



The relationship between parental role expectations and sibling jealousy: the mediating effect of first-born children's role cognition

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Abstract

This study aimed to explore the relationship among parental role expectations, the firstborns' sibling jealousy and their role cognition. A sample of 190 two-family firstborns aged 3-7 years old and their parents from China participated in the study by using experimental methods, questionnaires, and interviews. The results showed: (1) Parental role expectations had a significant positive effect on firstborns' role cognition. (2) The dispositional sibling jealousy of the first-born children was positively correlated with their parents' role expectations. (3) Firstborns' role cognition mediated the relation between parental role expectations and episodic sibling jealousy completely. The first-born children were more inclined to perceive themselves as resource contender and experience the episodic sibling jealousy the greater the parental role expectations.

Keywords Multi-child family · Sibling jealousy · Parental expectations · Role cognition · The mediating effect

Sibling jealousy refers to a complex of cognition, emotion, and behavior that arise when one child's close relationship with a parent in the family is threatened or challenged by a sibling in the "parent, infant, and sibling" triangle (Volling et al., 2002; Qian, 2022a, b). Children often experience jealousy in the process of getting along with their siblings, and strong jealousy make them feel frustrated and develop greater psychological stress, which affects the physical and mental health of individuals and is also detrimental to the establishment of harmonious and intimate relationships among siblings (Li et al., 2019). In order to promote children's healthy development, foster family harmony, and lessen the parenting stress experienced by parents of many children, this study explores the relationship among parental role expectations, first-born children's role cognition and sibling jealousy, and provides appropriate suggestions for parents in dealing with sibling jealousy in the multi-child family.

Children's role cognition and sibling jealousy

Role cognition refers to the individual's knowledge and understanding of the role image that he or she plays in sibling relationships, and clarifies his or her rights, obligations, and behavioral norms within the family by contrasting them with others (Yu, 1998; Feng, 1997). The first child in the multi-child family has a different perception of the sibling role. Younger siblings may play the role of "playmate", "nuisance" and "resource contender" in the life of a first-born child (Song, 2016). Sibling jealousy is more likely to occur when a sibling plays a negative role in a child's life, such as being a "nuisance" and a "resource contender," competing with siblings for toys, clothes, parental affection, etc. Children who see their siblings as their closest friends and family members are less likely to engage in conflicts with them, such as quarrels and fights (Chen, 2017). Therefore, we think that the types of various roles that first-born children see for their siblings have an impact on sibling jealousy.

According to the resources and positions the first-born children hold in relation to their siblings, their role cognition in multi-child family is divided into the following groups. The first category is the resource-related "resource contender" role perception. And the second category is the status-related "caregiver and guardian" and "disciplinary" roles (Chen, 2017; Gong, 2018). Young children in

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multi-child families frequently experience sibling jealousy over parental attention or material resources, but the status rivalry is uncommon. For this reason, in this study, we only focus on the relationship between resource contender role cognition and sibling jealousy. Based on the findings of existing studies, this study hypothesized that first-born children's sibling jealousy with resource contender role cognition was higher in first-born children than sibling jealousy with non-resource contender role cognition.

Parental role expectations and children's role cognition

Parental role expectation refers to parents' expectations of the child's role in the sibling relationship, for example, the attitudes and behaviors that parents expect from their first-born child in the role of "older brother/sister" (Xi, 2010). The family is the cell of society and parents in the family are influenced by social culture in their participation in social life in China. Their influence and education on children have sociality (Yu, 2003). Family education is closely related to children's (especially young children's) cognitive development, social development, and mental health (Maccoby & Martin, 1983). Some studies have found a significant relationship between mothers' concepts about child development and children's later cognitive and social development (Van, 1996; Sigel, 1986; McGillicuddy-DeLisi, 1985). With the arrival of the second child, the first-born child has become the "older" in the family, either actively or passively. Due to the influence of traditional Chinese family education, the expectation of parents to "let the older child give way to the second child" is still prevalent. Many parents naturally believe that the older child should take on more responsibilities, be mature, set a good example, be able to play the role of a model, and even help parents to take care of their younger brother or sister (Jiang, 2019). Empirical research shows that more than half of parents treat both children unfairly, and 80 % of parents compare the advantages and disadvantages of their two children (Zhang, 2018). But at the same time, the new generation of young parents also shows the desire for equal treatment between the two children, such as parents will "let the children solve their problems", "reasoning" and other strategies to solve their problems (Li et al., 2019). Therefore, this study proposes to explore the relationship between parental role expectations and children's role cognition.

Parental role expectations, children's role cognition and sibling jealousy

In a multi-child family, parents often have many expectations for their first child, such as being a good role model, taking care of younger siblings, and wanting them to be independent (Jiang, 2019; Lin et al., 1996; Wang, 2020).

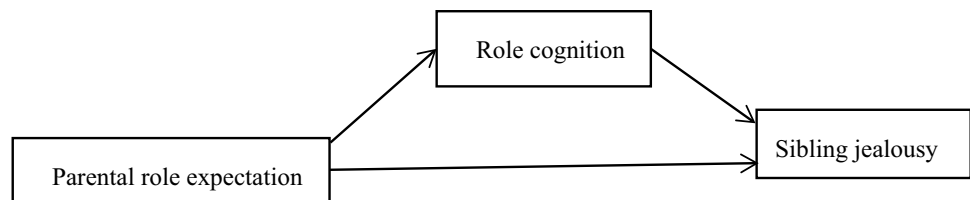
When the first child agrees with their parents' expectations, they will imperceptibly change these expectations into their own requirements and make efforts to realize them (Yang et al., 2015; Yao & He, 1994). Therefore, different levels of parental role expectations may be associated with first-born children's role cognition. There is often competition for resources among siblings. When younger siblings play a negative role (such as snatch person), sibling conflict will increase and sibling jealousy will be stronger, and when siblings play a positive role (such as best friend), they were less jealous (Chen, 2017; Kowal & Kramer, 1997; McHale & Pawletko, 1992; Richmond et al., 2005; Song, 2016).

Furthermore Volling et al. (2010) stated that in the interpersonal jealousy system, the characteristics of three people in a triangle of jealous, beloved and rival (e.g. age, gender, and temperament of each sibling and the affective state, cognition, and personality of the parents), as well as the quality of other relationships in the immediate family or factors outside the family, can influence individual jealousy. In the family, parents, who have the closest relationship with their children and have high authority, may also be the influencing factor of sibling jealousy.

According to the social construction theory of jealousy, jealousy is the product of the construction of social culture and individual psychology (Kong, 2008). Parents in multi-child families may have various expectations for their first-born children depending on their cultural surroundings. The culture also affects the children's cognition through the parents' expectations, which in turn affects their jealousy and emotions. However, no previous studies have examined the relationship among parental role expectations, children's role cognition and sibling jealousy. Therefore, considering the important influence of the family system on children's cognitive and emotional development, the following hypothesis was proposed: parental role expectations would be positively related to first-born children's sibling jealousy and this association was expected to be explained by role cognition (see Fig. 1).

Additionally, some academics have proposed various techniques for measuring sibling jealousy, including sibling jealousy interviews, questionnaires, and the triadic laboratory paradigm (Volling et al., 2010). However, each of these approaches has pros and cons (Qian et al., 2022b). Some academics have noted that there are often two types of emotions: trait and state (Khan et al., 2014). Jealousy is also divided into episodic jealousy (Gold, 1996; Smith et al., 1999) and dispositional jealousy (Cohen-Charash, 2009; Schalin, 1979). Dispositional sibling jealousy is a relatively stable personality disposition associated with a stable, chronic sense of inferiority (Parrott & Smith, 1993; Parrott, 1991). Episodic sibling jealousy is an experience that results from a specific social comparison, which consists of a sensory component and a comparison (Cohen-Charash,

Fig. 1 Mediation model



2009). For instance, the sibling jealousy interview method and the jealousy questionnaire primarily examine the sibling jealousy events that children can recollect and primarily measure dispositional sibling jealousy. Unlike the triadic laboratory paradigm, which investigates episodic sibling jealousy, this approach is more challenging to use in China given the normalization of the COVID-19 pandemic. Therefore, this study proposes to develop a valid and reliable virtual scenario-based experimental method to assess episodic sibling jealousy in preschool children aged 3–7 years, as well as to assess their dispositional sibling jealousy through a questionnaire.

Method

Participants

In this study, a total of 211 first-born children with younger siblings and their parents were randomly selected from kindergartens' grade one, grade two and grade three in Beijing, Inner Mongolia, Zhejiang, and Shaanxi. First-born children were interviewed and measured, and issued questionnaires to parents. 190 valid samples were collected, with an effective rate of 90%. Of these, 79 were boys, and 111 were girls. The mean age of first-born children was 4.43 years ($SD = 0.92$), and that of second-born children was 1.63 years ($SD = 1.18$). The average age gap between firstborns and their younger siblings was 3.10 years. The number of parents with a college education was the largest, accounting for 43.7%; and median family income with a total monthly income between 5000 and 7000 yuan was the largest, accounting for 37.4%.

Measures

Sibling jealousy virtual experiment method A self-programmed sibling jealousy virtual experiment was used to measure episodic sibling jealousy in first-born children. The virtual experiment was based on the classical experiments of the “Triad Laboratory Paradigm” (Fivaz-Depuersinge et al., 2010), and the experimental procedure was adapted into a virtual game procedure called “Fantasy Forest” (mini-game test), which was programmed by professional programmers and played by a child on a touch-screen computer or tablet.

The purpose of the Fantasy Forest mini-game test was to investigate the children's sibling jealousy in the simulated situation. Before the test began, the researchers first guided the participants through language to stimulate their interest. The test consisted of three scenarios, which were as follows: First, participants were asked to choose a family member to play with (Younger brother or sister. Mom, dad and themselves have to be chosen) and a multiplayer game they wanted to play with their family members (pass the ball or jump rope). Secondly, the subjects were “told” (a voice prompt set in the program) that their parents would first play the game chosen by the children in scene 1 with their siblings, and the subjects would first play the jigsaw puzzle alone. The jigsaw puzzle and interactive scenes of parents and the sibling were simultaneously presented in the screen. Subjects could choose to play the puzzle first, and then observe the interaction between parents and siblings and intervene in their interaction (that was, interact with any role in the interaction process of parents and siblings, no limit of times), but subjects could not participate in the game of parents and siblings. There were four types of interactions that can be performed: hugging the parent/sibling, holding the parent/sibling's hand, pushing the parent/sibling away, and hitting the parent/sibling on the body. The puzzles were played simultaneously with the interactive games of parents and compatriots for 3 minutes. Finally, the subjects reported their emotional experiences when they had just watched their parents play the game with their own siblings, but not with themselves.

The experiment measured episodic sibling jealousy of children in terms of jealous emotions (three types, including happy, sad, and angry) and jealous behaviors (four types, including pulling, hugging, pushing away, and hitting). Jealous behaviors were scored on a 3-point scale (1 never, 2 occasionally, 3 always). It was scored every 15 seconds, for a total of 12 times. The scores within each time were summed and divided by the number of 12-time intervals to obtain the mean score for each type. Jealous emotion was assessed using the overall assessment method to rate the subject child's emotional response during the 3 minutes, and was determined based on the child's emotional choice, taking into account the intensity, frequency and duration of the child's expression of that emotion throughout the 3 minutes, using a 3-point scale (1 never, 2 occasionally, 3 always). In particular, “happy” was scored inversely, and “sad” and

“angry” were scored positively. The Cronbach’s α of the questionnaire was 0.760.

Sibling jealousy questionnaire This study used the “*Sibling Jealousy Questionnaire*” developed by Qian et al. (2021) to measure dispositional sibling jealousy. The questionnaire consisted of 16 questions, divided into four dimensions about sadness and despair when losing a valuable relationship (e.g., “After the second baby was born, the first baby often cried sadly”; Cronbach’s $\alpha=0.854$), frustration with rivals (e.g., “When you praise the second child, the first child will try to get your attention”; Cronbach’s $\alpha=0.890$), hostility toward the rival (e.g., “After the second baby was born, the first baby showed aggressive behavior, such as hitting the second baby with his hand”; Cronbach’s $\alpha=0.775$), and hostility toward loved ones (e.g., “After the birth of the second child, the first child becomes irritable and often loses his temper with his family”; Cronbach’s $\alpha=0.755$). The questionnaire was completed by parents in multiple-children family. And the questionnaire was scored on a five-point Likert scale. The higher the total score, the higher the level of sibling jealousy. The Cronbach’s α of the questionnaire was 0.909.

Parental role expectation questionnaire This study used the expectation dimension of the questionnaire “*Parenting Views of Second Child Questionnaire*” developed by Wang (2020), which consisted of 10 questions. This questionnaire was divided into four dimensions, including expectation of independence and self-improvement (e.g. “The first child should be more independent than before”; Cronbach’s $\alpha=0.771$), expectation of good character (e.g. “The older child should learn to share more than the second child”; Cronbach’s $\alpha=0.787$), expectation of caring for the second child (e.g. “The older child should take on more household chores”; Cronbach’s $\alpha=0.768$), and learning expectations (e.g. “the older child should have better academic performance than the second child”; Cronbach’s $\alpha=0.522$). With a Likert scale of 1 to 5, subjects were asked to select the response that best reflected their current situation, ranging from entirely disagree to completely agree. Higher scores reflected higher levels of parental expectations for the first-born child’s role. The Cronbach’s α of the questionnaire was 0.768.

Interviews of children’s role cognition Based on the social comparison theory, the interview outline prepared by Gong (2018) was briefly modified and organized regarding the existing relevant scale questionnaires, and the interview was conducted with the first-born children of multiple-child family aged 3-7 years. Firstly, show a first-born child a picture of a toy snatching between two siblings, and the subject was asked to precisely describe the number of persons and events

in the image of the sibling fighting over the toy in order to thoroughly comprehend the picture’s content, and further help him or her to identify the situation where resources are limited (such as having only one toy). Secondly, the first-born child was asked whether he or she would grab toys from the younger sibling and reasons (“yes” was 1, and “no” was 0).

Research procedure

Equipment for the virtual experiment, as well as paper, pens, tape recorders, and photographs for the interviews, should be prepared in advance. With the consent of the instructors and parents, the children were first escorted to a quiet room where they were tested separately for the virtual experiment while the researcher helped set up the equipment and offered the necessary support. Following the simulation, the child was questioned by the researcher, who posed questions and got responses from the youngster. Record the interview procedure on tape, and then collect the content of the interview. The parents were then given paper questionnaires and computerized questionnaires.

Data processing

Data processing analysis with Pearson correlation and mediating effect test was performed using SPSS22.0 and an R package for mediation analysis confidence intervals (RMediation).

Results

Pearson correlation analysis was conducted to examine the relationships among parental role expectation, first-born children’s role cognition and sibling jealousy. Parental role expectation was positively related to first-born children’s role cognition ($r=0.209, p < 0.01$), episodic sibling jealousy ($r=0.167, p < 0.05$) and dispositional sibling jealousy ($r=0.191, p < 0.01$), and first-born children’s role cognition was positively related to episodic sibling jealousy ($r=0.817, p < 0.01$) and dispositional sibling jealousy ($r=0.163, p < 0.05$) (see Table 1).

According to the category mediation test procedure proposed by Fang et al. (2017), the unified scale method was adopted to judge the significance of mediating effect based on the significance of $Z_a \times Z_b$.

Binary logistic regression was carried out using gender, age, gender combination, and age difference as covariates, parental role expectations as independent factors, and resource contender role recognition of the first-born children as dependent variables. The results of omnibus test of binary logistic regression model showed that $\chi^2=8.319$,

$p = 0.004 < 0.05$, indicating that the value of at least one variable in the fitted model was statistically significant, that was, the model construction was significant. The regression analysis revealed that parental role expectation had a significant positive impact on the resource contender role recognition with a regression coefficient of 0.717 and a significant level of 0.01 ($z = 3.030, p = 0.002 < 0.01$). It demonstrated that the higher parent’s expectations, first-borns were more inclined to snatch toys from their younger siblings.

The “resource contender” role cognition and parental role expectation were chosen as independent factors, while episodic and dispositional sibling jealousy was taken as dependent variables for a linear regression analysis. Gender, age, gender combination, and age difference were used as covariates (see Table 2). The “resource contender” role cognition had a significant positive impact on episodic sibling jealousy, as evidenced by the regression coefficient of $b = 0.815$ ($t = 18.637, p = 0.000 < 0.01$). The regression coefficient of parental role expectation on episodic sibling jealousy was $b = 0.003$ ($t = 0.068, p = 0.946 > 0.05$), and the regression coefficient of “resource contender” role cognition on dispositional sibling jealousy was $b = 0.114$ ($t = 1.553, p = 0.122 > 0.05$). The dispositional sibling jealousy was positively predicted by parental role expectation, as

indicated by the regression coefficient of $b = 0.166$ ($t = 2.281, p = 0.024 < 0.05$).

When the mediating variable was a category variable, MacKinnon and Cox (2012) advised using the distribution of the product $Z_a \times Z_b$ to assess the mediating effect. Through RMediation, the $Z_a \times Z_b$ asymmetric confidence interval was obtained. If the confidence interval did not include 0, it indicated that the mediation effect was significant. RMediation of episodic and dispositional sibling jealousy showed that the former’s 95% confidence interval of $Z_a \times Z_b$ was [1.106, 3.796], excluding 0. The latter’s 95% confidence interval of $Z_a \times Z_b$ was [-0.005, 0.232], including 0. Therefore, “resource contender” role cognition had a complete mediating effect between parental role expectation and episodic sibling jealousy (see Fig. 2), and “resource contender” role cognition had no significant mediating effect between parental role expectation and dispositional sibling jealousy.

Discussion

This study is the first to explore the relationship among parental role expectations, first-born children’s cognition of the “resource contender” role and sibling jealousy. The main finding was that parental role expectations positively

Table 1 Pearson correlation coefficients of the study variables ($n = 190$)

	<i>M</i>	<i>SD</i>	1	2	3	
1 parental role expectation	2.66	0.76	–			
2 children’s role cognition	0.30	0.46	0.209**	–		
3 episodic sibling jealousy	6.90	1.92	0.167*	0.817**	–	
4 dispositional sibling jealousy	1.72	0.56	0.191**	0.163*	0.165*	–

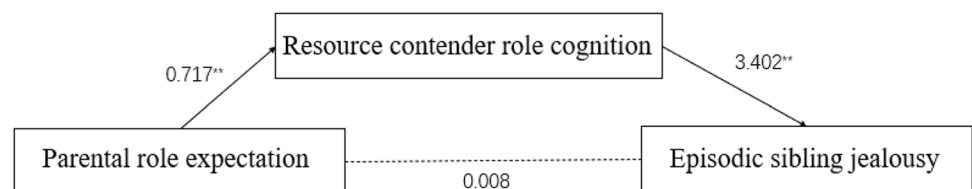
* $p < 0.05$, ** $p < 0.01$

Table 2 Linear regression of parental role expectation and role cognition on sibling jealousy

	<i>B</i>	<i>SE</i>	<i>t</i>	R^2	<i>F</i>
Episodic sibling jealousy					
children’s role cognition	0.815	0.183	18.637**	0.663	$F(4,183) = 63.102^{**}$
parental role expectation	0.003	0.111	0.068		
dispositional sibling jealousy					
children’s role cognition	0.114	0.088	1.553	0.057	$F(4,183) = 2.894^{**}$
parental role expectation	0.166	0.054	2.281*		

* $p < 0.05$, ** $p < 0.01$

Fig. 2 Resource contender role cognition mediation model



predicted the perception of the role of “resource contender”, suggesting that higher the parental role expectations, more likely it would be that the first-born children snatch toys from their siblings. This is generally consistent with previous research findings (Jiang, 2019; Maccoby & Martin, 1983; Qian, 2022a, b; Sigel, 1986; Van, 1996; Zhang, 2018). Children’s cognitive development may be significantly impacted by the parenting attitudes of both parents (Qian et al., 2022), which include parental expectations (Xu et al., 2008). In multiple-child families, parents often place unreasonably high expectations on older children. When parents do not share these expectations with older children and lack encouragement for them, it may increase the psychological burden on older children and may lead to negative self-perceptions (Duan, 2021). Zhang’s (2018) findings also suggest that if first-born children who are constantly disciplined and forced to humble themselves in front of their younger siblings are more likely to have sibling disputes as well as poor opinions of themselves. Luo et al. (2016, 2017) also found a positive correlation between parenting perceptions and children’s self-awareness.

This study also found that parental role expectation had a positive predictive effect on dispositional sibling jealousy and first-born children’s “resource contender” role cognition mediated the effect of parental role expectations on episodic sibling jealousy completely, which is not consistent entirely with the hypothesis of this study. Because no pertinent studies have been found, the interpersonal system theory of jealousy (Volling et al., 2010) and the social construction theory of jealousy (Kong, 2008) can both be used to explain the mediating effect discovered in this study. The social construction theory of jealousy emphasizes the impact of the socio-cultural environment on jealousy and contends that jealousy results from an interactive process of social and psychological co-creation. According to the interpersonal systems theory of jealousy, sibling jealousy is influenced by a person’s family, social environment, and personal traits. Parental views and behavior implicitly reflect social values and moral conventions, and parents are the main influencers of children’s perception of society and social influences in the household. Due to the influence of Chinese traditional culture of “orderly respect for the inferior and the elder and the younger,” the phenomenon of “the senior giving way to the younger” in Chinese families has become natural. Although this way of resolving conflicts has the positive intention of supporting the weak, it has a clear propensity to be overly straightforward, which could be indulgent toward the younger child and unfair toward the older child, which is not good for the growth of both parties (Wu et al., 2018). If the first-born children get their parents’ high expectations of independence and conduct, they may experience dispositional sibling jealousy in comparison to their younger siblings. Alternatively, parents excessively require the first child to be humble and share with the second child, and the first child will

feel the unfair treated by parents and become conscious of the need to pursue equality (e.g. in the interview, the first-born child would say “my sibling and I are mother’s children, why should I give the toy to him/her?”), and so there is more sibling jealousy on an episodic basis. As the family is the main place for social development of children, if parents can give their first-born children’s reasonable role expectations according to their characteristics, the first-born children’s can also develop good role qualities such as modesty, sharing, and responsibility in an environment where they perceive tolerance and equality, and can truly be “brotherly and respectful” (Qian et al., 2022), thus reducing the development of jealousy.

Limitations

There are some limitations in this study. Firstly, the sibling jealousy virtual experiment method developed in this study makes this experimental paradigm more convenient and simple for researchers to use. However, the virtual experimental scenario requires a certain degree of role substitution for the subjects compared with the real experimental scenario, and the differences between the virtual and real scenarios should be further eliminated in the future by improve the role involvement of the subjects in the virtual experiment scene. Secondly, sibling jealousy is not only present in the first-born child, but also the second-born child, and works in reverse to make the first-born child jealous of the second-born child. Therefore, follow-up studies could explore the causes of sibling jealousy in younger second children and the interaction of jealousy among siblings in multiple-child family.

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Data availability Data are available on request to the authors.

Declarations

Ethical approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Informed consent Informed consent was obtained from all individual participants included in the study.

Conflict of interest On behalf of all authors, the corresponding author states that there is no conflict of interest.

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