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The role of parenting stress on parenting self-efficacy and parental burnout among Turkish parents: a moderated mediation model

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Abstract

Objective Parental burnout is a significant problem that negatively effects parent-child interaction, parenting skills, and child well-being. Research has identified parenting stress as one of the leading factors in parent burnout. Although crucial connections have been explained between parenting stress and parental burnout, not much is known about how parenting self-efficacy operates in these relationships. This study aims to investigate the roles of parenting self-efficacy and number of children in the relationship between parenting stress and parental burnout.

Methods The participants consist of a total of 456 parents ($M_{\text{age}} = 35.64 \pm 9.28$, Range = 25–65 years). The data were collected using a personal information form, the Parenting Stress Scale, the Parental Burnout Scale and the Parenting Self-Efficacy Scale. Relationships among variables were examined using Pearson's correlation, while moderated mediation analysis was carried out using Hayes's bootstrapping.

Results The correlation analyses reveal a negative relationship between parenting self-efficacy and parenting stress, between parenting self-efficacy and parental burnout, and between parenting self-efficacy and number of children, while a positive significant relationship was found between parenting stress and parental burnout. The mediation analyses show parenting self-efficacy to mediate the correlation between parenting stress and parental burnout. The mediating effect of parenting self-efficacy is also moderated by number of children.

Conclusions This study provides empirical evidence for the effect of parenting stress and parenting self-efficacy on parental burnout, with fewer children in the household alleviating parental burnout.

Keywords Parenting stress, Parenting self-efficacy, Parental burnout, Number of children

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Introduction

Developments in family life have caused a variety of changes in parental life over the last few decades, and these changes have brought about various family problems, parental burnout being one of these. Research shows that one in 20 parents experience parental burnout [1]. Parents may experience parental burnout when they are unable to cope with challenging life events, and parental burnout can have negative consequences such as parental neglect, parental violence, sleep disturbance, and problematic alcohol use [2]. This evidence suggests that parental burnout negatively affects family members' lives.

An imbalance between the resources that reduce parenting stress and the factors that increase it leads to parental burnout [3]. Parenting stress can be defined as the tension and strain experienced by parents when interacting with their children [4]. Parental burnout can also occur as a result of prolonged uncertainty regarding parental roles in child rearing [5]. The literature contains cross-sectional and longitudinal studies demonstrating relationships among psychopathological behaviors, negative experiences, and parental burnout [6]. Individualism can be said to have come to the fore with globalization and is known to be an important factor that increases parental burnout in individualistic societies such as the United States of America, Germany, and Canada. However, the literature on parental burnout in Türkiye, which is considered a collectivist culture, is limited [7, 8]. In this context and due to the complex nature of parenting culture, this study focuses on examining the factors influencing parental burnout among Turkish parents.

The relationship between parental burnout and parenting stress has been the focus of research in the literature. However, no study was found to have examined parenting stress, parental burnout, and parenting self-efficacy (PSE) together. This study was conducted to address this gap in the literature. One of the factors that reduces parenting stress is PSE [4], whereas psychological resilience and self-compassion are two of the factors that prevent parental burnout [9, 10]. PSE refers to parents' subjective perception of their own adequacy and effectiveness in raising their child. PSE may explain in the relationship between parenting stress and parental burnout. It is crucial to understand the indirect impact of PSE on the correlation between parenting stress and parental burnout. Given that PSE can be employed in family-oriented interviews and therapeutic interventions as a protective factor against parental burnout, Furthermore, an understanding of the moderating effect of the number of children on this relationship may inform strategies to enhance PSE. Accordingly, parenting stress has been hypothesized to predict parental burnout. Reducing parenting stress and increasing PSE are also predicted to be able to be a useful

strategy for reducing parental burnout. In addition, the number of children is thought to be able to lead to a decrease in PSE's effect on parental burnout. Accordingly, these hypotheses summarize the research on parenting stress and parental burnout, with PSE as a mediating variable. Moreover, number of children is presented as a moderating variable in the relationship between PSE and parental burnout.

Parenting stress and parental burnout

Parenting stress is defined as a tension that involves physiological and psychological reactions to adapting to the challenges of raising children [11–13]. Parenting stress reflects systematic processes in the family system with mutual triggers such as inconsistency between spouses and parent-child conflict [4]. Parenting stress can be attributed to negative interactions between parents and their offspring, in addition to an inability to fulfill the responsibilities of the parenting role effectively [12, 14]. The construct of parenting stress is associated with a number of factors, including child and parent characteristics, as well as the specific role of parenting itself. It is a significant predictor of a number of problematic outcomes, including dysfunctional parenting, parental behavior problems, and child adjustment difficulties [13, 14]. Parenting stress and parental burnout have been shown to be able to decrease quality of life and stress to increase parental self-questioning. Parenting stress is also seen to be related to low PSE, self-blame, and child abuse [8, 15]. Parenting stress negatively affects parent-child interactions, parenting skills, and the child's well-being [16–18]. Parents being exposed to parenting stress leads to parental burnout in the long term [5, 15].

Parental burnout is a disorder defined as emotional detachment from the parenting role. Parental burnout is characterized by four symptoms: emotional exhaustion regarding one's parenting role, emotional detachment from the children, boredom and loss of pleasure, and a contrast with their previous parental self [1]. Emotional exhaustion refers to becoming bored with the role of mother or father, while emotional detachment from children indicates a weakening of the emotional bond with children. Boredom and loss of enjoyment involve a lack of life satisfaction and a desire to be finished with parenting, whereas contrast with their previous parenting self involves distancing oneself from their past parenting roles [3]. Parents, children, and couples all suffer from parental burnout. Children may experience neglect and violence, while couples may experience parental conflict and parent-child conflict. Parents may experience harmful consequences such as thoughts of leaving home, suicidal thoughts, addiction, sleep disorders, and physical health problems [19]. Research indicates that self-compassion and self-efficacy serve as primary protective

factors against parental burnout [9, 10]. Therefore, parental burnout can be said to occur as a result of prolonged exposure to stress, and parental burnout can be claimed to damage parents' familial relationships.

The balance risks and resources theory (BR²) explains the relationship between parenting stress and parental burnout. The BR² model states that parental burnout occurs as a result of insufficient resources and increasing parenting stress [2, 8]. BR² hypothesizes that burnout results from high stress and low parenting skills. The model suggests that an imbalance between resources (protective factors) and the expected demands of parenting (risk factors) lead to parental burnout. BR² assumes that parental burnout is due to parenting stress and a lack of parenting skills or self-efficacy [2, 5, 15]. The social cognitive (SC) theory developed by Bandura [20] suggests that parenting stress is closely linked to PSE. In light of these considerations, it may be posited that PSE and parenting stress are negatively correlated. Fang et al. [21] demonstrated a correlation between PSE and parenting stress. In the context of the BR² and SC models, parents' experience with intense stress can be stated as a risk factor, and PSE being a protective factor can lead to parental burnout when insufficient. With this in mind, the following hypotheses were formulated:

H₁: *Parenting stress positively predicts parental burnout.*

H₂: *Parenting stress negatively predicts PSE.*

Parenting self-efficacy as a Mediator

PSE is defined as parents' self-referenced estimates of their competence in the parenting role or parents' perceptions of their ability to positively influence their children's behavior and development [22]. Research reveals parental self-efficacy to be associated with different concepts, with high parenting stress levels and authoritarian or permissive parenting styles being connected to low levels of PSE [23–25]. On the other hand, high PSE is related to democratic parenting style, high parent-child communication, and parental well-being [21, 24, 26]. Furthermore, longitudinal and experimental studies have demonstrated the existence of a causal relationship between PSE, parenting behaviors and children's behaviors [20, 27, 28]. A parent's ability to provide quality parenting may be impacted by risk factors. As demands on the parent increase and their resources diminish, fulfilling their parenting responsibilities may become challenging [25].

PSE stems from Bandura's [20] SC theory, which suggests that individuals can perceive themselves as competent. The theory emphasizes PSE to be characterized by the ability to undertake parenting tasks and by making an effort to solve family problems; self-efficacy also

helps one experience less feelings of helplessness [20]. SC theory helps explain how parenting stress relates to PSE. According to this theory, PSE and parenting stress arise from the same experiential context. Parenting stress brings about the possibility of changing PSE over time. Although evidence is found that PSE is linked to the child-rearing process [27], the fact that this change has not yet been demonstrated to be related to parenting stress forms an important problem. Accordingly, parenting stress may reduce PSE, and increasing PSE may prevent parental burnout. In this sense, PSE is assumed to mediate the parenting stress-parental burnout relationship. Therefore, the following hypotheses have been developed:

H₃: *PSE negatively predicts parental burnout.*

H₄: *PSE mediates the parenting stress-parental burnout relationship.*

Number of children as a moderating variable

The number of children is among the parental workload factors associated with parental burnout. As the number of children in a household increases, the time, effort, and resources that a parent must devote to each child may become insufficient. Hence, the number of children may increase parental stress [29]. Research has suggested number of children to be a risk factor for parental burnout in individualistic cultures but to be a protective factor against parental burnout in collectivist cultures [28, 30]. In collectivist cultures, more children can be associated with happiness, emotional support, and resilience [7, 31]. In Turkish society, which is seen as a collectivist culture [7, 8], the number of children may help explain to PSE's effect on parental burnout. In Türkiye, social norms and values are shaped by traditional cultural beliefs and a collectivistic mindset. The individual's role within the larger social group tends to be more prominent than the individual's pursuit of personal interests and goals, reflecting the country's cultural heritage [7]. According to the 2023 data published by the Turkish Statistical Institute, 26% of Türkiye's population is comprised of children [32]. It is essential to be aware of the number of children in a family unit, given that the roles played by each family member may differ depending upon the number of children. The number of children may influence the risk of parental burnout and PSE. In a collectivist culture, as defined by Hofstede et al. [7], children serve as the primary source of financial security for their parents in their later years. Furthermore, children are socialized to think in terms of the collective "we." Additionally, the presence of multiple children in a family may positively influence the subjective well-being of older parents, as indicated by increased life satisfaction or reduced depressive symptoms [31]. In

light of the aforementioned, the number of children in a family may be associated with PSE and parental burnout. It can be posited that PSE may be a more robust indicator of parental burnout in the case of parents with more children. The number of children a parent has can influence their self-efficacy. Conversely, the presence of an excessive number of children may also contribute to the development of parental burnout. Consequently, the negative correlation between PSE and parental burnout may be exacerbated by the presence of additional children. Thus, the following hypothesis was formulated:

H₅: Number of children has a moderating role in the indirect relationship between parenting stress and parental burnout via PSE.

The Present Study

Although an association between parenting stress and parental burnout has been described, little is known about the effect of PSE in this link. This study was conducted with the following research question: How does number of children moderate PSE’s indirect effect on the parenting stress-parental burnout relationship? The study examines the relationships among the variables using the moderating mediation model within the framework of SC theory and the BR² theory. This research is considered to be particularly important as it has been carried out to fill this gap in the field.

The moderated mediation model assumes a relationship to exist between parenting stress and parental burnout (H1), as well as between parenting stress and PSE (H2). Furthermore, the model suggests the presence of the PSE -parental burnout relationship (H3). PSE is also proposed to serve as a mediator between parenting stress and parental burnout (H4), with number of children moderating the indirect parenting stress-parental burnout relationship through PSE (H5). Figure 1 presents the hypothesized model.

Method

Participants

The study involved parents from a province with a low socio-economic status in the Southeastern Anatolia region of Türkiye. A power analysis was employed to analyze the relationships between the variables. For the purposes of power analysis, the following values were calculated: $\alpha=0,05$, effect size= $0,10$, and power level= $0,90$. Consequently, the requisite number of participants was determined to be 415. The study was conducted on 456 participants. This result indicates that the sample size is sufficient. The study reached 456 parents with children in primary or secondary school using simple random sampling. Simple random sampling is a method in which each person in the population has an equal probability of being selected [33]. Table 1 shows the participants’ demographic characteristics.

As shown in Tables 1, 67.1% of the participants are female. The ages of the participants range between 25 and 65 years ($M_{age}=35.64\pm 9.28$). Of the participants, 25.7% have a high school and 31.1% a university. According to the variable of perceived income level, 59.40% of the participants have a medium perceived socioeconomic status. Regarding the variable of number of children, 34.6% of the participants have more than three children. Of the participants, 89.6% are parents with children with children residing in the family environment. Family environment refers to the family members living together in the dwelling.

Procedure

The study received approval from the Siirt University Ethics Committee in Türkiye (decision date and number: 4977). Parents were invited to participate in the study through online links such as social media and social networks. All the participants received informed consent before the execution of the research. A link was sent via Google Forms to parents who volunteered to participate

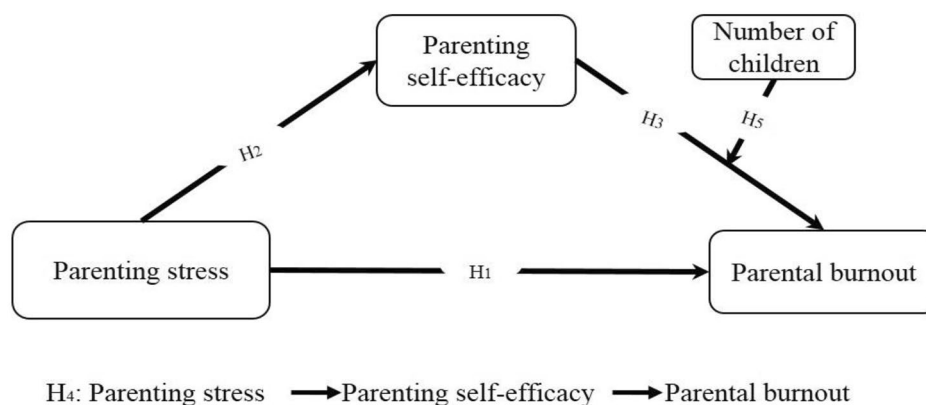


Fig. 1 The hypothesized model

Table 1 Participant demographics

		f	%	M	SD
Gender	Female	306	67.1		
	Male	150	32.9		
Age				35.64	9.28
Education Level	Elementary School	123	26.6		
	Middle School	67	14.7		
	High School	117	25.7		
	University	142	31.1		
	Master's or PhD	7	1.5		
Perceived Income Level	Low	91	20.0		
	Middle	271	59.4		
	High	94	20.6		
Number of children	One child	108	23.7		
	Two children	114	25.0		
	Three children	76	16.7		
	More than three children	158	34.6		
Household environment	Co-parents with child/children	409	89.6		
	Single parents with child/children	23	5.1		
	Step-parents with child/children	3	0.5		
	Grandparents with child/children	21	4.6		

in the study and whose children were in elementary and middle school. Parents were assured that the information would remain private. Data were collected between June-September 2023. The order of scales was changed to collect healthy data during the implementation phase. A total of 456 parents who'd agreed to participate in the study filled out the form, which required about 20 min to complete.

Measures

Parental Burnout Assessment (PBA)

The purpose of the PBA, developed by Roskam et al. [1], was to measure parental burnout. The 23-item scale was introduced to Turkish culture by Arikan et al. [4] and consists of four dimensions: emotional exhaustion, contrast with previous parental self, feeling of being fed up, and emotional distancing. The PBA is a 7-point Likert scale where items score between 0 (never) and 6 (every day). Scores between 8 and 40 can be obtained from the scale. The mean parental self-efficacy score on a 7-point Likert scale was found to be 18.65. High scores on the scale indicate that parents are exhausted regarding their parenting role. Sample items of the scale are as follows: *I have the sense that I'm really worn out as a parent* and *My role as a parent uses up all my resources*. The goodness-of-fit indices for the Turkish version were found to be at a good level ($\chi^2/df=2.43$, $RMSEA=0.05$, $SRMR=0.07$, $AGFI=0.91$, $CFI=0.91$, $GFI=0.93$). Cronbach's alpha of

internal consistency for the sub-dimensions and overall scale are 0.93, 0.93, 0.90, 0.86, and 0.96, respectively.

Parenting self-efficacy scale

The scale was developed by Guimond et al. [34] and adapted into Turkish by Cavkaytar et al. [35]. It has 17 items and is one-factor. The scale assesses the degree to which parents demonstrate efficacy in their role of raising their children, particularly in the domains of family, school, and social-emotional development. High scores on the scale show that parents are competent in their parenting role. The measurement tool is a 7-point Likert scale ranging from "strongly disagree" (1) to "strongly agree" (7). Scores between 17 and 119 could be gathered from the scale. The mean parental self-efficacy score on a 7-point Likert scale was found to be 99.38. Sample items of the scale are as follows: *I can research and find appropriate education/therapy for my child* and *I can share my concerns with my child's therapist or teacher when necessary*. The item-total correlations of the scale exhibited a range of 0.52 to 0.83, while the factor loadings of the scale were found to range from 0.55 to 0.86. Cronbach's alpha for the scale was found to be 0.95.

Parenting stress scale

This scale was developed by Kaymak-Özmen and Özmen [36] with the aim of measuring parents' experienced stress in their relationship with their children. The scale is

designed to assess the stress that parents with school-age children experience as a consequence of the challenges they encounter in their daily lives. The scale consists of 16 items. The measure is a 5-point Likert scale whose scores range from “never” (1) to “always” (4). Scores on the scale range from 16 to 56. The mean parental self-efficacy score on a 7-point Likert scale was found to be 28.10. High scores on the scale indicate that parents are experiencing stress related to their parenting role. The scale has no reverse-scored items. Sample items of the scale are as follows: *I find myself inadequate in educating my child* and *I think I am a failed mother/father*. Confirmatory factor analysis (CFA) results show a good model fit for the scale ($\chi^2/df=2.43$, $RMSEA=0.05$, $RMR=0.03$, $AGFI=0.91$, $CFI=0.91$, $GFI=0.93$). Cronbach’s alpha of internal consistency for the scale was found to be 0.85.

Demographics

The demographic information form includes key personal details about gender, age, number of children, maternal/paternal age, perceived socio-economic status, education level, and household.

Statistics analysis

First, the data were analyzed in terms of the assumptions of normality. Accordingly, all variables were determined to fall within the ± 1.5 range [37], thus meeting the normality assumptions. Pearson’s correlation was then calculated to analyze the relationships among the variables. Third, the variables were evaluated for multicollinearity. As a general rule, tolerance values of less than 0,10, variance inflation factors (VIFs) of less than 10, and condition indexes of less than 30 were used to avoid multicollinearity problem [38]. Thus, we did not encounter multicollinearity problem. Fourth, investigated the potential moderating effect of the number of children on PSE. The significance of the predictive coefficients obtained in the moderated mediating model was assessed

using bootstrap analysis [39]. Thus, we accepted PSE as a mediator variable, number of children as a moderator variable, and parent gender and school level of the child as control variables in the relationship between parenting stress and parental burnout. Bootstrapping was performed with 10,000 resampling paths at a 95% confidence interval (CI). For mediation to be interpreted as significant, the criterion was taken into consideration that confidence intervals should not include zeroes [39]. IBM SPSS version 27 and Hayes’ PROCESS Macro 4.2 package programs were used to analyze the data.

Results

Correlation analysis

The analysis measured Pearson correlation values to determine the variables’ relationships in the study. Table 2 presents the results regarding the descriptive statistics and correlations between variables.

As seen in Table 2, number of children and PSE were found to have a significant negative relationship ($r = -.13$, $p < .01$). In addition, a significant positive correlation exists between parenting stress and parental burnout ($r = .44$, $p < .01$). Furthermore, a significant negative correlation was found for PSE with both parenting stress ($r = -.33$, $p < .01$) and parental burnout ($r = -.45$, $p < .01$). Accordingly, PSE is negatively related to parenting stress and parental burnout, while parenting stress is positively related to parental burnout. Therefore, H1, H2, and H3 were accepted.

Moderated mediating analysis

After significant relationships were observed among the study variables, the moderated mediating role of parenting self-efficacy and number of children in the parenting stress-parental burnout relationship were examined. Table 3 presents moderated mediational analysis.

As seen in Table 3, the direct effect between parenting stress and PSE was significant ($\beta = -0.78$, $p < .001$, 95% CI

Table 2 Descriptive statistics and correlation analyses

	1	2	3	4	5	6	7	8
1.Number of Children								
2. Parenting Stress	0.03							
3.Parenting Self-Efficacy	-0.13*	-0.33*						
4. Parental Burnout	0.02	0.44*	-0.45*					
5.EX	0.01	0.46*	-0.45*	0.99*				
6.CO	-0.05	0.47*	-0.46*	0.86*	0.90*			
7.ED	0.08	0.29*	-0.27*	0.83*	0.78*	0.43*		
8.FU	0.06	0.34*	-0.41*	0.94*	0.90*	0.65*	0.93*	
M	1.27	28.10	99.38	18.66	7.23	4.17	3.06	4.18
SD	0.82	7.85	18.67	16.10	6.23	4.33	2.99	3.93
Skewness	-0.55	0.58	-1.14	0.55	0.55	0.90	0.99	0.72
Kurtosis	-1.30	0.12	0.52	-0.86	-0.85	-0.15	0.73	-0.49

M=Mean, SD=Standard deviation, * = $p < .01$, EX=emotional exhaustion, CO=contrast with previous parental self, FE=feeling of being fed up, ED=emotional distancing

Table 3 Moderated mediational analysis

Variables	M (Parenting Self-Efficacy)					Y (Parental Burnout)						
	β	SE	t	p	LLCI	ULCI	β	SE	t	p	LLCI	ULCI
X (Parenting stress)	-0.78	0.10	-7.46	<0.001	-0.98	-0.57	0.69	0.08	8.13	<0.001	0.52	0.86
C (Parent's gender)	-0.37	1.75	-0.21	>0.05	-3.81	3.06	0.52	1.34	0.39	>0.05	-2.11	3.17
C (School level of child)	-2.06	0.67	-3.08	<0.05	-3.38	-0.75	0.18	0.56	0.32	>0.05	-0.93	1.29
M (Parenting self-efficacy)							-0.29	0.03	-8.20	<0.001	-0.36	-0.22
W (Number of children)							-0.85	0.84	-1.01	>0.05	-2.50	0.84
M*W (Parenting self-efficacy* Number of children)							0.12	0.04	2.96	<0.01	0.04	0.20
	$R = .35, R^2 = 0.12$					$R = .56, R^2 = 0.31$						
	$F_{(6, 452)} = 21.57, p < .001$					$F_{(6, 449)} = 34.41, p < .001$						

[-0.98, -0.57]). Furthermore, the effect of the covariates of school level of the child on PSE was found to be significant ($\beta = -2.06, p < .01, 95\% \text{ CI } [-3.38, -0.75]$). However, the covariates of parent's gender no significant effect on PSE ($\beta = -0.37, p > .05, 95\% \text{ CI } [-3.81, 3.06]$). Accordingly, it was found the variables to explain 12% of the variance in PSE and is therefore significant ($F_{(3, 452)} = 21.57, p < .001$).

The study then examined the role of number of children in parenting stress-parental burnout relationship through PSE. The non-standardized direct effect between parenting stress and parental burnout was determined to be significant ($\beta = 0.69, p < .001, 95\% \text{ CI } [0.52, 0.86]$). In addition, the effect of PSE on parental burnout was found to be significant ($\beta = -0.29, p < .001, 95\% \text{ CI } [-0.36, -0.22]$). However, the effect of number of children on parental burnout was found to not be significant ($\beta = -0.84, p > .05, 95\% \text{ CI } [-2.50, 0.80]$). Furthermore, the effect of the covariates of parent's gender ($\beta = 0.52, p > .05$), and school level of the child ($\beta = 0.18, p > .05$) on parental burnout was not significant. Moreover, the effect of number of children on parental burnout via PSE was found to be significant ($\beta = 0.12, p < .01, 95\% \text{ CI } [0.04, 0.20]$). Thus, it was found the variables to explain 31% of the variance in parental burnout and thus is significant ($F_{(6, 449)} = 34.41, p < .001$). Thus, H4 was supported.

In the study, Model 14 of the Process Macro was calculated to reveal the moderating effects of the number of children. The study analyzed number of children's moderating role in parenting stress-parental burnout relationship through PSE, with Table 4 presenting the results of the conditional indirect effects of PSE on parental burnout.

As seen in and Fig. 2; Table 4, the interaction "PSE*number of children" was a significant predictor of parental burnout. The results regarding the mediation index are significant ($\beta = -0.09, p < .001, 95\% \text{ CI } [-0.16, -0.03]$). Accordingly, number of children has a moderating effect in parenting stress' indirect effect on parental burnout through PSE. Hence, H5 was confirmed.

The study examined the conditional effects of PSE at three levels: -1 SD, at the mean, and +1 SD. The results indicated that the conditional effect of PSE on the relationship between parenting stress and parental burnout was significant at low levels ($\beta = 0.30, p < .001, 95\% \text{ CI } [0.21, 0.42]$), medium levels ($\beta = 0.23, p < .001, 95\% \text{ CI } [0.15, 0.32]$) and high levels ($\beta = 0.16, p < .001, 95\% \text{ CI } [0.07, 0.26]$). The graph illustrates that higher levels of PSE are associated with lower levels of parental burnout, particularly when parents have fewer children. A negative predictive effect of PSE on parental burnout was observed for a slope of -1 SD. For a slope of mean, PSE has a significant negative predictive effect on parental burnout; however, the predictive effect is slightly weaker.

Table 4 Conditional indirect effects of PSE on parental burnout

	Bootstrapped indirect effect	Boot SE	Boot LLCI	Boot ULCI
-1 SD	0.30	0.05	0.21	0.41
M	0.23	0.04	0.15	0.32
+1 SD	0.16	0.04	0.07	0.26
<i>Index of Moderated Mediation</i>				
Number of children	-0.09	0.03	-0.16	-0.03

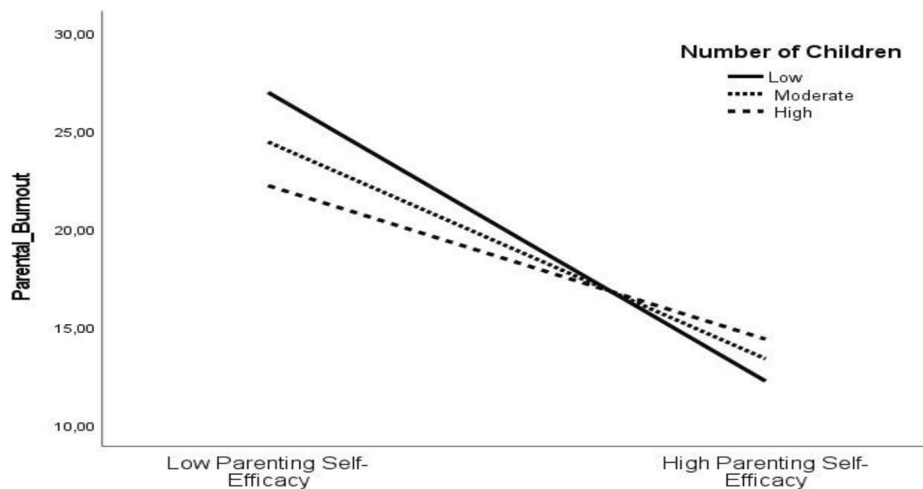


Fig. 2 Number of children's moderating effect on PSE's impact on parental burnout

For a slope+1 SD, PSE still has a significant negative predictive effect on parental burnout, but the predictive effect has weakened significantly.

Discussion

The current study explored the correlation between parenting stress and parental burnout among Turkish parents, focusing on the mediating role of PSE and the moderating role of number of children. This study examined direct and indirect relationships to test five hypotheses. As a result, all hypotheses were accepted. The results show parental burnout is positively and significantly affected by increases in parenting stress. Furthermore, PSE mediates the parenting stress-parental burnout relationship. Moreover, number of children moderates the impact of parenting stress on parental burnout through PSE. Accordingly, having less children positively affects parental burnout through PSE.

As predicted, the current study presented that parenting stress to positively predict to parental burnout, finding that aligns with previous research and corroborates the initial hypothesis [5, 10, 40, 41]. The literature has shown that one risk factor for parental burnout is parenting stress [6, 15]. According to BR² theory, parental burnout consists of an imbalance between the expectations from parenting and parenting resources. Risk factors refer to the expectations from parenting, while protective factors refer to parenting resources [3, 15]. Parenting

stress can disrupt parent-child interaction and damage parenting skills [16–18]. Chronic parenting stress can lead to issues regarding parental roles, child-parent relationships, child attachment, and parenting enjoyment, ultimately resulting in parental burnout [1, 3]. Thus, high parenting stress can be said to anticipate parental burnout.

This research showed that parenting stress is negatively predict PSE, as anticipated by the second hypothesis. The literature review examining findings for a significant negative relationship between PSE and parenting stress also supports these findings. According to Crnic and Ross [5], one of the factors that reduces parenting stress is PSE. Bloomfield and Kendall [1] found PSE to be related to less parenting stress. Fu et al. [42] determined low parenting stress to be able to increase PSE. Wang et al. [41] found a negative correlation between parents' sense of competence and parenting stress. Accordingly, one can infer high parenting stress can predict PSE.

As consistent with the third hypothesis, this current study indicated PSE to be negatively predict parental burnout. When reviewing the literature, similar results are found [40, 43, 44]. Matias et al. [43] found a negative correlation between PSE and parental burnout, showing parental burnout and PSE to be negatively correlated regarding cross-cultural consistency. Skjerdingsstad et al. [44] revealed PSE to be associated with reduced parental burnout. Swit and Breen [45] found parental emotional

regulation, which is related to PSE, to be a protective factor against parental burnout. According to Wang et al. [41], identified negatively correlates to parenting sense of competence and parental burnout. Therefore, it can be argued that parental burnout is positively predicted low PSE.

As a predicted potential mediator, consistent with the fourth hypothesis, the study concluded that the association between parenting stress and parental burnout to be mediated by PSE. These results can be explained within the context of both BR² and SC theories. SC theory assumes parenting stress and PSE to emerge from the same experiential context [20]. Low stress levels during child rearing may contribute to higher self-efficacy, potentially reducing parental burnout. The BR² theory suggests parental burnout is associated with elevated levels of parenting stress and diminished parenting skills [2, 15]. Research has shown democratic parenting style, parent-child communication, and child well-being to be positively correlated with high PSE [21, 24, 26]. These variables can be seen as factors that reduce parenting stress and parental burnout. PSE is also considered a protective factor against parent burnout because it can increase parental resources [15, 25]. Wang et al. [41] determined parenting sense of competence serves as a mediator between the association neuroticism, agreeableness, and low parenting flexibility and parental burnout. Wang et al. [46] also identified parenting sense of competence mediates the relationship between work-family enrichment and parental burnout. In their study of Chinese parents of children with ASD, Liu et al. [6] found that resilience partially mediated the relationship between parenting stress and parental burnout. The results underscore the notion that these variables, which are positively correlated with PSE, serve as potential underlying mechanisms in the relationship between parenting stress and parental burnout. Hence, one can argue the parenting stress-parental burnout relationship to be mediated by PSE.

Finally, as a potential moderator, consistently with the fifth hypothesis, the present study has also discovered number of children to moderate the indirect relationship parenting stress and parental burnout have through PSE. The results reveal the effect of PSE on parental burnout to decrease as the number of children in the family increases. According to SC theory, having more children in a family can enhance PSE, as experience with raising children contributes to PSE [20]. According to Ercegovic et al.'s [47] study, parents with multiple children perceive themselves as more competent in the parenting role, finding parenting experience and number of children to be positively correlated [48]. However, Hong and Liu [29] demonstrated that one-child families have higher PSE and lower parenting stress than two-child families.

Although an increase in the number of children is associated with a higher PSE, it also seems to be associated with a higher prevalence of parental burnout. The extant literature indicates that in individualistic cultures, the number of children is perceived as a risk factor for parental burnout, whereas in collectivistic cultures perceived this as a protective factor [28, 30]. The findings suggest that the Turkish family structure, which is assumed to have collectivist cultural characteristics [7], has more individualistic cultural characteristics contrary to expectations. According to Hofstede et al. [7], more children in Türkiye may be associated with low parental burnout, as in collectivist cultures children are seen as the primary source of financial security for their parents in elderly. Gao and Qu [31], also reported that the presence of more than one child positively affects the subjective well-being of elderly parents. These results offer a contrasting perspective on the influence of child number on PSE. It is plausible that the observed effects may vary contingent on the societal context, government policies pertaining to childbearing, and place of residence. This suggests that new challenges in life may be positively associated with lower PSE in parents with more children. The number of children in a household is able to add to parental burnout by multiplying parenting burned of parents. Having more children may make parents' ability to dedicate sufficient time, energy, and attention to each child challenging [4, 28, 30]. Additionally, the rising number of mothers in the workforce has increased the cost of parenting, which can lead to fatigue and a lack of energy for parenting due to work demands. In such situations, parents may become more exhausted. Having fewer children in the family can help parents maintain their PSE while also maximize parental burnout. As a result, future research is necessary to elucidate these inconsistent results.

Limitations and future directions

Although the study has some strengths, it also has limitations. The data were collected online from parents between the ages of 25–65. To increase the generalizability of the results, parents may need to be included from a wider age range. The study is a cross-sectional study based on the correlational survey model. Although the results indicate relationships among the variables, longitudinal and experimental studies need to be conducted to establish a causal relationship. The evaluation was based on the total scores for the variables in the study. Future studies can make evaluations based on the scores from the sub-dimensions. Because the data in this study were collected through self-report scales, a possibility of social bias exists regarding the parents' responses. To ensure social validity, future studies can support quantitative results using qualitative and mixed-methods research. Additionally, this study considered the number of

children as a moderating variable. Subsequent research endeavors may investigate the effect of variables such as place of residence and parenting style in this relationship.

Conclusions

The present study found number of children to moderate the parental burnout-parenting stress relationship, with PSE playing a mediating role. This study contributes to the advancement of our understanding of the relationship between PSE and parental burnout. The integration of Bandura's [24] theory of parenting self-efficacy with Roskam et al.'s [13] BR² theory suggests that higher levels of PSE are linked to lower levels of parental burnout. These results highlight the importance of the effects of parenting stress PSE, and number of children on parental burnout among parents. The results suggest that parenting stress may be linked to parental burnout, PSE and number of children. This suggests that parenting stress may be a risk factor for parental burnout and PSE may be a protective factor for parental burnout. Addressing the variables of PSE and number of children in family-focused interviews and therapeutic interventions may contribute to reducing parental burnout.

Abbreviations

BR ²	The balance risks and resources theory
PSE	Parenting self-efficacy
SC	Social cognitive theory

Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s40359-024-01980-7>.

Supplementary Material 1. Number of children

Supplementary Material 2. Spss data on parental stress, parental self-efficacy and parental burnout

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Author contributions

Yahya Aktu is in charge of writing-original draft, review & editing, methodology, investigation, conceptualization, data analysis and curation.

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Data availability

The datasets used in this study are not publicly accessible for the protection of personal data. Requests for the data used in this study may be directed to the author via email at aktuyahya@gmail.com.

Declarations

Ethic approval and consent to participate

The present study was approved by the Siirt University's Ethics Committee in Türkiye. The document reference number is 4977 and date is 15/06/2023. All the participants received informed consent before the execution of the research. All of the study's procedures follow the standards set forth in the Declaration of Helsinki.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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