



# Personality Traits and Parental Burnout Among Fathers: A Moderated Mediation Model

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## Abstract

Focusing on a sample of fathers, this study examined the effects of two personality traits, agreeableness and neuroticism, on parental burnout, as well as the mediating role of parenting sense of competence and moderating effects of parental psychological flexibility. Data were collected from 263 fathers of middle-school children in central China, with questionnaires including the agreeableness and neuroticism subscales from the Big Five personality trait scale, Parenting Sense of Competence Scale, Parenting Psychological Flexibility scale, and Parental Burnout Assessment. To analyze the hypothesized moderated mediation model, bootstrapping analysis and structural equation modeling were performed. Results showed that agreeableness was negatively correlated with parental burnout, while neuroticism was positively correlated with parental burnout; both these relationships were partially mediated by parenting sense of competency. Further, psychological flexibility moderated the relationship between parenting sense of competence and parental burnout. When parenting psychological flexibility was low, parenting sense of competence was significantly related to parental burnout, while parenting psychological flexibility was high, parenting sense of competence was not related to parental burnout significantly. These preliminary findings provide theoretical guidance and an empirical basis for intervention strategies to prevent burnout among fathers.

**Keywords** Parental burnout · Agreeableness · Neuroticism · Parenting sense of competence · Parenting psychological flexibility · Sample of fathers

## Highlights

- Considering the increasing involvement of fathers in childcare and education, the present study examined the occurrence of parental burnout, and the result showed that the prevalence of fathers' parental burnout was estimated to be between 5.76% to 9.71%.
- Agreeableness and neuroticism were significantly associated with parental burnout, and the above relations were partially mediated by parenting sense of competence; further, the relation between parenting sense of competence and parental burnout was moderated by parental psychological flexibility.
- Parental psychological flexibility and parenting sense of competence had complementary effects on parental burnout, individuals can reduce their parental burnout if either is adequate. These results may provide a new perspective to the BR<sup>2</sup> model that when individuals have enough resources, additional resources could not result in a lower occurrence of parental burnout.

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Although parenting is associated with substantial pressures and challenges (Furutani et al., 2020), the topic of parental burnout has received little attention until recently (Cheng et al., 2021). Parental burnout refers to a series of stressful symptoms induced by the parenting role and long-term parenting stress, including exhaustion in one's parental role, contrasts with the previous parental self (thinking that they are no longer the good father/mother that they used to be),

feelings of being fed up with one's parental role, and emotional distancing from one's children (Roskam et al., 2018). Previous studies have shown that parental burnout not only negatively impacts those who directly experience the condition, but it can also affect their spouses and children (Mikolajczak et al., 2018a; Mikolajczak et al., 2019; Chen et al., 2021; Yang et al., 2021).

Given the negative consequences of parental burnout, early research largely focused on its antecedents to support prevention efforts. For instance, Mikolajczak et al. (2018b) examined a series of variables including sociodemographic, child-related, parent-related, parenting, and family-functioning variables, and their results showed that sociodemographic factors explained less variance in parental burnout than child-related, parent-related, parenting, and family-functioning variables. Accordingly, researchers began to examine the personality traits that affect parental burnout. For instance, Le Vigouroux et al. (2017) showed that the personality traits of neuroticism, conscientiousness, and agreeableness were associated with parental burnout. In addition, results of Sorkkila and Aunola (2020) showed socially prescribed perfectionism was positively related with parental burnout, and this relation could be further strengthened by self-oriented perfectionism. The main effects of perfectionism on parental burnout were also found in research by Kawamoto et al. (2018), Lin et al. (2021), and Lin & Szczygiel (2021).

However, as the theme of parental burnout did not gather much attention until Roskam et al. (2018) proposed the measurement of parental burnout, studies on the antecedents of parental burnout remain insufficient. In addition, research on the antecedents of parental burnout has two limitations. The first limitation is that most previous studies mainly focused on the effects of demographic variables, and explored the associations relying on simple correlation levels. They paid relatively less attention to the psychological variables. However, as Mikolajczak et al. (2018b) and Woine et al. (2022) noted, the demographic variables were hardly significant in predicting parental burnout, and the stable traits of the parent, parenting factors, and family-functioning factors could explain more variance in parental burnout (Mikolajczak et al. 2020). The second limitation was that even though research has shown that fathers also suffer from the risk of parental burnout (e.g., Roskam & Mikolajczak, 2020), the existing literature has largely ignored fathers when considering the research sample. With the increased involvement of fathers in childcare and education, fathers may also suffer from the risk of parental burnout. Furthermore, fathers may be more vulnerable to parental burnout (Roskam & Mikolajczak, 2020). Especially in traditional Chinese culture, where the notion that “If a son is

uneducated, his dad is to blame” is widely held, fathers may not be much involved in general childcare activities, however, they may be more involved in their children's education. According to Cheng (2020) and Wang et al. (2021), the incidence of fathers' parental burnout was 1.5%–12.83%. Considering the large population base in China, the risk of fathers' parental burnout is notable.

To explain the occurrence of parental burnout, Mikolajczak and Roskam (2018) proposed the Balance between Risks and Resources model (BR<sup>2</sup> model), according to which parental burnout may result from a chronic imbalance of demands over resources. Based on the BR<sup>2</sup> model, chronic parenting stress may not necessarily result in parental burnout, as it also depends on the resources individuals have. The risk factors refer to the factors that could significantly increase parenting stress, including perfectionism, low emotional intelligence, poor parenting habits, and lack of support from family and partners. Parenting resources (i.e., protective factors) refer to factors that can significantly reduce parenting stress, including parents' self-empathy, high emotional intelligence, good parenting habits, time for leisure, and active co-parenting.

In essence, based on the BR<sup>2</sup> model, the present study aimed to enhance knowledge regarding the occurrence of parental burnout by specifically examining how the personality traits of agreeableness and neuroticism affected parental burnout in a sample of fathers. The role of parenting sense of competence and parental psychological flexibility—which could be viewed as the parenting resources—were also examined. In addition, we chose the fathers of middle school students as our sample. While experiencing rapid physical maturity, adolescents' psychological maturity does not generally develop at the same pace (Lin, 2013). This may cause them to suffer from various problems, such as increasing conflict with their parents or other behavioral and emotional concerns (e.g., Steinberg, 2008). Therefore, the fathers of middle school students may suffer higher levels of parental burnout. In sum, a moderated mediation model was constructed to assess the mediating role of parenting sense of competence and moderating role of parental psychological

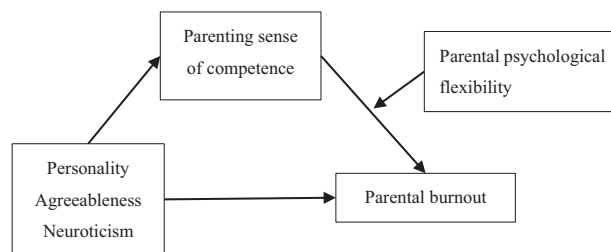


Fig. 1 Basic Study Framework

flexibility. Figure 1 shows the hypothetical model for the present study.

### Direct Effects of Agreeableness and Neuroticism on Parental Burnout

From the perspective of the BR<sup>2</sup> model, personality could also be viewed as a protective or risk factor for parental burnout, wherein it could constantly reinforce or deplete an individual's resources. Personality is defined as “the dynamic organization within the individual of those psychophysical systems that determine their unique adjustments to their environment” (Allport, 1937; Asendorpf, 2015). Le Vigouroux et al. (2017) and Mikolajczak et al. (2018b) found that the trait of agreeableness is negatively related to parental burnout and that neuroticism is positively related to parental burnout.

Agreeableness is characterized by friendly and empathic behaviors. Agreeable individuals are helpful, warm, altruistic, generous, and loving (Marsh et al., 2013). Higher agreeableness may also be associated with a more understanding and trusting approach toward others, thus contributing to satisfactory interpersonal relationships (Prinzle et al., 2009). Such individuals may face less parenting stress and are therefore less likely to experience parental burnout. Research has shown that parents with higher agreeableness tend to have better and more harmonious interactions with their children. They are also more likely to positively evaluate their children's behaviors. Taken together, these factors indicate that parents with higher agreeableness may also experience less parenting stress (Prinzle et al., 2009). Thus, it was posited that parents with higher agreeableness were more likely to report lower levels of parental burnout.

By contrast, neuroticism is characterized by frequent worrying, as well as greater emotional instability, including more frequent and intense negative affect (Finch et al., 2012). Individuals with higher neuroticism levels tend to report higher levels of emotional instability and greater sensitivity to life events (Prinzle et al., 2009). In this context, parents with high neuroticism are more likely to report higher levels of parental burnout. In addition, a previous study on a Chinese sample reported that agreeableness was negatively correlated with parental burnout, while neuroticism was positively correlated with parental burnout (Cheng et al., 2020). In line with prior studies, this study chose agreeableness and neuroticism as personality variables to further examine the relationship between personality and parental burnout. In this regard, the following hypothesis was proposed:

Hypothesis 1 (H1): Agreeableness is negatively related to parental burnout, while neuroticism is positively related to parental burnout.

### Mediating Effects of Parenting Sense of Competence

Parenting sense of competence refers to how individuals evaluate themselves as parents. It is commonly conceptualized as perceived self-efficacy in parenting and feelings of satisfaction with the parenting role (Johnston & Mash, 1989; Ohan et al., 2000; Suwansujarid et al., 2013; Ngai et al., 2007). Previous studies have shown that individuals with higher levels of sense of competence may experience increased life satisfaction, self-esteem, and more positive emotions while also being less prone to loneliness, depression, anxiety, and negative emotions (e.g., Li et al., 2019).

According to the BR<sup>2</sup> model (Mikolajczak & Roskam, 2018), parenting sense of competence could also be viewed as a protective factor of parental burnout. As mentioned above, parents with higher agreeableness may emphasize positive communication and interaction with their children, thus leading to positive feedback behavior while enhancing parenting sense of competence (Lent et al., 1994; Nauta et al., 2004). Parents with high emotional stability (i.e., low neuroticism) may also be more relaxed when interacting with their children. This leads to specific outcomes, such as the practice of guiding children toward desired results, which further enhances parenting sense of competence (De Haan et al., 2009). Therefore, high emotional instability (neuroticism) may decrease parenting sense of competence.

Previous studies have shown that parenting sense of competence is related to positive parenting behavior (De Haan et al., 2013). For instance, individuals who feel they are more competent also pay more attention to their children, exhibit more proactive and instructive behaviors, and are less punitive (De Haan et al., 2013). On the contrary, individuals who believe they are less competent tend to report higher levels of parenting depression, stress, and learned helplessness (Coleman & Karraker, 2000). As such, a higher parenting sense of competence indicates an increased ability to cope with various problems while holding positive parental attitudes and implementing better parenting strategies; these factors jointly decrease the risk of parental burnout. In this regard, the following hypothesis was proposed:

Hypothesis 2 (H2): The relationships between agreeableness/neuroticism and parental burnout are mediated by parenting sense of competence.

### Moderating Effects of Parental Psychological Flexibility

Parental psychological flexibility refers to the ability of parents to fully accept their negative thoughts, emotions,

and urges (e.g., anger, self-doubt, or the desire to yell) when interacting with their children, manage their actions to maintain the parent-child relationship, and consistently implement good parenting practices (Burke & Moore, 2015; Wu et al., 2018). Parents with high parental psychological flexibility are therefore able to manage their behaviors while conducting effective parenting activities, for instance, expressing warmth and setting boundaries (Burke & Moore, 2015).

According to the BR<sup>2</sup> model (Mikolajczak & Roskam, 2018), parental psychological flexibility could also be viewed as a protective factor of parental burnout. Previous research has also shown that parental psychological flexibility is negatively related to internalization and externalization problems among children (Brassell et al., 2016). Therefore, with high parental psychological flexibility, parents may experience less parenting stress, as children will have better mental health. Further, studies have shown that parental psychological flexibility moderates the relationship between parental depression/anxiety and depression among children (Li, 2016).

To the best of our knowledge, however, no previous studies have focused on the relationship between the sense of parenting competence and parental psychological flexibility. With a higher parenting sense of competence, parents may evaluate themselves more positively as parents and/or in their parenting roles. However, those who cannot accept their own negative emotions or maintain positive parenting behaviors (low parental psychological flexibility), even if they possess a higher parenting sense of competence, may fail to achieve their expected parenting goals, thus causing parenting stress. Hence, we assume that the relationship between parenting competence and parental burnout is moderated by parental psychological flexibility, and therefore a moderated mediation model could be constructed. The following hypothesis was proposed:

Hypothesis 3 (H3): Parental psychological flexibility moderates the relationship between parenting sense of competence and parental burnout. Specifically, with low parental psychological flexibility, parental burnout would not change with the increase of parenting sense of competence, while with high parental psychological flexibility, parental burnout would decrease with the increase of parenting sense of competence.

## Methods and Participants

Data were collected through a survey of 600 fathers of middle school children from a city in central China. The questionnaires comprised items on agreeableness, neuroticism, parenting sense of competence, parental psychological flexibility, and parental burnout. The questionnaires were initially distributed to the middle school students, who

then delivered them to their fathers. Once complete, the students returned the questionnaires to their school, which were then handed to the researchers. In total, 565 fathers returned their questionnaires. However, some of the participants did not answer all the questionnaire, and all questionnaires with blank answer were removed from the sample (listwise deletion).

A total of 263 fathers completed all questions (the effective response rate: 43.83%) and were thus included in the analysis (average age of 41.9;  $SD = 4.39$ ). Meanwhile, G\*power was used to calculate the minimum sample size needed for the hypothesized model. The effect size  $f^2$  was set at 0.15, significance level ( $\alpha$ ) at 0.05, and power at 0.95; we then input the total number of predictors as 4. The result showed that 129 participants were needed to validate the hypotheses of this study; the 263 participants included in our study met the sample size requirement for data analysis. The survey was approved by the Research Ethics Committee of the academic institution that the authors are affiliated with. Informed consent was obtained from all participants.

## Measures

### Agreeableness and Neuroticism

Agreeableness and neuroticism were measured using the respective subscales (four items each) from the Big Five personality trait assessment scale (Luo & Dai, 2015). Item examples included “suspicious-reliable” for agreeableness and “anxious-calm” for neuroticism. All items were rated using respective 6-point bipolar adjective scales, ranging from 1 (full endorsement of neuroticism/full endorsement of disagreeableness) to 6 (full endorsement of emotional stability/full endorsement of agreeableness). Higher scores indicated higher emotional stability or agreeableness, respectively. In this study, Cronbach’s alphas were 0.87 for agreeableness and 0.83 for neuroticism.

### Parenting Sense of Competence

Parenting sense of competence was measured using the 17-item Parenting Sense of Competence Scale (Ngai et al., 2007; e.g., when I understand how my behavior affects my children, all kinds of difficulties in taking care of them are easy to solve). All items were rated on a 6-point scale ranging from 1 (absolutely disagree) to 6 (absolutely agree). In this study, Cronbach’s alpha was 0.81.

### Parental Psychological Flexibility

Parental psychological flexibility was measured using the 16-item Chinese version of the Parenting Psychological

Flexibility Questionnaire (Li et al., 2018; Burke & Moore, 2015; e.g., my emotions prevent me from becoming the perfect father/mother in my mind). All items were rated on a 7-point scale ranging from 1 (absolutely inconsistent) to 7 (absolutely consistent). In this study, Cronbach's alpha was 0.86.

### Parental Burnout

Parental burnout was measured using the 21-item Chinese version of the Parental Burnout Assessment (Cheng et al., 2020; Roskam et al., 2018; e.g., I am exhausted to play the role of a good parent). All items were rated on a 7-point scale ranging from 1 (absolutely inconsistent) to 7 (absolutely consistent), with higher scores indicating higher levels of burnout. In this study, Cronbach's alpha was 0.95.

### Demographic Variables

Respondents were asked to provide demographic information, including their own ages and children's ages and genders (1 = boy, 2 = girl).

### Data analyses

All data analyses were conducted using IBM SPSS 23.0 with a process macro (Hayes, 2013) and AMOS 23.0. First, common method variance was examined via confirmatory factor analysis. Second, as some questionnaires contained missing data, all the answers with unanswered question were removed (listwise deletion), and the Welch tests were conducted between kept group and removed group. After examining the hypothesis, data were imputed using the Bayesian imputation method and the check calculation was conducted. Third, the prevalence of burnout was calculated and the correlation analyses were conducted to preliminarily examine the hypotheses. Fourth, the mediation effects of parenting psychological flexibility and the moderation effects of parental psychological flexibility were examined via bootstrap analyses. Finally, the result was checked using Structural Equation Modeling (SEM), with removed data and imputed data (the Bayesian imputation method was used to create a dataset 10 times that of the original dataset).

## Results

### Preprocessing the Data

Since all measures were evaluated by the same source, the common method bias (variance that is attributable to the measurement method rather than to the constructs of the measures) might have influenced the overall result of the

present study. Before testing the hypotheses, common method variance was examined by controlling for the effects of the unmeasured latent methods factor (Podsakoff et al., 2003). Each item was allowed to load on its respective construct (i.e., agreeableness, neuroticism, parenting sense of competence, parental psychological flexibility, and parental burnout). In addition, the common method variance factor was included, with all items allowed to load it, and we then constrained these paths to be equal. The latent factor was not allowed to be correlated with other factors. The variance explained by the latent method factor was 4%, which is lower than the median of 25% shown in previous work (Williams et al., 1989). Further, when constraining the latent method variance factor's regression weight to 0, or setting the estimation as free, the model fit did not change significantly ( $\Delta \chi^2 = 22.76$ , n.s.; Richardson et al., 2009). These results provide further evidence that the common method variance had little effect on the present study's overall results.

As many fathers did not participate in the survey and their questionnaires were all blank, these missing data were removed from the dataset. To examine whether removing these data would bias our result, the Welch's test was conducted between the removed and kept data groups. No significant differences were noted between the children's age ( $t = -0.24$ ,  $df = 490.09$ ,  $p = 0.81$ ), gender ( $t = 0.45$ ,  $df = 557.12$ ,  $p = 0.66$ ), and the fathers' age ( $t = 1.06$ ,  $df = 418.18$ ,  $p = 0.29$ ), suggesting that removing the incomplete questionnaires did not bias our results.

### Prevalence of Parental Burnout

According to Roskam et al. (2017), when parental burnout is rated on a 7-point scale, the prevalence of parental burnout could be calculated via three methods: 1) based on the job burnout cutoff value, 2) the average scores above 4, and 3) a 1.5 standard deviation over the sample mean. Since parental burnout was assessed as a single factor and it has a different factor structure compared to the Maslach Burnout Inventory (Maslach et al., 2001), in the present study, the prevalence of parental burnout could be calculated by the last two methods. The result showed that approximately 5.76% (average score over 4) to 9.71% (1.5 standard deviation over the sample mean) of fathers would be considered to be experiencing burnout. These results suggested that the prevalence of Chinese fathers' parental burnout is within the range found in existing studies (Cheng, 2020; Wang et al., 2021).

### Descriptive Statistics and Correlation Analysis

Table 1 shows the descriptive statistics and correlation matrix. Agreeableness was negatively correlated with

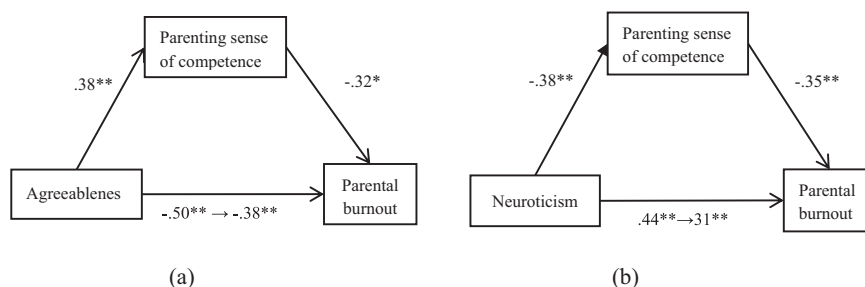
**Table 1** Descriptive Statistics and Correlations ( $n = 263$ )

	<i>M</i>	<i>SD</i>	①	②	③	④	⑤	⑥	⑦
① Student's gender	1.51	0.50	1.00						
② Student's age	13.83	0.81	-0.05	1.00					
③ Father's age	41.92	4.39	-0.02	0.02	1.00				
④ Agreeableness	4.67	1.02	0.02	-0.14*	0.11	1.00			
⑤ Neuroticism	2.64	0.97	-0.04	0.19**	-0.06	-0.80**	1.00		
⑥ PSOC	3.94	0.59	0.12*	-0.04	0.08	0.34**	-0.38**	1.00	
⑦ PPF	4.78	0.91	0.07	-0.02	0.04	0.32**	-0.36**	0.66**	1.00
⑧ Parental burnout	2.01	0.97	-0.04	-0.01	-0.15*	-0.43**	0.40**	-0.40**	-0.44**

Students' gender 1 = boy, 2 = girl

\* $p < 0.05$ ; \*\* $p < 0.01$

**Fig. 2** The mediation effects of parenting sense of competence. **a** The mediation effects of PSOC on the relationships between parental burnout and agreeableness. **b** The mediation effects of PSOC on the relationships between parental burnout and neuroticism. PSOC parenting sense of competence. \* $p < 0.05$ , \*\* $p < 0.01$



parental burnout ( $r = -0.43$ ,  $p < 0.01$ ), while neuroticism was positively correlated with parental burnout ( $r = 0.40$ ,  $p < 0.01$ ), thus supporting H1. Next, parenting sense of competence was negatively correlated with parental burnout ( $r = -0.40$ ,  $p < 0.01$ ). Agreeableness was positively correlated with parenting sense of competence ( $r = 0.34$ ,  $p < 0.01$ ), while neuroticism was negatively correlated with parenting sense of competence ( $r = -0.38$ ,  $p < 0.01$ ). While father's age was found to be negatively correlated with parental burnout, neither the age nor gender of the children were significantly correlated with parental burnout. In addition, these variables were not found to be significantly associated with parental burnout in the regression model (for child's gender  $b = 0.27$ ,  $SE = 1.07$ ,  $p = 0.81$ ; for child's gender age  $b = -1.63$ ,  $SE = 1.94$ ,  $p = 0.45$ ; for father's age  $b = -0.27$ ,  $SE = 0.24$ ,  $p = 0.31$ ). As controlling for too many variables would have decreased the overall analytical power (Becker, 2005), these variables were therefore removed from subsequent analyses.

### Mediating Effects of Parenting Sense of Competence

To examine the mediating effects of parenting competence in the relationship between personality and parental burnout, the process macro was used, which was developed by Hayes (2013) and is especially useful for calculating mediation and moderation effects. The mediation model was

examined with agreeableness and neuroticism set as the independent variables, parenting sense of competence set as a mediating variable, and parental burnout set as the dependent variable. Following the suggestions of Fang et al., (2014), the nonparametric bootstrapping method ( $n = 5000$ ) was used, with the 95% confidence interval calculated using the bias-corrected bootstrapping method. As respectively shown in Fig. 2(a, b), parenting sense of competence partially mediated the relationships between agreeableness and parental burnout (indirect effect =  $-0.09$ ,  $SE = 0.02$ ,  $p < 0.001$ , 95% CI  $[-0.16, -0.06]$ ) and neuroticism and parental burnout (indirect effect =  $0.11$ ,  $SE = 0.03$ ,  $p < 0.001$ , 95% CI  $[0.08, 0.21]$ ), thus supporting H2 Fig. 2.

### Moderating Effects of Parental Psychological Flexibility

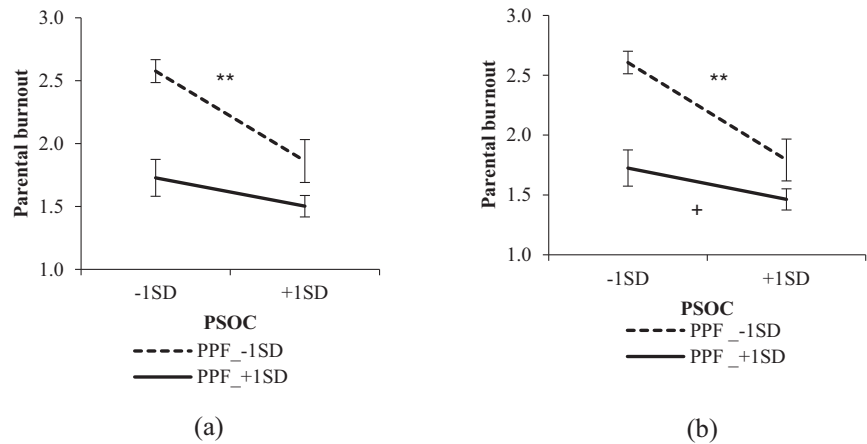
Model 14 of process macro (Hayes, 2013) was used to examine the moderation effect of parental psychological flexibility and determine whether the moderated mediation model could be established. This was examined with agreeableness and neuroticism set as the independent variables, parenting sense of competence set as a mediating variable, parental psychological flexibility set as a moderating variable, and parenting burnout set as the dependent variable. Following the suggestions of Fang et al. (2014), the nonparametric bootstrapping method ( $n = 5000$ ) was

**Table 2** The Mediation Effects of Parenting Sense of Competence Under Different Levels of Parental Psychological Flexibility ( $n = 263$ )

		PPF	Effect	SE	95% CI
Agreeableness	Mediation effect of PSOC	M-1SD	-0.13	0.04	[-0.23, -0.06]
		M	-0.09	0.02	[-0.14, -0.04]
		M + 1 SD	-0.04	0.02	[-0.07, -0.01]
Neuroticism	Mediation effect of PSOC	M-1SD	0.16	0.05	[0.09, 0.27]
		M	0.11	0.03	[0.06, 0.17]
		M + 1 SD	0.05	0.02	[0.02, 0.09]

The numbers in the Table were unstandardized value  
 POSC parenting sense of competence

**Fig. 3** The moderation effects of PPF. **a** The moderation effects of PPF with agreeableness as independent variables. **b** The moderation effects of PPF with neuroticism as independent variables. POSC parenting sense of competence, PPF parental psychological flexibility.  $**p < 0.01$ ,  $+p < 0.10$



used, with the 95% confidence interval calculated using the bias-corrected bootstrapping method. Results showed significant moderating effects for parental psychological flexibility; the moderated mediation model was also significant (the indexes of moderated mediation were 0.05, SE = 0.02, 95% CI [0.02, 0.09] for agreeableness and -0.06, SE = 0.02, 95% CI [-0.11, 0.02] for neuroticism). Table 2 shows the different mediating effects of parenting sense of competence under different levels of parental psychological flexibility.

A simple slope test was conducted to further explore the moderating effects of parental psychological flexibility (Fig. 3). With agreeableness set as the independent variable, under conditions of low parental psychological flexibility, parenting sense of competence was significantly related to parental burnout ( $\beta = -0.35$ ,  $p < 0.001$ ), and parental burnout decreased with increased parenting sense of competence. However, under conditions of high parenting psychological flexibility, parenting sense of competence was not significantly related to parental burnout ( $\beta = -0.11$ ,  $p = 0.12$ ), and the level of parental burnout did not change with a change in parenting sense of competence. With neuroticism set as the independent variable, regardless of whether parenting psychological flexibility was high or low, parenting sense of competence was significantly related to

parental burnout ( $\beta = -0.40$ ,  $p < 0.001$ , for high flexibility;  $\beta = -0.13$ ,  $p = 0.08$  for low flexibility). However, a stronger relationship was observed between parenting sense of competence and parental burnout when parenting psychological flexibility was low; in other words, with increased parenting competence, the level of parental burnout decreased further under conditions of low psychological flexibility, thus the H3 was partially supported.

In addition, the SEM was used to check the results. First, to calculate the minimum sample size needed for the hypothesized model, a computation method based on the model fit proposed by MacCallum et al. (1996) was employed (Preacher and Coffman, 2006). For a significant level ( $\alpha$ ) of 0.05, degrees of freedom of 59, power of 0.8, a null root mean square error of approximation (RMSEA) of 0, and an alternative hypothesized RMSEA of 0.05, the minimum sample size was calculated to be 220. Second, the hypothetical model was created using the original dataset. The results showed that agreeableness was positively related to parenting sense of competence ( $\beta = 0.36$ ,  $p = 0.000$ ), parenting sense of competence was negatively related to parental burnout ( $\beta = -0.23$ ,  $p = 0.001$ ), and the indirect effect was also significant (indirect effect = -0.09, SE = 0.03, 95% CI [-0.14, -0.03]). In addition, neuroticism was negatively related to parenting sense of competence

( $\beta = -0.37, p = 0.000$ ), parenting sense of competence was negatively related to parental burnout ( $\beta = -0.26, p = 0.000$ ), and the indirect effect was also significant (indirect effect = 0.11, SE = 0.03, 95% CI [0.04, 0.17]). The interaction of parenting sense of competence and parenting psychological flexibility was also significant to parental burnout ( $\beta = 0.14, p = 0.011$  with agreeableness set as the independent variable;  $\beta = 0.16, p = 0.005$  with neuroticism set as the independent variable).

Furthermore, the Bayesian imputation method was used to create a complete dataset (10 times that of the original dataset). The goodness of model fit, regression weights, and mediation effects of the removed and imputed datasets did show a meaningful change. These results suggest that removing incomplete questionnaires did not significantly bias our results.

## Discussion

Recent decades have seen important changes in favor of gender equality, which have resulted in the increased involvement of fathers in childcare and children's education (Roskam & Mikolajczak, 2020). Sorkkila and Aunola (2021) identified Finnish fathers' parenting demands and resources through qualitative and quantitative research methodologies. In China, where Confucian culture is prevalent, the important and core role of fathers in children's education has been emphasized since ancient times, which further has an important impact on Chinese education (Gao et al., 2021). Since prior studies have paid less attention to the psychological antecedents of parental burnout and have largely ignored fathers in their research sample, the present study aimed to examine the prevalence of parental burnout and explore the relationship between personality traits and parental burnout. Specifically, the associations between agreeableness and neuroticism with parental burnout were examined in a sample of fathers. Furthermore, the mediation effects of parenting sense of competence and moderation effects of parental psychological flexibility were examined. The results of the prevalence of parental burnout was in line with prior studies (e.g., Cheng, 2020; Wang et al., 2021), and the results of bootstrapping and SEM generally supported the hypothesized model.

### Direct Effects of Agreeableness and Neuroticism on Parental Burnout

Here, we assumed that individuals with positive personality traits would exhibit increased confidence in their parenting abilities and performance, and could therefore handle a greater variety of problematic situations. Studies have also shown that these types of individuals are more likely to

view difficulties as opportunities for growth (Kobasa, 1979; Maddi, 2004), which entails a lower risk of parental burnout. On the contrary, individuals with higher neuroticism tend to interpret their environments from a negative perspective, and may therefore have more difficulty coping with various parenting stresses. These results were in line with prior studies, which combined samples of fathers and mothers, indicating that personality may have robust direct effects on parental burnout, and the effects appear to be consistent across genders.

### Mediating Effects of Parenting Sense of Competence

Notably, parenting sense of efficacy may mediate the relationship between personality and related variables (De Haan et al., 2009). Following the results of previous research, this study examined how personality influenced parental burnout, with a particular focus on the mediating effects of parenting sense of competence. Results showed that parenting sense of competence was negatively related to parental burnout, and could partially mediate the relationship between personality and parental burnout. The present study adds new evidence for the BR<sup>2</sup> model and confirms the effects of the sense of competence on parental burnout in fathers. Furthermore, considering the direct negative effect of sense of competence on parenting burnout, family therapists could focus on establishing and/or strengthening fathers' sense of parenting competency to reduce or eliminate parental burnout.

In addition, psychology teachers in school could also conduct knowledge sessions for parents to prevent the occurrence of parental burnout. In China, the government is also promoting the construction of "parent schools," which encourage parents to acquire scientific knowledge and skills pertaining to family education. Primary and secondary schools now have full-time psychology teachers and some schools also cooperate with psychological researchers from universities, which may be helpful for parent schools. During and at the end of the semester, schools will bring together parents to hold meetings for them. Psychology teachers and researchers could introduce the concepts, antecedents, and mechanisms related to parental burnout to parents at such meetings. Thereby, parents could be trained to improve their parenting skills, as well as establish parenting competence and parenting psychological flexibility.

### Moderating Effects of Parental Psychological Flexibility

Parents with high psychological flexibility may consciously be able to separate their negative thoughts and emotions from their parenting behaviors. Previous studies have



shown that higher levels of parenting psychological flexibility are associated with better mental health among children. On the contrary, lower levels of parenting psychological flexibility are associated with ineffective parenting styles (Brown et al., 2014). In this context, the lack of parenting psychological flexibility may increase the likelihood of children's problematic behaviors. In addition, research has further shown that parenting psychological flexibility may buffer the negative effects of parental depression and anxiety on childhood depression (Li, 2016).

Based on these findings, this study investigated the moderating effects of parenting psychological flexibility on the relationship between parenting sense of competence and parental burnout. Although the results supported our original hypothesis, the specific interactions were different than expected. Specifically, parenting sense of competence was significantly related to parenting burnout in cases of low parenting psychological flexibility but not so in cases of high parenting psychological flexibility. In other words, a complementary or substitution effect may exist between parenting psychological flexibility and parenting sense of competence; individuals can reduce their parental burnout if either is adequate. Notably, the results indicated that when individuals have enough resources, additional resources could not result in a lower occurrence of parental burnout. These results may provide a new perspective to the BR<sup>2</sup> model that different types of parenting resources may have a substituting relationship with each other.

Prior studies (Sorkkila & Aunola, 2020; Roskam & Mikolajczak, 2020) have indicated that based on the unrealistically high expectations placed on mothers, they may experience considerable guilt for not being perfect in their parental role, whereas fathers may be considered as good parents simply by spending time with their children (e.g., Hagger, 2011). Consequently, fathers may be less involved and less skillful with respect to childcare, and mothers may have a stronger coping ability for parental burnout than fathers. In other words, childrearing tasks may be more automatic for mothers; they do not need to have more resources to offset their parenting demands. Therefore, the complementary or substitution effect between parenting psychological flexibility and parenting sense of competence on parental burnout may be more obvious in a sample of mothers. However, this assumption needs further empirical testing in future studies.

### Limitations and Suggestions for Future Research

Although our findings may improve the current understanding of parental burnout and provide theoretical support for relevant interventions, some limitations of our study must be acknowledged. First, the cross-sectional design of the present study limited us from determining causal relationships. Future studies should therefore adopt longitudinal

designs to establish a cross-lag model, to further explore the relationship between personality and other parenting variables with parental burnout. Second, the survey sample wholly comprised fathers of middle school students. Middle school students (who are in their adolescent years) and their parents were considered ideal samples for this study on parental burnout, the rationale for which has been discussed above. However, the occurrence of parental burnout may not be limited to parents of adolescents. In addition, our sample is from a single middle school in a city in central China. Therefore, the external validity of the present study's conclusions should be carefully explained. Future studies should therefore collect data from a broader sample that includes parents of children and adolescents of different ages. Third, the response rate was lower than expected. One possible explanation is that some students did not hand over the questionnaire to their parents or the fathers did not show interest to participate in the survey. A few cases of blank questionnaires being returned were also noted. Although our sample met the required sample size for conducting the analyses, future studies should adopt a more rigorous design to collect data from fathers directly. In addition, even we have examined the differences of demographic variables between kept and removed participants groups. The level of personality, parenting sense of competence, parental psychological flexibility, and parental burnout might still have differences. Therefore, the conclusions of our study require a more cautious interpretation. Fourth, our focus on fathers was important due to their increased involvement in parenting activities in the modern context, but mothers still play highly important roles in Chinese families (Zhang, 2010). Future studies should therefore conduct a similar analysis among a sample solely consisting of mothers, thus providing a basis for comparison.

### Data Availability

The datasets generated for this study are available on request to the corresponding author.

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### Compliance with Ethical Standards

**Conflict of interest** The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

**Ethics approval** The studies involving human participants were reviewed and approved by the Research Ethics Committee of the Institute of Psychology and Behavior, Henan University. Written informed consent to participate in this study was provided by the participants' legal guardian/next of kin.

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