



Associations between Family Routines, Family Relationships, and Children's Behavior

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Abstract

Consistent daily routines are associated with children's well-being. Family routines provide both a predictable structure to guide behavior and an emotional environment that supports development. Enforcing family routines, improving family relationships, and creating a healthy home environment are necessary to maintain children's psychosocial health. This study examined the associations between family routines, family relationships, and elementary school children's behavior. Parents of 1515 third-grade students (8–9 years old) completed a self-administered questionnaire in Japan in 2017. We conducted a path analysis to examine the associations between the predictor variable of family routines, the mediating variable of family relationships, and the criterion variable of children's behavior. A total of 717 valid responses were included in the analysis. The results showed that family routines were significantly related to children's behavior (internalizing problem behaviors, externalizing problem behaviors, and prosocial behaviors) through family relationships (cohesiveness, expressiveness, and conflict). Family routines were positively associated with cohesiveness and expressiveness, and negatively associated with conflict. Cohesiveness was negatively associated with externalizing problem behaviors. While expressiveness was negatively associated with internalizing and externalizing problem behaviors, it was positively associated with prosocial behaviors. Conversely, conflict was positively associated with internalizing and externalizing problem behaviors, and negatively associated with prosocial behaviors. Our findings indicate that family routines may protect children's mental health from the stressors of daily life and foster interpersonal and social competence. Moreover, family routines may stabilize family relationships, reduce children's problem behaviors, and improve social competence.

Keywords Family routines · Family relationships · Children's behavior · Mental health

Highlights

- Based on a survey of Japanese parents, family routines were associated with children's behaviors and well-being.
- We also examined the mediating role of family relationships in this association.
- Family routines were positively related to family cohesion and expressiveness and negatively related to family conflict.
- Family relationships were related to internalizing and externalizing behaviors and prosocial behaviors.
- Family relationships partially mediated the relationship between family routine and children's behaviors.

Consistent daily routines have been associated with children's well-being. Family routines provide both a predictable

structure to guide children's behavior and an emotional environment that supports development (Liu & Merritt, 2021; Spagnola & Fiese, 2007). Routines bring stability and predictability to family life and promote children's well-being and health (Phillips et al., 2018; Wildenger et al., 2008). Thus, parents' direct involvement with children and family environment factors are important for maintaining children's psychosocial well-being. Although most parenting research emphasizes a direct approach to raising children, such as parenting practices, a comprehensive approach to the environment surrounding the children is essential.

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Higher levels of positive parenting practices have been associated with lower social or behavioral difficulties (Gryczkowski et al., 2010; Hosokawa & Katsura, 2019; Stormshak et al., 2000), while negative parenting practices have been shown to consistently predict externalizing problems (Bayer et al., 2008). Thus, while prior research mostly focuses on the quality of parenting behaviors, structural aspects of family interactions are also important. Both parenting behaviors and family interactions—including family routines and family relationships—are important for children’s development. By contrast, although parenting practices provide a direct approach to children, family routines and family relationships constitute a comprehensive approach to the family environment. Family relationships involve diverse aspects. Family functioning is assessed using various scales and across various domains, among which cohesiveness, expressiveness, and conflict are common (Fok et al., 2014; Olson, 2011; Priest et al., 2020). Specifically, the Family Relationships Index has been used to assess family relationships (Hoge et al., 1989; Holahan & Moos, 1983; Moos & Moos, 1976). This index assesses family cohesion, expressiveness, and conflict as overall indicators of the quality of family relationships. The composite scale comprises 12 items and three factors (i.e., cohesiveness, expressiveness, and conflict subscales), and the reliability and validity of its Japanese version have been confirmed (Taguchi, 2009). The higher the score of each subscale, the higher the cohesiveness, expressiveness, and conflict. Cohesiveness is defined as the degree to which family members provide help, commitment, and support; are involved and committed to the family; help and support each other; have a sense of family togetherness; and are willing to devote time to the family (e.g., “Family members really help and support one another”). Expressiveness measures how many family members express feelings directly, are allowed and encouraged to be open with and express their feelings directly, and can share their feelings with each other (e.g., “We can say anything we want around the home”). Conflict measures the degree to which there is open conflict, anger, and aggression (including open expressions of anger and aggression) as well as conflicted interactions within the family (e.g., “We fight a lot in our family”). Several studies have identified the relationships between family routines and children’s behavior (DeCaro & Worthman, 2008; Fiese et al., 1993; Spagnola & Fiese, 2007) and those between family relationships and children’s behavior (Hirsch et al., 1985; Marsh et al., 2020; Tweed & Ryff, 1996). However, these relationships have not been analyzed simultaneously. Accordingly, we aimed to clarify the associations between the regularity of family routines, family relationships, and children’s behavior during their school years.

Family routines, also known as patterned interactions, play an important role in the life and functioning of families with children. Family routines refer to the level at which parents provide structure, consistency, and organization at home (Voydanoff et al., 1994). These routines are observable and involve repetitive family behaviors that structure family life (Schuck & Bucy, 1997). Such behaviors involve two or more family members and occur with predictable regularity in the family’s daily and weekly life. Family routines involve how a family organizes itself to get things done, spends time together, and has fun. Examples include eating meals together, spending regularly designated family leisure time, and coordinating wake-up and bedtime rituals, bathing rituals, greetings and goodbyes, and weekend leisure activities. Routines also serve to clarify family members’ roles and responsibilities, regulate children’s behavior, and give meaning to family life (Mackey & Greif, 1994). They help families identify who should do what, when, in what order, and how often. Thus, a child’s routine in the family is defined as “observable repetitive behaviors that directly involve the child and at least one adult in an interactive or supervisory role and occur with predictable regularity in the child’s daily or weekly life” (Sytsma et al., 2001).

Routines also play a major role in promoting family well-being (Denham, 2002, 2003) and health by providing stability and predictability in family life, thereby supporting social, emotional, and spiritual well-being (Koome et al., 2012). Basic daily routines, such as eating, sleeping, using the bathroom, maintaining hygiene, and getting dressed, help children develop their physical and mental health. These daily routines require appropriate training and repeated instruction for successful implementation by children. Family routines are also important factors in reducing the impact of and protecting children’s physical and mental health from the effects of stressors in daily life. Family routines increase stability by establishing expectations and creating greater predictability within the family. They provide both a predictable structure that guides behavior and an emotional climate that supports development. Family routines indicate the level of structure, consistency, and organization the parents provide in the family environment. Routines also serve to set events for child compliance by providing environmental cues for consistent and predictable behavior throughout the day. For example, children who routinely perform activities (i.e., at a fixed time, place, and in a typical order) are more likely to follow directions and perform those behaviors in the future. Having opportunities to practice expected behaviors through daily routines helps children produce and maintain appropriate behaviors (Harris et al., 2014). Consistent routines are associated with lower impulsivity, aggression, and oppositional behavior in children. Some studies (Koblinsky et al., 2006; Lanza &

Drabick, 2011) show that meaningful family routines help children maintain identity, stability, and a sense of belonging, while others emphasize the importance of family routines for children's behavioral development and psychobiological adjustment (DeCaro & Worthman, 2008; Fiese et al., 1993).

Family relationships affect children's behavior and development (Cowan & Cowan, 2019; Van As & Janssens, 2002). As familiar entities, families influence the health of children. Additionally, various problems that family members face may have psychosocial consequences for other family members. One psychosocial impact of such problems on other family members involves the impact of parents' mental health, such as depressive symptoms, on children's physical and psychological health (Hirsch et al., 1985; Tweed & Ryff, 1996). Furthermore, family customs represent the state of family relationships. They are believed to have the following effects (Fiese et al., 2002). First, the more the family routines are formed, the more cohesive the family; furthermore, the better protected the family's physical and mental health, the less conflict within the family and the better the family relationships. Second, the presence of a certain regularity in family routines creates consistency and predictability in family life and forms a sense of permanence that protects members' physical and mental health from stressors. Third, family customs generate interactions among family members, which foster interpersonal and social skills and allow members to form a sense of belonging and adaptability to society. These effects are crucial in promoting children's healthy social-emotional development and fostering good mental and physical health, and their influence may extend to psychological conditions (Spagnola & Fiese, 2007). Additionally, family routines can play substantive roles in family relationships. Robust routines in the family are likely to transition into parenting practices that are associated with higher marital satisfaction and feelings of maternal competence (Fiese et al., 1993).

In summary, both family routines and family relationships are important for children's development and behavior and constitute a comprehensive approach to the family environment. However, prior studies have examined only the individual impacts of family routines and family relationships on children's development (Fiese et al., 2002; Spagnola & Fiese, 2007). Few have assessed the associations between family routines, family relationships, and children's behavioral problems and social competence within a comprehensive model. As these relationships need to be analyzed simultaneously, we aimed to assess the associations between family routines, family relationships, and children's behavior. We employed a cross-sectional design using mediator analysis as a first step toward developing future longitudinal research. Owing to the cross-sectional design, it was not possible to identify causal

relationships. However, it allowed us to identify relationships between family routines, family relationships, and children's behavior, and predict causal relationships (Maxwell et al., 2011). Analysis with a mediator variable plays an important role in causal estimation and reveals the relationship between the mediator and the effect of the predictor on the criterion variable (MacKinnon et al., 2007). This study is thus the first step toward developing future longitudinal studies. We hypothesized that children's behavior would be affected by family routines and family relationships.

Methods

Participants

This study is part of a research effort to examine the effects of the parenting environment on children's social development and adjustment. For this project, five-year-old preschoolers at 52 kindergartens and 78 nursery schools in Nagoya, Aichi, a major metropolitan area in Japan, were recruited in 2014. Since then, annual surveys have been conducted involving these participants.

The current study used the follow-up sample data from 2017. Self-reported questionnaires were administered to the parents ($N = 1515$) of the above participants ($N = 803$), who were 8–9 years old and in the third grade of elementary school at the time of data collection. To accurately identify the associations between family routines, family relationships, and children's behavior, children diagnosed with developmental disabilities and children whose parents did not complete the required items of the questionnaire were excluded from the analysis. In other words, the inclusion criteria were a) absence of developmental disability in the children and b) parents' responses to questionnaire items necessary for this analysis (i.e., family routines, family relationships, and children's behavior). Of the 803 children, 717 (89.3%) met the eligibility criteria. The mean age of the children was 9.08 years (standard deviation [SD] = 0.33; boys: $n = 366$; girls: $n = 351$). Regarding the study sample, we included individuals who participated in the project and met the inclusion criteria. In line with Fritz and MacKinnon's (2007) study, the sample size was found to be sufficient for analysis.

Ethics Statement

The parents of the children were informed of the purpose and procedures of the study and were made aware that their participation in the baseline survey was voluntary. Parents provided written informed consent on behalf of their children before they participated in the study, with the

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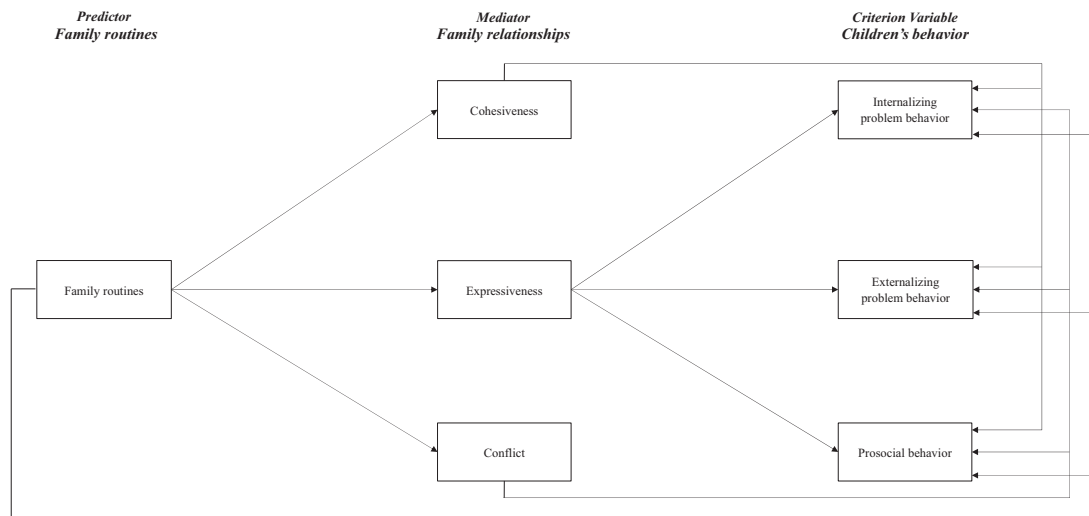


Fig. 1 Hypothesized Model. Note: This figure illustrates the hypothesized pathways between family relationships, family routines, and children's behavior

understanding that it covered both baseline and follow-up surveys. Ethical approval for this study was obtained from the authors' affiliate institutional review board (Approval Number Blinded).

Measures

Predictor: family routines

The Family Routines Inventory was used to evaluate the families' routines (Boyce et al., 1983; Jensen et al., 1983). This instrument measures the extent to which families are regularly involved in specific behavioral routines. It also measures positive, strength-promoting family routines; that is, "observable, repetitive behaviors that involve two or more family members and occur with predictable regularity in the family's daily life" (e.g., parent[s] taking some time each day to talk with the children, working parents playing with their children regularly after coming home from work, and families having a certain "family time" each week when they do things together at home). The Family Routines Inventory is a reliable and valid measure of family unity, solidarity, order, and overall satisfaction with family life. The scale comprises 25 items, and the reliability and validity of the Japanese version have been confirmed (Satoh et al., 2014). Higher scores indicate a family environment characterized by greater regularity in family routines.

Mediator: family relationships

The Family Relationships Index was used to assess family relationships (Hoge et al., 1989; Holahan & Moos, 1983;

Moos & Moos, 1976). This index assesses family cohesion, expressiveness, and conflict as overall indicators of the quality of family relationships. It is a composite scale comprising 12 items and three factors (i.e., cohesiveness, expressiveness, and conflict subscales), and the reliability and validity of the Japanese version have been confirmed (Taguchi, 2009). The higher the score of each subscale, the higher the cohesiveness, expressiveness, and conflict.

Criterion variable: children's behavior

Children's behavior was assessed using the Strength and Difficulty Questionnaire (SDQ; Goodman, 1997, 1999; Goodman et al., 2003), a widely used behavioral screening and mental health questionnaire for children. It comprises 25 items divided evenly into five subscales: emotional symptoms, behavior problems, hyperactivity inattention, peer problems, and prosocial behavior. The reliability and validity of the Japanese version have been confirmed (Matsuishi et al., 2008). Additionally, there is theoretical and empirical evidence for integrating the emotional symptoms and peer problems subscales into an internalizing problems subscale and the behavior problems and hyperactive inattention subscales into an externalizing problems subscale (Goodman et al., 2010). Accordingly, we used three subscales: internalizing problem behavior, externalizing problem behavior, and prosocial behavior.

Demographic covariates

Self-reported demographic information was collected, including the child's sex, family structure, household

income, and parent's education level; all of these have shown some association with the criterion variable of children's behavior (see Table 3). Therefore, to account for these confounders in our study's adjusted model, we included the indicators of sex, family structure, household income, and parents' education level as covariates.

Data Analyses

Correlation analyses were used to measure the associations between family routines, family relationships (cohesiveness, expressiveness, and conflict), and children's behavior (internalizing problem behavior, externalizing problem behavior, and prosocial behavior). Moreover, a path analysis was conducted to estimate the direct and indirect paths between them. The regularity of family routines was specified as the predictor, family relationships as the mediator, and children's behavior as the criterion variable. The hypothesized model is shown in Fig. 1. The comparative fit index (CFI; Bentler, 1990), incremental fit index (IFI; Bollen, 1990), and root mean square error of approximation (RMSEA; Steiger, 1990) were used to evaluate the goodness of fit. Good model fit is reflected by CFI and IFI values greater than 0.90 (Bentler, 1990; Bollen, 1990) and an RMSEA value below 0.08 (Browne & Cudeck, 1993). All statistical analyses were performed using SPSS version 23.0 and Amos version 23.0.

Results

Preliminary Analysis

The participants' demographics (children's sex, family structure, household income, and parents' education level) are shown in Table 1. The descriptive statistics of the variables measured by the scales—that is, family routines, family relationships (cohesiveness, expressiveness, and conflict), and children's behavior (internalizing problem behavior, externalizing problem behavior, and prosocial behavior)—are shown in Table 2. The correlation matrix of family routines, family relationships, children's behavior, and the demographic covariates is shown in Table 3. The analysis of family routines, family relationships, and children's behavior showed that all the correlations were statistically significant. Family routines, family relationships, and the indicators of children's behavior were therefore interrelated, thereby supporting our hypothesis. Family routines were positively associated with the cohesiveness and expressiveness of family relationships and negatively associated with conflict. They were also negatively associated with children's internalizing and externalizing problem behaviors and positively associated with prosocial behavior.

Table 1 Demographic characteristics of the participants ($N = 717$)

Description	<i>n</i>	%
Sex		
Male	366	51.0
Female	351	49.0
Family structure		
Single-parent family	42	5.9
Two-parent family	675	94.1
Annual household income (million JPY)		
<4	128	17.9
4–6	216	30.1
6–9	175	24.4
≥9	186	25.9
Maternal education level		
Compulsory education (9 years)	11	1.5
Upper secondary school (12 years)	134	18.7
Less than four years at college/university (13–15 years)	288	40.2
Over four years at college/university (≥16 years)	271	37.8
Paternal education level		
Compulsory education (9 years)	18	2.5
Upper secondary school (12 years)	142	19.8
Less than four years at college/university (13–15 years)	96	13.4
Over four years at college/university (≥16 years)	417	58.2

Table 2 Descriptive statistics of the study variables

Description	Range	<i>M</i>	<i>SD</i>	α
Family routines: family routines inventory				
Family routines	0–75	44.65	10.24	0.80
Family relationships: family relationships index				
Cohesiveness	0–12	9.45	2.09	0.80
Expressiveness	0–12	8.13	2.00	0.68
Conflict	0–12	4.99	2.51	0.69
Children's behavior: SDQ				
Internalizing problem behavior	0–20	3.59	2.95	0.81
Externalizing problem behavior	0–20	5.02	3.23	0.82
Prosocial behavior	0–10	6.72	2.05	0.71

M median, *SD* standard deviation, *SDQ* Strength and Difficulty Questionnaire

Family Relationships, Family Routines, and Children's Behavior

The results of the path analyses are shown in Table 4. Significant associations are also shown in the path diagram (Fig. 2). Our results showed that family routines were significantly related to children's behavior (across all three

Table 3 Correlations between family routines, family relationships, and children’s behavior

Variable	1	2	3	4	5	6	7	8	9	10	11	12
Family routines												
1. Family routines	—											
Family relationships												
2. Cohesiveness	0.494***	—										
3. Expressiveness	0.372***	0.657***	—									
4. Conflict	-0.136***	-0.250***	-0.089*	—								
Children’s behavior												
5. Internalizing problem behavior	-0.133**	-0.132***	-0.163***	0.105**	—							
6. Externalizing problem behavior	-0.174***	-0.273***	-0.193***	0.331***	0.288***	—						
7. Prosocial behavior	0.235***	0.228***	0.213***	-0.154***	-0.071*	-0.315***	—					
Demographics												
8. Sex	-0.011	-0.046	-0.052	-0.013	0.007	-0.177***	0.162***	—				
9. Family structure	-0.018	0.097*	0.025	-0.085*	0.057	-0.067	-0.007	-0.005	—			
10. Annual household income	-0.035	0.086*	0.057	-0.041	-0.091*	-0.093*	-0.027	0.040	0.224***	—		
11. Maternal education level	0.036	0.078*	0.056	0.032	-0.121**	-0.122**	-0.055	0.056	0.106**	0.333***	—	
12. Paternal education level	-0.062	0.027	-0.002	-0.050	-0.097*	-0.147***	-0.009	0.054	0.108**	0.276***	0.397**	—

Demographics: Sex (0 = male, 1 = female); family structure (0 = single-parent family, 1 = two-parent family)

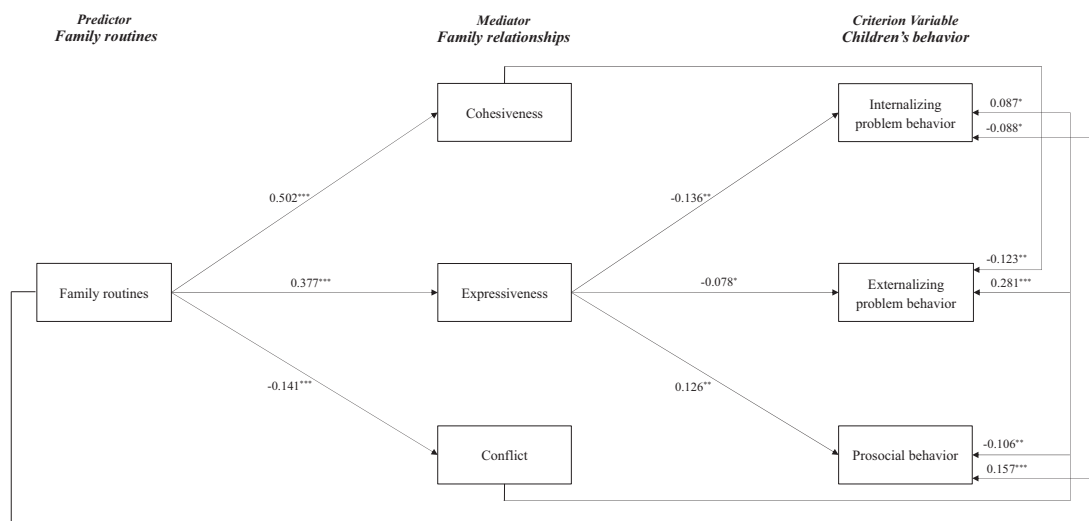
* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table 4 Path analyses

Construct			<i>B</i>	<i>SE (B)</i>	β	<i>p</i>
Family routines						
Family routines	→	Cohesiveness	0.502	0.034	14.808	<0.001
Family routines	→	Expressiveness	0.377	0.037	10.285	<0.001
Family routines	→	Conflict	-0.141	0.039	-3.602	<0.001
Family routines	→	Internalizing problem behavior	-0.088	0.046	-1.939	0.042
Family routines	→	Externalizing problem behavior	-0.048	0.042	-1.138	0.255
Family routines	→	Prosocial behavior	0.157	0.044	3.593	<0.001
Family relationships						
Cohesiveness	→	Internalizing problem behavior	0.036	0.055	0.646	0.518
Cohesiveness	→	Externalizing problem behavior	-0.123	0.050	-2.437	0.005
Cohesiveness	→	Prosocial behavior	0.058	0.053	1.090	0.276
Expressiveness	→	Internalizing problem behavior	-0.136	0.050	-2.746	0.006
Expressiveness	→	Externalizing problem behavior	-0.078	0.045	-1.715	0.046
Expressiveness	→	Prosocial behavior	0.126	0.048	2.633	0.008
Conflict	→	Internalizing problem behavior	0.087	0.038	2.277	0.023
Conflict	→	Externalizing problem behavior	0.281	0.035	8.011	<0.001
Conflict	→	Prosocial behavior	-0.106	0.037	-2.882	0.004

SE standard error

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**Fig. 2** Statistically significant paths. Note: This figure illustrates the statistically significant paths in the hypothesized model. All the variables were converted to z-scores. Standardized path coefficients are presented in the figure. Path analyses control for child's sex, family

structure, annual household income, maternal education level, and paternal education level. Model fit statistics: $\chi^2(24) = 37.87$; CFI = 0.99; IFI = 0.99; RMSEA = 0.03; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

subscales) through family relationships (across all three subscales). Specifically, family routines were positively associated with cohesiveness ($\beta = 0.502$, $p < 0.001$) and expressiveness ($\beta = 0.377$, $p < 0.001$) and negatively associated with conflict ($\beta = -0.141$, $p < 0.001$). Cohesiveness was negatively associated with externalizing problem behavior ($\beta = -0.123$, $p = 0.005$). Expressiveness was negatively associated with internalizing problem behavior ($\beta = -0.136$, $p = 0.006$) and externalizing problem behavior ($\beta = -0.078$,

$p = 0.046$) but positively associated with prosocial behavior ($\beta = 0.126$, $p = 0.008$). Conflict was positively associated with internalizing problem behavior ($\beta = 0.087$, $p = 0.023$) and externalizing problem behavior ($\beta = 0.281$, $p < 0.001$) but negatively associated with prosocial behavior ($\beta = -0.106$, $p = 0.004$). Additionally, family routines were negatively associated with internalizing problem behavior ($\beta = -0.088$, $p = 0.042$) and positively associated with prosocial behavior ($\beta = 0.157$, $p < 0.001$).

Discussion

Our results showed that family routines were significantly related to children's behavior (internalizing problem behavior, externalizing problem behavior, and prosocial behavior) through family relationships (cohesiveness, expressiveness, and conflict). Specifically, family routines were positively associated with cohesiveness and expressiveness but negatively associated with conflict. Family relationships were also associated with children's behavior. Specifically, cohesiveness was negatively associated with externalizing problem behavior. Furthermore, expressiveness was negatively associated with internalizing and externalizing problem behaviors, but positively associated with prosocial behavior. By contrast, conflict was positively associated with internalizing and externalizing problem behaviors but negatively associated with prosocial behavior. These results are consistent with those of previous studies that examined the impact of family routines on children's behavior (DeCaro & Worthman, 2008; Fiese et al., 1993; Romano et al., 2022) and the impact of family relationships on children's behavior (Hirsch et al., 1985; Marchand-Reilly & Yaure 2019; Tweed & Ryff, 1996).

In this study, family routine was positively correlated with cohesiveness and expressiveness. Family routines are observable and repetitive family behaviors that lend structure and order to families (Wildenger et al., 2008). They are unique and meaningful family interactions that communicate family beliefs and values and provide families with a sense of stability, identity, and means of socialization. Family routines are powerful organizers of family life, providing stability during times of stress and transition. Thus, they may help improve family relationships, including cohesiveness and expressiveness (Dickstein, 2002).

In addition, family routines were negatively correlated with conflict in this study. Prior research found that higher family conflict and lower cohesion are associated with higher internalizing and externalizing of problems (Freed et al., 2015). Additionally, several dimensions of family relationships are correlated with children's internalizing and externalizing problem behaviors (Wiegand-Grefe et al., 2019). Family relationships are also a mediating factor in the association between parental and child psychopathology, pointing to their importance in the intergenerational transmission of mental illness (Daches et al., 2018). Thus, family relationships play a major role in fostering prosocial behavior, which is consistent with our results.

We also found a direct relationship between family routines and children's behavior. Family routines showed a negative association with internalizing problem behavior and a positive association with prosocial behavior. Routines, or patterned interactions, played an important role in the life and functioning of families with children. Routines

promote children's well-being and health by providing stability and predictability in family life and augmenting social, emotional, and spiritual well-being (Koulouglioti et al., 2011). Routines also clarify family members' roles and responsibilities, control children's behavior, give meaning to family life, and enhance family members' sense of belonging. The regularity of family routines may increase the consistency and predictability of family life and protect children's mental and physical health, such as anxiety related to the stressors in daily life. This, in turn, may reduce internalizing problems, as indicated by our results. Certain regularities in family customs may increase children's sense of permanence and predictability, foster interpersonal skills, and improve social adaptability through family interactions. This is consistent with prior research, which asserts that interactions among family members through family customs foster interpersonal and social skills and create a sense of belonging and adaptability to society (Dickstein, 2002). The family has the most important influence on physical and cognitive development in early childhood, and good family relationships predict high social competence in children (Li et al., 2015; Mousavi et al., 2015). Therefore, the promotion of children's well-being should be based not only on fostering direct nurturing attitudes toward the child but also on working on the entire family environment, through means such as the regularity of family routines.

Limitations

This study has several limitations. As this was a cross-sectional study, the causal relationships were unknown; however, it has been argued that family routines represent the state of family relationships and that more family customs lead to stronger family ties, less family conflict, and better family relationships (Boyce et al., 1983; Jensen et al., 1983). A cross-sectional analysis may suggest the existence of substantial indirect effects even when the true longitudinal indirect effects are zero (Maxwell et al., 2011). Thus, a variable found to be a mediator in a cross-sectional analysis may not be a mediator in a longitudinal analysis. Longitudinal studies should thus be conducted in the future. In addition, this study may be prone to self-reporting bias, as the parents filled in the questionnaires. For example, optimistic parents may have rated family routines, family relationships, and children's behavior in an overly positive manner. Incorporating both parent and child perspectives in future research would allow for a more objective evaluation. Furthermore, family routines and relationships are changing because of the COVID-19 pandemic (Bates et al., 2021; Hen-Herbst & Fogel 2021; Kracht et al., 2021). Therefore, this study may not be able to provide an accurate generalization of the current

association between family routines, family relationships, and children's behavior.

Conclusions

Our results showed that family routines were significantly related to children's behavior (internalizing problem behavior, externalizing problem behavior, and prosocial behavior) through family relationships (cohesiveness, expressiveness, and conflict). Specifically, family routines were positively associated with cohesiveness and expressiveness but negatively associated with conflict. Cohesiveness was also negatively associated with externalizing problem behavior, while expressiveness was negatively associated with internalizing and externalizing problem behaviors but positively associated with prosocial behavior. By contrast, conflict was positively associated with internalizing and externalizing problem behaviors but negatively associated with prosocial behavior. Our results suggest that family routines may stabilize family relationships, reduce children's problem behaviors, and improve their social competence.

Data availability

The datasets generated and/or analyzed during the current study are available from the corresponding author on reasonable request.

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Author Contributions R.H. acquired the funds needed for the study. R.H. and T.K. carried out the investigations. R.H. was involved in finalizing the methodology, administering the project, acquiring resources, and securing the software required for data analysis. T.K. provided supervision. Validation and visualization were performed by R.H. and T.K. The original draft was written by R.H. The draft was reviewed and edited by R.T. and T.K. All the authors read and approved the final draft.

Compliance with Ethical Standards

Conflict of Interest The authors declare no competing interests.

Ethics Approval and Consent to Participate This study was approved by the Kyoto University Graduate School of Medicine and the Faculty of Medicine Ethics Committee (E2322). We explained the objectives of the study to the participants and obtained written and informed consent from those who agreed to participate.

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