoting active involvement of fathers in parenting to improve child development outcomes.

### **Keywords**

Paternal role confidence; Parenting stress; Positive parenting behaviors; South Korea; Early childhood parenting

### **1. Introduction**

Becoming a parent is one of the most transformative experiences in human life, requiring substantial effort and adaptation [1]. Among the various aspects of parenting, the active involvement of fathers has gained increasing recognition as uniquely critical to a child's overall development. In particular, paternal engagement, which includes providing emotional support, participating in caregiving activities, and fostering educational development, has been identified as a cornerstone of positive child outcomes.

In the context of South Korea, fatherhood has undergone significant transformation over recent decades. Traditional parenting roles emphasized fathers as heads of the household, primarily responsible for economic support and maintaining an authoritarian relationship with their children, while mothers assumed the primary responsibility for child-rearing [2, 3]. However, societal changes, such as the rapid industrialization of South Korea, increased participation of women in the workforce, declining birth rates, and the weakening of extended family support systems, have reshaped family dynamics. These shifts reflect broader global trends while also being shaped by Korea's unique cultural and social context [4]. For example, South Korea's strong emphasis on education and

achievement has created distinct pressures and expectations for parental roles, particularly for fathers. Understanding this evolving context is crucial, as it provides insights into how shifting societal norms impact paternal engagement and parenting dynamics.

Fathers play a vital role in fostering their children's emotional, social, and cognitive development. Their unique engagement complements maternal roles, contributing to secure attachment, emotional regulation, and social skills during early childhood [5]. For instance, active father involvement has been linked to improved language acquisition, problemsolving skills, and emotional resilience in children, outcomes that are often attributed to the distinct nature of paternal interactions, such as playfulness and encouragement of exploration [6]. Fathers' involvement has also been associated with positive outcomes such as enhanced academic achievement, selfesteem, and behavioral adjustment in children [6]. Moreover, fatherhood can benefit fathers themselves by strengthening the father-child bond and enhancing their sense of identity and purpose within the family [7]. Despite these benefits, direct paternal involvement has historically been underexplored in comparison to maternal parenting, especially in Asian societies, including South Korea, where traditional family structures have often emphasized the father's economic role over caregiving responsibilities.

To provide a focused analysis of fathers' roles, this study centers on specific dimensions of paternal involvement, such as paternal role confidence, as key factors associated with parenting behaviors. Paternal confidence holds particular significance in South Korea, where evolving societal expectations have created both challenges and opportunities for fathers [8]. Paternal confidence not only reflects fathers' self-perception of their parenting ability but also serves as a catalyst for sustained and meaningful engagement with their children. The rationale for focusing on paternal confidence stems from its foundational role in fostering positive parenting behaviors [9, 10]. While constructs like positive parenting behaviors represent the observable outcomes of parenting practices, paternal confidence provides an upstream mechanism that shapes how fathers navigate and respond to parenting challenges. This distinction is central to the study's conceptual framework, which examines the relationships among paternal confidence, parenting stress and positive parenting behaviors.

This study employs a cross-sectional design, which limits the ability to infer causal relationships. As such, factors associated with paternal role confidence are treated as covariates rather than predictors. This adjustment avoids directional language and aligns the interpretations with the study's methodological scope. For example, instead of stating that parenting stress or positive parenting behaviors are "influenced by" paternal confidence, the analysis frames these relationships as associations, reflecting the inherent limitations of the cross-sectional approach [9, 10]. The study design emphasizes associations rather than causality to ensure methodological rigor and clarity.

Parenting stress is an additional focus of this study, as it represents a significant challenge for many parents. When the demands of parenting exceed available resources, stress levels can rise, potentially leading to negative outcomes for both parents and children [6, 7]. Fathers who lack confidence in their role may experience heightened stress, which could impact their ability to engage in positive parenting behaviors [4]. Understanding these dynamics is essential to supporting fathers and improving family outcomes.

Finally, this study, conducted in South Korea, aims to address gaps in the understanding of fathers' parenting by examining the interplay between paternal confidence, parenting stress, and positive parenting behaviors. By focusing on these factors, the study seeks to provide foundational insights that can inform early childhood parenting education programs tailored specifically to fathers. The findings are particularly relevant in the Korean context, where cultural expectations and family dynamics are rapidly evolving, offering a unique lens through which to examine the intersection of tradition and modernity in parenting [9–14].

### 2. Research method

### 2.1 Research purpose

The purpose of this study is to identify the factors that influence fathers' confidence in their paternal role during early childhood. The specific objectives are as follows: (1) To identify and examine the levels of factors that influence fathers' confidence in their paternal role during early childhood.

(2) Analyzing the correlation between positive parenting behaviors, stress, and paternal role confidence.

### 2.2 Research methods

### (1) Research design

This study uses a cross-sectional design to examine the factors associated with paternal role confidence. Given the limitations of cross-sectional analyses, the term "influence" is avoided throughout this study to acknowledge that the design cannot establish causality. Instead, the study explores associations between variables, treating factors as covariates rather than predictors.

(2) Study participants

The Participants in this study included fathers of children aged 1–3 years recruited through daycare centers in Seoul, Gyeonggi, Gangwon, and Jeonnam from 01 June to 10 July 2024. During data analysis, it was identified that 20% of the sample consisted of fathers with children older than 3 years, resulting from recruitment challenges. South Korea's high utilization rate of daycare centers (over 70% for children aged 1–5) provided a suitable context for recruiting fathers actively involved in caregiving responsibilities.

The final sample comprised 180 valid responses after excluding incomplete or inconsistent data. The sample size was calculated using G\*Power 3.1 software (Heinrich Heine University Düsseldorf, Düsseldorf, NRW, Germany) for multiple regression analysis, using the following parameters: a significance level of 0.05, a medium effect size of 0.15, a statistical power of 0.80, and 21 covariate variables.

(3) Sample characteristics and justification

In Q methodology, "Q" refers to the sorting process where participants rank or categorize items based on their subjective perspectives, providing insights into their viewpoints and priorities. "P" samples represent the participants. The typical number of "P" samples ranges from 20 to 60. While Q methodology terminology is referenced here, the main analysis involves regression models, and "Q" and "P" are not further utilized in statistical methods in this study. Clarifying this terminology avoids confusion for readers unfamiliar with Q methodology.

(4) Impact of missing data

The dataset had 5% missing data, which was managed using multiple imputation methods. Although this ensures a complete dataset for analysis, it may introduce minor biases, particularly in sensitive variables. This limitation is noted in the discussion section, as it could marginally affect the reliability of certain findings.

(5) The reliability of the research instruments is as follows: positive parenting behaviors (0.882), parenting stress (0.844), and paternal role confidence (0.856).

(a) Positive parenting behaviors

To measure positive parenting behaviors, the instrument developed by Park and Kang [15] for assessing the positive parenting behaviors of primary caregivers during early childhood was used. The tool consists of a total of 26 items, each rated on a 5-point Likert scale ranging from strongly disagree (1 point) to strongly agree (5 point). Higher scores indicate a greater tendency towards positive parenting behaviors. The reliability of the tool, as measured by Cronbach's  $\alpha$ , was 0.87 at the time of development, and 0.88 in this study.

### (b) Parenting stress

Father's parenting stress was measured using the Parenting Daily Hassles scale developed by Crnic and Greenberg [16]. This tool consists of 18 items rated on a 5-point Likert scale from 1 (not at all bothersome) to 5 (very bothersome), with higher scores indicating greater parenting stress. The reliability of the tool, as measured by Cronbach's  $\alpha$ , was 0.86 at the time of development, and 0.84 in this study.

### (c) Paternal role confidence

The paternal role confidence scale used in this study was based on the Parenting Sense of Competence Scale developed by Gibaud Wallston [17] and modified by Kang [18]. The subject of the questionnaire was replaced with "father" instead of "parent" to fit the research subject. The paternal role confidence scale consists of 10 items rated on a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). Higher scores indicate greater confidence in the father's role. The Cronbach's  $\alpha$  for the scale at the time of development was 0.86, and in this study, the reliability of the scale, as measured by Cronbach's  $\alpha$ , was found to be 0.85.

(d) Predictor variable

Predictor variables include age, income, education, employment status, and family support level. While ANOVA (Analysis of Variance) was used for initial group comparisons, prior reviewers suggested hierarchical regression as a more suitable approach. To address this, a hierarchical regression analysis was conducted, with demographic variables entered in the first step, followed by main variables (*e.g.*, stress and positive parenting) in subsequent steps. This approach aligns better with the study objectives by controlling for demographic effects and isolating the contributions of key variables to paternal role confidence.

### 3. Research results

### 3.1 General characteristics of the participants (N = 180)

Frequency analysis and descriptive statistics were conducted to examine the general characteristics of the participants, as shown in Table 1. To provide better context, the median wage for South Korea during the study period was approximately 3.5 million KRW (2438.25 USD). This information helps to understand how the income distribution of the participants compares to the general population. First, the age of the fathers was distributed as follows: 101 participants (56.1%) were in their 30s, 42 participants (23.3%) were in their 40s or older, and 37 participants (20.6%) were in their 20s. The number of children was distributed as follows: 100 participants (55.6%) had one child, 71 participants (39.4%) had two children, and 9 participants (5.0%) had three or more children. positive parenting behaviors Monthly income was distributed as follows: 52 participants (28.9%) earned between 3 and 4 million KRW (2791.80 USD), 41 participants (22.8%) earned between

2 and 3 million KRW (2086.32 USD), 41 participants (22.8%) earned over 5 million KRW (3483.23 USD), 26 participants (14.5%) earned less than 2 million KRW (1392.06 USD) and 20 participants (11.1%) earned between 4 and 5 million KRW (3483.23 USD).

## **3.2 Correlation between positive parenting behaviors, parenting stress, and paternal role confidence**

The analysis of the participants' positive parenting behaviors showed a total score of  $92.93 \pm 16.09$  out of 5 points. Similarly, the analysis of parenting stress showed a total score of  $38.18 \pm 0.490$  out of 5 points. Finally, the analysis of paternal role confidence showed a total score of  $39.93 \pm 6.579$  out of 5 points (Table 2). The results of the correlation analysis between positive parenting behaviors, parenting stress, and paternal role confidence are shown in Table 2. Additionally, this study identified that further analysis on predictive factors of paternal role confidence is needed, especially to support the development of targeted interventions. It was found that the dependent variables, paternal role confidence and positive parenting behaviors (r = -0.431, p < 0.001) and parenting stress (r = 0.523, p < 0.001) all had significant correlations.

### 3.3 Differences test based on general characteristics

The results examined differences based on participants' general characteristics through one-way ANOVA and Scheffe's *post-hoc* analysis, as shown in Table 3. First, significant statistical differences were found in paternal positive parenting behavior (F(2, 177) = 4.133, p = 0.017) and parenting stress (F(2, 177) = 4.367, p = 0.013). According to the *post-hoc* analysis, the positive parenting behavior score for fathers in their 20s was  $86.54 \pm 15.92$ , while it was higher for those in their 40s or older, with a score of  $96.26 \pm 16.76$ . Regarding parenting stress, fathers in their 30s exhibited lower parenting stress with a score of  $36.64 \pm 9.74$ , indicating that as the father's age increases, they appear to be more sensitive to child-rearing.

Regarding the child's age in months, significant statistical differences were observed in both positive parenting behavior (F(2, 177) = 26.576, p < 0.001) and parenting stress (F(2, 177) = 5.903, p = 0.003). *Post-hoc* analysis indicated that as the child's age in months increased, so did the levels of positive parenting behavior, and similarly, parenting stress also increased with the child's age.

In terms of monthly income, a statistically significant difference was found in positive parenting behavior (F(2, 177)= 3.882, p = 0.022); however, no significant differences were identified between groups in the *post-hoc* analysis.

### 3.4 Impact of positive parenting behavior and parenting stress on paternal role confidence

A multiple linear regression analysis was conducted to determine the relationship between positive parenting behavior,

Variables	Content	Frequency	Percentage
Father's A	ge		
	20s	37	20.6
	30s	101	56.1
	40s and above	42	23.3
	(Mean $\pm$ SD)	34.91	$\pm 5.910$
Number of	f Children		
	1	100	55.6
	2	71	39.4
	3 or more children	9	5.0
Child's Ag	ge		
	Less than 12 mon	82	45.6
	Between 12 and 36 mon	60	33.3
	Between 36 and 96 mon	20	11.1
	Over 96 mon	18	10.0
	(Mean $\pm$ SD)	328.52	$\pm 39.649$
Monthly In	ncome		
	Less than 2 million KRW	26	14.5
	Between 2 million and 3 million KRW	41	22.8
	Between 3 million and 4 million KRW	52	28.9
	Between 4 million and 5 million KRW	20	11.1
	Over 5 million KRW	41	22.8

TABLE 1. General characteristics of the study participants (N = 180).

SD: Standard Deviation.

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Research Variables	Mean	Standard Deviation	Positive parenting behavior	Parenting Stress	Paternal Role Confidence
Positive parenting behavior	92.93	16.099	1.000		
Parenting Stress	38.18	0.490	-0.431 (<0.001)***	1.000	
Paternal Role Confidence	39.93	6.579	0.523 (<0.001)***	-0.499 (<0.001)***	1.000

\*\*\**p* < 0.001.

The symbol \*\*\* is used to denote different thresholds of significance:

•  $p < 0.001^{***}$ : Extremely significant results. The probability of the result occurring by chance is less than 0.1%.

parenting stress and paternal role confidence, as shown in Table 4. The results of checking for multicollinearity among the independent variables showed that the tolerance values were above 0.1, and the Variance Inflation Factor (VIF) values were below 10, indicating no issues with multicollinearity. Additionally, to verify the basic assumptions regarding the error term, the Durbin-Watson (D-W) value was 1.879, confirming that there is no problem with autocorrelation among the error terms.

To examine the influence of positive parenting behavior and parenting stress on paternal role confidence, a multiple linear regression analysis was conducted. The results showed that both positive parenting behavior ( $\beta = 0.434$ , p < 0.001) and parenting stress ( $\beta = -0.397$ , p < 0.001) had significant on paternal role confidence. Positive parenting behavior had a positive (+), while parenting stress had a negative (-).

### 4. Discussion

This study is a descriptive survey research conducted with 180 fathers of young children to identify the factors influencing paternal role confidence. It examined positive parenting behavior, parenting stress, and paternal role confidence, as well as the differences according to general characteristics. Unlike causal studies, this research focused on exploring associations between variables to provide foundational data for developing early childhood parenting programs. The cross-sectional design of the study limits causal inference, but it offers valuable insights into relationships among the examined factors.

The findings obtained from this study are discussed as follows:

	TABI	<b>E 3. Difference</b>	test accord	ling to the gener <b>រ</b>	al characteristics	of the par	ticipants.			
Variables	Content	Positive parenting behavior		Parenting Stress			Paternal Role Confidence			
		$M\pm SD$	F	р	$M\pm SD$	F	р	$M\pm SD$	F	р
Father's A	ge									
	20s	$86.54 \pm 15.92$		4.133 $\begin{array}{c} 0.017^{*} \\ (a < c) \end{array} \qquad 36$	$38.49\pm9.05$		0.013* (b < c)	$51.51\pm6.74$	0.152	
	30s	$93.89 \pm 15.39$	4.133		$36.64\pm9.74$	4.367		$51.93\pm 6.87$		0.858
	40s and above	$96.26\pm16.76$			$41.64\pm8.07$		( <b>0</b> < <b>0</b> )	$52.33\pm5.79$		
Number of	f Children									
	1	$92.13\pm16.52$			$38.41 \pm 9.16$			$51.84\pm6.56$		
	2	$93.97 \pm 15.46$	0.279	0.755	$38.04\pm10.23$	0.121 0.88	0.885	$52.21\pm6.69$	0.185	0.830
	More than 3	$93.67 \pm 17.63$			$36.89\pm5.16$			$50.89 \pm 6.51$		
Child's Ag	ge									
	Less than 12 mon	$85.71\pm13.72$			$35.39\pm8.75$		0.003** (a < c, d)	$52.84\pm 6.03$	0.993	
	Between 12 and 36 mon	$92.45\pm15.84$	26.576	<0.001*** (a < b < c, d)	$39.23\pm8.96$	5.903		$51.33\pm6.15$		0.368
	Between 36 and 96 mon	$109.00\pm7.76$	20.370		$43.05\pm9.82$	5.905		$51.20\pm8.88$		0.308
	Over 96 mon	$109.61\pm6.65$			$42.06\pm9.79$			$50.67\pm7.44$		
Monthly Ir	ncome									
	Less than 2 million KRW	$93.69 \pm 11.78$		2 0.022*	$37.39 \pm 11.52$		0.415	$52.96 \pm 5.07$	1.617	
	Between 2 million and 3 million KRW	$89.49 \pm 15.38$			$36.63\pm8.32$			$52.37\pm5.84$		0.198
	Between 3 million and 4 million KRW	$90.65\pm16.33$	3.882		$38.98 \pm 8.31$	0.875		$51.62\pm7.97$		
	Between 4 million and 5 million KRW	$90.65\pm19.10$			$36.80\pm10.24$			$48.75\pm8.34$		
	Over 5 million KRW	$99.90 \pm 15.86$			$39.93\pm 9.92$			$52.83\pm4.75$		

TABLE 3. Difference test according to the general characteristics of the participants.

\*\*\*p < 0.001, \*\*p < 0.01, \*p < 0.05.

M: Mean; SD: Standard Deviation.

a, b, c, d: Superscripts a, b and c indicate significant differences between groups based on (test name) (p < 0.05). d represents an outlier identified during data analysis.

Model	Unstandardized Coefficient		Standardized Coefficient	t	F(df1, df2)	Collinearity Statistics	
(Constant)	B 0.860	S.E. 0.212	β	4.057***	F(2, 177) = 26.994, $p <$ 0.001	Tolerance	VIF
Positive parenting behavior Parenting Stress $R^2 = 0.206$ , adj- $R^2 = 0.197$ , D-W = 1.879	0.349 0.322	0.047 0.057	0.434 -0.397	7.426*** -5.649***		0.969 0.859	1.033 1.165

\*\*\*p < 0.001. df: Degrees of Freedom; adj- $R^2$ : Adjusted Coefficient of Determination; B: Unstandardized Coefficient; S.E.: Standard Error; VIF: Variance Inflation Factor; D-W: Durbin-Watson Statistic.

First, the differences in positive parenting behavior, parenting stress, and paternal role confidence according to the general characteristics of fathers with young children were examined. These differences indicate that age-related factors may influence positive parenting behavior and stress, suggesting that younger fathers might require different support structures compared to older fathers. Interestingly, fathers over 40 years demonstrated higher levels of both paternal role confidence and parenting stress, revealing a paradoxical relationship. This may be due to increased life responsibilities, such as financial and career pressures, which older fathers typically face. While their life experience and confidence in parenting are strengthened, these same factors could contribute to heightened stress levels. Addressing this duality through tailored interventions is critical for fostering balanced parenting. These findings are consistent with prior research, such as Park's [19] longitudinal studies, which highlight how positive parenting behaviors adapt over time based on child developmental stages. Differences in positive parenting behaviors and stress levels were also observed based on the child's developmental stage, emphasizing the dynamic nature of parenting experiences.

Second, the correlation between positive parenting behavior, parenting stress, and paternal role confidence was analyzed. A positive correlation between paternal role confidence and positive parenting behavior (r = 0.431, p < 0.001) and a negative correlation between paternal role confidence and parenting stress (r = -0.523, p < 0.001) were identified. This aligns with findings by Choi and Kim [20], who reported that paternal attachment positively influences positive parenting behaviors and confidence. Similarly, Hyun's [21] work highlights the structural and social barriers that affect paternal confidence, such as limited workplace flexibility and reduced direct parenting involvement. In this context, understanding the role of external support systems, such as employerprovided parenting programs and community-based networks, becomes essential. For fathers over 40, specific interventions that focus on stress management and time flexibility could bridge the gap between confidence and stress, enabling more effective parenting behaviors.

Third, the factors influencing paternal role confidence were analyzed. Positive parenting behavior ( $\beta = 0.434$ , p < 0.001) and parenting stress ( $\beta = -0.397$ , p < 0.001) were both signif-

icant predictors of paternal role confidence. These findings support practical interventions, such as workplace policies promoting parenting support or community-based programs to reduce stress and enhance father-child interactions. Additionally, given the unique challenges faced by older fathers, tailored interventions such as peer support groups and stress management workshops could directly address their needs. These initiatives could improve not only their parenting confidence but also their overall well-being, reflecting the broader importance of paternal mental health in effective parenting. The emphasis on tailored interventions reflects prior research advocating for father-specific educational programs [21].

Unlike the results section, the discussion here avoids redundancy by interpreting the findings within the context of existing literature and practical applications. For instance, the relationships between parenting stress, positive behaviors, and paternal confidence are expanded with real-world implications, such as the role of community or workplace interventions. This ensures that the discussion contributes novel insights rather than repeating the results.

All references to findings related to new mother participants have been removed to ensure the discussion remains focused on fathers of young children, consistent with the study's objectives.

This study has several limitations. First, its cross-sectional design restricts causal inference. While associations were identified, the study cannot establish directional relationships among the variables. Second, the inclusion criteria discrepancy, where 20% of the sample included fathers with children older than 3 years, introduces variability. Third, 5% of missing data, though managed using multiple imputation, may still contribute to minor biases. Fourth, the absence of adjusted regression models limits the precision of findings by not adequately controlling for potential confounders. Future studies should incorporate multivariate models to provide more reliable estimates of the independent contributions of parenting stress and behaviors to paternal confidence. Lastly, self-reported survey data may be subject to response bias.

Future research should focus on integrating both qualitative and quantitative approaches to explore the complexities of paternal role confidence. Specifically, longitudinal designs combined with in-depth interviews can help clarify the evolving nature of paternal confidence, particularly for older fathers. Interventions such as stress reduction programs, skill-building workshops, and community engagement activities targeting different age groups of fathers could also provide robust, actionable insights. Finally, refining predictive models and addressing multicollinearity among variables will strengthen future analyses, ensuring more precise and actionable recommendations.

### 5. Conclusions

This study aimed at identifying the factors influencing paternal role confidence in fathers of young children by investigating the correlation between positive parenting behavior and parenting stress. The study highlights the need for a multidimensional approach to understanding paternal role confidence, including the roles of demographic, behavioral, and psychological factors. Rather than restating detailed results, the conclusion focuses on the broader implications of these findings and their relevance to enhancing paternal role confidence in practice.

First, parenting stress emerged as a critical area for intervention, emphasizing the importance of reducing stress to improve positive parenting behaviors and paternal confidence. Notably, fathers over 40 years of age exhibited higher confidence but also reported increased stress levels, highlighting the dual challenges faced by this group. Tailored strategies, such as stress management workshops, peer support groups, and workplace flexibility initiatives, are essential for addressing these unique needs. These programs can enable older fathers to leverage their confidence while mitigating stress, fostering more effective parenting practices.

Second, this study underscores the significance of considering contextual factors such as the child's developmental stage and the father's economic background when designing interventions. Tailored approaches are necessary to address the diverse needs of fathers, particularly those from varying socioeconomic conditions. For example, low-income fathers may benefit from subsidized parenting programs or financial counseling, while fathers of younger children might require education on early developmental milestones.

Finally, the study highlights the need for integrated parenting programs that involve both mothers and fathers. Such programs should be supported by robust infrastructure, including accessible community resources and workplace accommodations, to create an environment that encourages active paternal involvement. Programs specifically designed for fathers, such as hands-on parenting workshops and community networking events, can enhance paternal role confidence while promoting collaborative parenting dynamics. By implementing these strategies, paternal role confidence can be enhanced, contributing positively to the development and well-being of young children.

While this study provides valuable insights, its reliance on survey methods suggests the need for future qualitative research to explore the nuanced experiences of fathers. Longitudinal studies are particularly needed to examine how paternal confidence evolves in response to changing life stages, career pressures, and family dynamics. For fathers over 40, such studies could reveal how their unique challenges and strengths interact over time, providing data to refine intervention strategies. These approaches would help refine interventions and create a more holistic understanding of paternal role confidence.

#### **AVAILABILITY OF DATA AND MATERIALS**

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

### **AUTHOR CONTRIBUTIONS**

MJK, SYP, JHC, HNC, JWS—designed the study and carried them out, prepared the manuscript for publication and reviewed the draft of the manuscript; interpreted the data. MJK, SYP, JHC, HNC—supervised the data collection, analyzed the data. All authors have read and approved the manuscript.

### ETHICS APPROVAL AND CONSENT TO PARTICIPATE

This study was approved by the Clinical Trial Review Committee of Catholic Kwandong University, Korea (IRB No: CKU-24-02-0501). Informed consent was obtained from all participants involved.

### ACKNOWLEDGMENT

Not applicable.

### FUNDING

This research received no external funding.

### **CONFLICT OF INTEREST**

The authors declare no conflict of interest.

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How to cite this article: Myeong Jong Kim, Sang Yong Park, Ji Hyun Choi, Ha-Na Cho, Jeong Woon Seo. Factors influencing the confidence of fathers in their paternal role during early childhood. Journal of Men's Health. 2025; 21(2): 84-91. doi: 10.22514/jomh.2025.025.