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Maternal decentering and child maladjustment: a mediated maternal psychological distress and parenting model

Yasuo Murayama[1] · Ai Uemiya[1] · Aiko Ohya[2]

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Abstract
Negative parenting, which exacerbates children's maladjustment, could result from poor mental health in parents. Therefore, factors that improve parental mental health may also facilitate positive parenting. One such factor is decentering (i.e., the capacity to observe internal experiences as passing mental phenomena that do not reflect self or reality). However, little research has examined the indirect association between parental decentering and children's maladjustment. This cross-sectional study investigated whether parental decentering was associated with child maladjustment through the mediation of parental psychological distress and parenting quality. Japanese mothers (N = 2522) participated in an online survey assessing parenting quality, maternal decentering levels, maternal psychological distress, and the oldest child's maladjustment level as reported by the mothers. A parallel mediation analysis revealed a significant indirect effect. Mothers with greater decentering demonstrated lower psychological distress and more positive and less negative parenting. These characteristics were related to lower maladjustment in their children as reported by the mothers. This is the first study to demonstrate the link between decentering and positive maternal parenting. Therefore, decentering may be a possible factor to promote better parenting.

Highlights

- Maternal decentering was associated with children's maladjustment as reported by the mothers.
- Mothers with greater decentering demonstrated lower psychological distress and better parenting.
- Incorporating strategies to improve parents' mental health into parent training programs can be helpful.

Keywords Decentering · Parenting · Psychosocial maladjustment in children · Parallel mediation analysis

1 Introduction

Harsh, negative parenting is a worldwide concern. A recent study among parents (n = 2068) of children aged 0 to 18 years reported that more than half of the sample had engaged in neglectful parenting behaviors and showed psychological aggression against their children in the previous month [1]. Moreover, over 50% of parents with children aged 1–10 years reported to have yelled at their children [2]. In Japan, we see a similar prevalence of negative

✉ Yasuo Murayama, y-murayama@staff.kanazawa-u.ac.jp | [1]Institutes of Human and Social Sciences, Kanazawa University, Kakuma-Machi, Kanazawa-Shi, Ishikawa, Japan. [2]Faculty of Psychology, Doshisha University, 1-3 TataraKyotanabe-Shi, Kyoto, Miyakodani, Japan.

parenting. More than half of Japanese parents of children aged 0–17 years (n = 5344) reported to have yelled at their children, and over 10% of them reported to have threatened them [3]. Furthermore, around 30% of Japanese parents frequently use harsh physical discipline methods on their children at home [4].

Parenting has been shown to contribute to the psychosocial adjustment or maladjustment in children. Positive parenting behaviors, such as support and warmth, have predicted fewer peer and behavior problems [5–7]. Conversely, negative parenting involving rejection and harsh discipline, predicts increased emotional and behavioral problems [8–10]. Furthermore, based on Japanese parental reports (n = 7354), positive parenting (e.g., support) has been negatively associated with children's bullying perpetration, whereas negative parenting (e.g., harsh discipline) has been positively associated with children's bullying victimization [11]. Therefore, parenting practices may have a crucial impact on child psychosocial adjustment.

Parental psychological distress (i.e., symptoms of depression and anxiety) [12] is a major factor leading to poor parenting. Among mothers (n = 16,131) in the UK, maternal psychological distress predicted an increased use of harsh parenting, even after controlling for whether the mothers received psychological treatment [13]. Regarding each symptom, a recent meta-analysis of 37 studies found that maternal depression was positively associated with negative parenting and negatively associated with positive parenting [14]. Furthermore, elevated depressive symptoms were linked with increased anger [15], a severe risk factor for harsh parenting [16]. In addition, mothers with greater anxiety reported more overprotective and unsupportive parenting [17]. These findings highlight the critical role of parental psychological distress in practicing parenting. Therefore, variables alleviating parental psychological distress may indirectly foster less negative parenting.

One such variable is decentering. Decentering is defined as the capacity to observe internal experiences, such as thoughts, feelings, and mental images, as passing mental phenomena that do not reflect the self or reality [18]. Individuals with greater decentering tend to be aware of the contents of their internal events (e.g., "I am thinking that I'm worthless") rather than immersing themselves in their internal events (e.g., "I'm worthless"). The decentered perspective is theorized to encourage individuals to disidentify from and reduce reactivity to their negative internal events [19]. Due to these efficacious functions, decentering is considered a critical variable in maintaining mental health [20].

The empirical research has provided support for the effects of decentering. For example, increased decentering predicted the reduction of depressive and anxiety symptoms among patients with depressive or social anxiety disorders who received psychological intervention [21, 22]. Additionally, increased decentering has been found to facilitate faster recovery from depressive and anxiety disorders [23]. In cross-sectional studies, decentering has been negatively correlated with depressive and anxiety symptoms, showing moderate to large effect sizes [20, 24]. Moreover, individuals with greater decentering exhibit lower negative emotion reactivity [25, 26], which is related to negative parenting [16, 27]. Therefore, it seems that parents with greater decentering can maintain lower psychological distress, indirectly encouraging them to engage in less negative parenting.

Based on the mentioned empirical findings (i.e., the effect of parenting on the adjustment in children, the effect of parental psychological distress on parenting behaviors, and the effect of decentering on the level of psychological distress), parental decentering may be indirectly associated with psychosocial maladjustment in children through the mediation of parental psychological distress and parenting. However, to our knowledge, research examining this indirect relationship is scarce. Moreover, few studies have examined the direct association between parental decentering and parenting. Given that individuals with greater decentering report higher satisfaction in caring for others [28], it is plausible that greater decentering in parents may be directly associated with more positive parenting. Additionally, while some researchers used a total parenting score which combined positive and negative parenting [29], multiple empirical studies have reported a weak correlation between positive and negative parenting (e.g., [30, 31]). Therefore, when examining associations between parenting and other variables, it is crucial to assess the association of each parenting behavior separately.

To address the limitations of previous studies, this cross-sectional study aims to elucidate the association between parental decentering and child maladjustment, by examining the mediating roles of parental psychological distress and parenting. Although this cross-sectional study is unable to truly examine the mediation model, this cross-sectional data can help us understand the mechanisms underlying the development of better parenting and provide insights for future longitudinal studies.

Given the findings mentioned above, we hypothesized that greater parental decentering is indirectly associated with lower levels of maladjustment in children, mediated by two variables: psychological distress in parents and parenting. Specifically, we proposed that (1) higher level of parental decentering is linked to lower psychological distress in parents [21, 22], (2) lower psychological distress in parents is associated with more positive and less negative parenting [13–17],

(3) such parenting behaviors are related to lower maladjustment in children [5–10], and (4) taken together, greater decentering in parents is indirectly associated with lower maladjustment in their children through the mediation of lower parental psychological distress and more positive/less negative parenting.

2 Method

2.1 Participants

The current study focused on mothers of the oldest child aged between 3 and 6 years, based on previous research indicating that (1) mothers are more likely than fathers to engage in negative parenting practices [32], (2) children aged between 3 and 6 years experience harsh physical discipline most frequently [32], and (3) the oldest child is more susceptible to problematic behaviors than their younger siblings [33]. We asked the Cross Marketing, Inc., a research company, to recruit mothers from across Japan who met these criteria. A total of 2,958 mothers who met the study's requirements were registered as members (potential respondents) with the company, and they were invited to participate via email. Of those, 2,522 (M_{age} = 35.22, SD_{age} = 4.77) agreed to participate and completed all questionnaires online. Since the company excluded those who failed to respond to any items, we had no missing data. Most participants were in their 30 s (70.3%), married (92.3%), and had two children (50.5%). The most common annual household income range was 5–6 million yen (44,248–61,469 US$), which is approximately the average annual household income in Japan (5,523,000 yen) [34]. Data were collected in October 2021 via the internet, and Table 1 presents the sample's demographic characteristics.

2.2 Measures

2.2.1 Maternal decentering

The Experiences Questionnaire—Japanese Version (EQ-J) [35] was used to assess the mothers' decentering level. The EQ-J, derived from the original EQ [20], contains 20 items grouped into two subscales: decentering and rumination. The 15-item decentering subscale (example item: "I can observe unpleasant feelings without being drawn into them") was used. Participants responded using a 5-point Likert-type scale (1 = *never* to 5 = *all the time*). The total score is calculated by summing the scores of the 15 items with a range of 15 to 75. Higher scores indicate greater decentering levels. A previous study reported that the EQ-J showed good internal consistency and moderate associations with relevant variables to decentering, which suggests that the EQ-J has reliability and validity [35]. Cronbach's alpha for the scale was 0.936 in this study.

2.2.2 Positive and negative parenting

The Positive and Negative Parenting Scale (PNPS) [36] measured everyday parenting quality. The PNPS comprises six subscales, each with four items: *involvement and monitoring* (for example, "I know the friends who are my child's likely playmates"), *positive responsivity* ("I give praise to my child when he/she does something well"), *respect for children's will* ("I let my child play as he/she wants"), *overprotection* ("I think that my child should follow what we (parents) say to become a worthy person"), *inconsistency* ("Sometimes I take my frustration or irritation out on my child"), and *harsh discipline* ("I hit my child's head or body as discipline"). Moreover, the PNPS includes two second-ordered subscales (positive and negative parenting). The positive parenting scale is composed of three subscales measuring constructive parenting: involvement and monitoring, positive responsivity, and respect for children's will subscales. The negative parenting scale comprises subscales related to harmful practices. In this study, the positive and negative scales assessed the participants' parenting qualities. The mothers responded on a 4-point Likert scale (1 = *never or almost never* to 4 = *frequently*). The total score of each subscale is calculated by summing the scores of the items which it is composed. The positive parenting scale has a range of 20 to 80, while the negative parenting scale ranges from 15 to 60. Higher scores on each parenting scale indicate greater positive/negative parenting. Ito et al.'s [36] study of Japanese mothers of children aged 3–15 years demonstrated that each subscale of the PNPS showed good internal consistency and moderate correlations with relevant variables to parenting, which suggests that the PNPS has reliability and validity. We instructed participants to respond to PNPS items based on the daily parenting of their oldest child. The Cronbach's alphas were 0.881 for the positive and 0.857 for the negative parenting scales.

Table 1 Sample characteristics

Participants' characteristic	*n*	%
Mother age: $M = 35.22$, $SD = 4.77$		
20 s	265	10.5
30 s	1774	70.3
40 s	481	19.1
50 s	2	0.1
Residential area		
Hokkaido	106	4.2
Tohoku	110	4.4
Kanto	831	33.0
Chubu	473	18.8
Kinki	542	21.5
Chugoku/Shikoku	228	9.0
Kyusyuu	232	9.2
Annual household income		
Under 1,000,000 yen (under 8,850 USD)	60	2.4
1,000,000–1,999,999 yen (8,850–17,698 USD)	75	3.0
2,000,000–2,999,999 yen (17,699–26,548 USD)	150	5.9
3,000,000–3,999,999 yen (26,549–35,397 USD)	330	13.1
4,000,000–4,999,999 yen (35,398–44,247 USD)	430	17.0
5,000,000–6,999,999 yen (44,248–61,946 USD)	727	28.8
7,000,000–9,999,999 yen (61,947–88,495 USD)	534	21.2
10,000,000–14,999,999 yen (88,496–132,742 USD)	173	6.9
15,000,000–19,999,999 yen (132,743–176,990 USD)	22	0.9
20,000,000 yen + (176,991 USD +)	21	0.8
Partnered status		
Married	2329	92.3
Divorced/Widowed	163	6.5
Single/Never Married	30	1.2
Number of children		
One	1102	43.7
Two	1273	50.5
Three	143	5.7
Four and above	4	0.2
Sex of the oldest child		
Male	1322	52.4
Female	1190	47.2
Age of the oldest child: $M = 5.56$, $SD = 1.68$		
3-years	377	14.9
4-years	720	28.5
5-years	822	32.6
6-years	603	23.9

UDS U.S. dollar

The conversion to U.S. dollars was calculated based on the exchange rate as of October 2021 (1 USD = 113 yen)

2.2.3 Psychosocial maladjustment in children

The Japanese version of the Strength and Difficulties Questionnaire-Parent Ratings Form (J-SDQ-P) [37] measured the participants' children's maladjustment. The SDQ, including the J-SDQ-P, validly assesses levels of adjusted and maladjusted behaviors of children aged 3–16 [37, 38]. The J-SDQ-P, adapted from the original version [34], contains 25 items grouped into five subscales, each with five items: *emotional symptoms* ("often complains of headaches, stomach-aches, or sickness"), *conduct problems* ("often loses temper"), *hyperactivity/inattention* ("restless, overactive, cannot stay still for

long"), *peer relationship problems* ("rather solitary, prefers to play alone"), and *prosocial behavior* ("considerate of other people's feelings"). The mothers responded using a 3-point Likert-type scale (0 = *not true* to 2 = *definitely true*). The total score of each subscale is calculated by summing the scores of the items which it is composed. We used the scores from the difficulty subscale to assess the psychosocial maladjustment level of the participants' children. The difficulty score is the sum of all subscale scores, excluding the prosocial subscale with a range of 0 to 40. Higher scores indicating greater maladjustment. A previous study reported that the J-SDQ-P showed good internal consistency and factorial validity [37]. The participants answered the J-SDQ-P based on the daily parenting of their oldest child. The Cronbach's alpha of the difficulty subscale was 0.781.

2.2.4 Maternal psychological distress

We used the Kessler 6 Japanese version (K6-J), adapted from the original K6 [39], to measure psychological distress among the mothers. The participants responded to the K6-J with six items (example item: "During the last 30 days, how often did you feel worthless?") on a 5-point Likert scale (0 = *all of the time* to 4 = *none of the time*). The total score, ranging from 0 to 24, is obtained by summing the scores of the 6 items. Higher scores indicated that individuals have greater psychological distress. The K6-J has shown good internal consistency and a moderate correlation with CES-D [40], which suggests that the K6-J had reliability and validity. The scale's Cronbach's alpha was 0.937.

2.3 Procedure

The survey was administered online. All participants provided informed consent before responding. Their identities were anonymized. It took about fifteen minutes for the mothers to complete the above-mentioned questionnaires. They were compensated in electronic currency (The authors do not know how much the participants earned, as the research company determined the amount). As the research company has a policy of not providing clients (e.g., researchers) with missing data for quality assurance of the product (i.e., survey data), we had no missing data. The ethics board of (blinded for review) approved the study.

2.4 Data analysis

For descriptive statistics, zero-order correlations (Pearson's r) were evaluated between each measured variable. Included potential confounding variables as covariates in the model, such as maternal/oldest child's age(s), the oldest child's sex, number of children, and socioeconomic status level. The gender of the oldest child was dummy-coded, with 0 representing boys and 1 representing girls. Annual household income was transformed into an ordinal scale, ranging from 1 ('Under 1,000,000 yen') to 9 ('20,000,000 yen + '), as shown in Table 1.

We conducted mediation analysis with the PROCESS macro [41] (model number: 81). A serial-parallel multiple mediator model (Fig. 1) was used to examine whether maternal decentering was directly or indirectly associated with the oldest child's maladjustment level as reported by the mothers through the mediation of maternal psychological distress and parenting (i.e., positive and negative parenting). Maternal ability to reflect their and another's mental and emotional states is directly associated with internal and external child behaviors [42]. Therefore, we set the direct relationship between maternal decentering and the psychological maladjustment in the oldest child as reported by the mother. All quantitative variables were mean-centered and then entered into the mediational analyses. The analysis used the bootstrap method (bias-corrected percentiles), recommended for mediation analyses [43], with 10,000 samples, stabilizing the confidence interval estimation's precision [41]. We used the completely standardized effect recommended for mediation models as an index of the model's indirect effect sizes [41]. While the PROCESS macro does not provide any *p*-values for the completely standardized indirect effects, the indirect effects are significant if the 95% confidence interval generated by the PROCESS macro does not contain zero. All analyses were performed with Predictive Analytic Software (PASW) Statistics (SPSS Ver. 27.0) and significance levels set at $p < 0.05$.

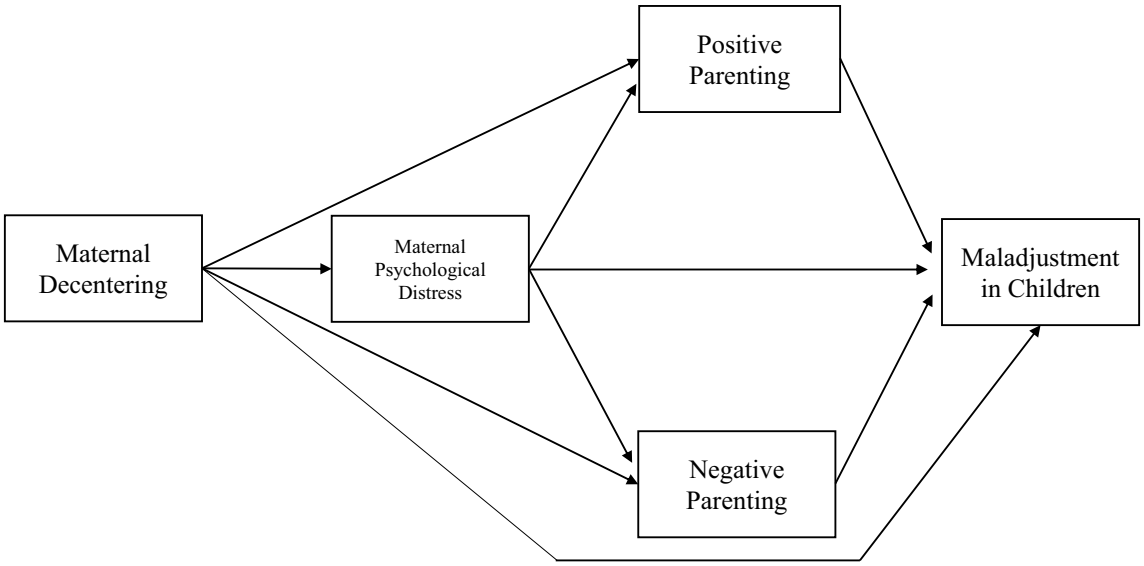

Fig. 1 The serial-parallel mediation model in the current study

3 Results

3.1 Descriptive statistics

Table 2 displays the means, standard deviations, and zero-ordered correlations among the study's variables. Maternal decentering was inversely correlated with negative parenting ($r = -0.304$, $p < 0.001$), oldest child's maladjustment as reported by the mothers ($r = -0.256$, $p < 0.001$), and maternal psychological distress ($r = -0.359$, $p < 0.001$), but positively correlated with positive parenting ($r = 0.346$, $p < 0.001$). The oldest child's maladjustment as reported by the mothers was positively correlated with negative parenting ($r = 0.417$, $p < 0.001$) and maternal psychological distress ($r = 0.435$, $p < 0.001$), but negatively correlated with positive parenting ($r = -0.307$, $p < 0.001$). Only household income consistently showed weakly significant correlations with maternal decentering, positive and negative parenting, oldest child's maladjustment as reported by the mothers, and maternal psychological distress ($r = |.105| - |.166|$, $ps < 0.001$).

Table 2 Descriptive statistics and Pearson's product-moment correlations among variables

Variables		1	2	3	4	5	6	7	8	9	*M*	*SD*
1	Maternal decentering	–									28.57	7.60
2	Positive parenting	.346***	–								35.47	6.33
3	Negative parenting	– .304***	– .153***	–							22.62	5.97
4	Children's maladjustment	– .256***	– .307***	.417***	–						11.96	5.66
5	Maternal psychological distress	– .359***	.170***	.435***	.337***	–					4.72	5.51
6	Mother's age	.001	– .037	– .025	– .006	– .015	–				35.22	4.77
7	The number of children	.008	.046*	.032	– .094***	– .064**	– .236***	–			1.62	0.60
8	Age of the oldest child	.034	.080***	.012	– .087***	– .005	.130***	.164***	–		4.65	1.00
9	Sex of the oldest child (ref. = boy)	.017	.007	– .034	– .027	– .031	.009	– .030	– .036	–	0.47	0.50
10	Annual household income	.126***	.105***	– .113***	– .166***	-.114***	.100***	.070***	.027	– .003	5.56	1.68

*$p < .05$, **$p < .01$, ***$p < .001$; The boys were dummy-coded as 0, while the girls were corded as 1; The annual house incomes were coded from 1 ("Under 1,000,000 yen") to 9 ("20,000,000 yen + ")

3.2 Mediation analysis

Table 3 shows the mediation analysis summary. In the model with maternal psychological distress as a dependent variable, greater decentering was found to be associated with lower levels of maternal psychological distress ($B = -0.350$, $p < 0.001$). In the models where positive and negative parenting were dependent variables, decentering was directly associated with positive ($B = 0.318$, $p < 0.001$) and inversely associated with negative parenting ($B = -0.164$, $p < 0.001$). Maternal psychological distress was inversely associated with positive parenting ($B = -0.049$, $p < 0.05$) and directly associated with negative parenting ($B = 0.373$, $p < 0.001$). In the final model, where the oldest child's maladjustment level as reported by the mothers was a dependent variable, although maternal decentering was not significantly associated with the oldest child's maladjustment ($B = -0.024$, $p = 0.213$), maternal psychological distress and parenting showed

Table 3 Results of mediation analysis for the indirect relationship between maternal decentering and maladjustment in the oldest child

Variables	*B*	95% CI for B		*SE*	*β*	*p*	R^2
		LL	UL				
DV: Maternal psychological distress							.138***
Maternal decentering	− 0.350	− 0.387	− 0.314	0.019	− 0.350	< .001	
Mother's age	− 0.028	− 0.066	0.011	0.020	− 0.028	.159	
Number of children	− 0.068	− 0.106	− 0.029	0.020	− 0.068	< .001	
Age of the oldest child	0.023	− 0.015	0.060	0.019	0.023	.233	
Sex of the oldest child (ref. = boy)	− 0.052	− 0.125	0.021	0.037	− 0.026	.162	
Annual household income	− 0.037	− 0.059	− 0.015	0.011	− 0.063	< .001	
DV: Positive parenting							.133***
Maternal decentering	0.318	0.279	0.357	0.020	0.318	< .001	
Maternal psychological distress	− 0.049	− 0.088	− 0.010	0.020	− 0.049	.015	
Mother's age	− 0.051	− 0.089	− 0.013	0.020	-0.051	.009	
Number of children	0.012	− 0.026	0.051	0.020	0.012	.534	
Age of the oldest child	0.072	0.034	0.109	0.019	0.072	< .001	
Sex of the oldest child (ref. = boy)	0.009	− 0.065	0.082	0.037	0.004	.920	
Annual household income	0.037	0.015	0.059	0.011	0.061	.001	
DV: Negative parenting							.221***
Maternal decentering	− 0.164	− 0.201	− 0.127	0.019	− 0.164	< .001	
Maternal psychological distress	0.373	0.336	0.410	0.019	0.373	< .001	
Mother's age	− 0.001	− 0.037	0.036	0.019	− 0.001	.963	
Number of children	0.059	0.022	0.095	0.019	0.059	.002	
Age of the oldest child	0.010	− 0.025	0.046	0.018	0.010	.568	
Sex of the oldest child (ref. = boy)	− 0.036	− 0.105	0.033	0.035	− 0.018	.310	
Annual household income	− 0.032	− 0.053	− 0.011	0.011	− 0.054	.003	
DV: Children's maladjustment							.274***
Maternal decentering	− 0.024	− 0.062	0.014	0.019	− .024	.213	
Maternal psychological distress	0.144	0.105	0.183	0.020	.144	< .001	
Positive parenting	− 0.211	− 0.247	− 0.175	0.018	− .211	< .001	
Negative parenting	0.308	0.271	0.346	0.019	.308	< .001	
Mother's age	− 0.005	− 0.040	0.031	0.018	− .005	.803	
Number of children	− 0.071	− 0.106	− 0.036	0.018	− .071	.001	
Age of the oldest child	− 0.059	− 0.093	− 0.024	0.018	− .059	< .001	
Sex of the oldest child (ref. = boy)	− 0.029	− 0.096	0.038	0.034	− .014	.399	
Annual household income	− 0.050	− 0.070	− 0.029	0.010	− .083	< .001	

The boys were dummy-coded as 0, while the girls were corded as 1. The annual house incomes were coded from 1 ("Under 1,000,000 yen") to 9 ("20,000,000 yen + ")

CI confidence interval, *LL* lower limit, *UL* upper limit, *SE* standard error

*$p < .05$, **$p < .01$, ***$p < .001$

significant associations with the child's maladjustment. Specifically, maternal psychological distress and negative parenting indicated positive associations (maternal psychological distress: $B = 0.144$, $p < 0.001$; negative parenting: $B = 0.308$, $p < 0.001$), whereas positive parenting showed an inverse association ($B = -0.211$, $p < 0.001$).

We found a significant indirect effect ($B = -0.212$, 95% *CI* [− 0.239, − 0.186], $p < 0.001$) but not a direct effect ($B = -0.024$, 95% *CI* [− 0.062, 0.014], $p < 0.001$). In summary, the total effect of decentering in the model was significant ($B = -0.236$, 95% *CI* [− 0.274, − 0.199], $p < 0.001$). The completely standardized effect for the total effect was − 0.236. This value indicates that a 1 *SD* greater maternal decentering was associated with a 0.236 *SD* lower level of maladjustment in the oldest child, as reported by the mothers, through the mediation of maternal psychological distress and parenting. The completely standardized effect of the indirect effect was -0.212, while that of the direct effect was − 0.024.

Regarding individual indirect effects, all indirect effects differed from zero (Table 4). The range of the completely indirect effects regarding these indirect effects were − 0.004 to − 0.067. In addition, we found four significant differences among these indirect associations (see Appendix). Particularly, the coefficient of the indirect association through negative parenting (i.e., decentering →maternal psychological distress→negative parenting→children's maladjustment) was larger than the indirect association through positive parenting (i.e., decentering→maternal psychological distress→positive parenting→children's maladjustment; $B = 0.037$, 95% *CI* [0.281, 0.461]). The coefficient of the indirect association through positive parenting (i.e., decentering→positive parenting→children's maladjustment) was greater than that of the indirect association through maternal psychological distress and positive parenting (i.e., decentering→maternal psychological distress→negative parenting→children's maladjustment; $B = -0.063$, 95% *CI* [− 0.080, − 0.048]).

4 Discussion

This cross-sectional study examined the indirect relationship between maternal decentering and children's maladjustment as reported by the mothers through the mediation of maternal psychological distress and parenting. The serial-parallel mediation analysis found full mediation; greater maternal decentering was indirectly associated with lower child maladjustment levels through lower maternal psychological distress, more positive parenting, and less negative parenting. Previous research has confirmed the relationship between parenting or parental psychological distress and maladjustment in children [44, 45], yet research evaluating the association between maternal decentering and parenting is scarce. To our knowledge, this is the first study to show an indirect relationship between maternal decentering and the oldest child's psychological maladjustment as reported by the mothers through the mediation of maternal psychological distress and parenting. Our findings provide valuable insights into the underlying mechanisms of effective parenting.

4.1 Association among maternal decentering, mental health, positive parenting, children's maladjustment

Consistent with our hypotheses, we found a significant indirect association between maternal decentering and children's maladjustment as reported by the mothers through the mediation of maternal psychological distress and positive parenting. Specifically, mothers with greater decentering exhibited lower levels of psychological distress; such lower psychological distress was related to more positive parenting; and such greater positive parenting was associated with lower children's maladjustment as reported by the mothers. Given previous prospective or experimental studies demonstrating the individual relationships among decentering, psychological distress, positive parenting, and children's adjustment [e.g., 5, 8, 13, 21, 22], the indirect association between maternal decentering and children's maladjustment through the mediation of maternal psychological distress and positive parenting is deemed logical.

We observed that the indirect association coefficient through positive parenting (i.e., decentering→positive parenting→children's maladjustment) was stronger than the coefficient through maternal psychological distress and positive parenting (i.e., decentering→maternal psychological distress→positive parenting→children's maladjustment). This significant difference may stem from the weak association of maternal psychological distress with positive parenting ($B = -0.049$) and the direct positive association of maternal decentering with positive parenting. Notably, this study is the first to reveal a direct association between maternal decentering and positive parenting.

This direct association could be explained by empathy or compassion, both of which are linked to more positive parenting practices [46]. Adaptive emotion regulation, a function of decentering [47, 48], enhances individuals' empathy [49, 50]. A recent study by Hegel et al. [28] found that decentered healthcare professionals were more aware, attentive, and exhibited greater satisfaction in caring for others (compassion satisfaction). Additionally, decentered resident medical doctors demonstrated higher compassion satisfaction [51]. Mothers with young children and medical professionals

Table 4 Results of completely standardized effects of each indirect relationship

Types of indirect effects							*B*	*SE*	95% *CI* for B		Completely standardized indirect effect
									LL	UL	
Decentering	→	Psychological distress	→	Children's maladjustment			− 0.050	0.008	− 0.066	− 0.036	− 0.050
Decentering	→	Positive parenting	→	Children's maladjustment			− 0.067	0.008	− 0.082	− 0.053	− 0.067
Decentering	→	Negative parenting	→	children's maladjustment			− 0.051	0.008	− 0.066	− 0.036	− 0.051
Decentering	→	Psychological distress	→	Positive parenting	→	Children's maladjustment	− 0.004	0.002	− 0.007	− 0.001	− 0.004
Decentering	→	Psychological distress	→	Negative parenting	→	Children's maladjustment	− 0.040	0.004	− 0.049	− 0.032	− 0.040

CI confidence interval, *LL* lower limit, *UL* upper limit, *SE* standard error

share a common concern in caring for vulnerable individuals daily and may experience burnout [52, 53]. Therefore, the greater empathy or compassion exhibited by decentered individuals may elucidate the direct positive association between decentering and positive parenting identified in this study.

4.2 Association among maternal decentering, mental health, negative parenting, and children's maladjustment

Consistent with our hypotheses, we found significant indirect associations between maternal decentering and children's maladjustment as reported by the mothers through the mediation of maternal psychological distress and negative parenting. Specifically, mothers with lower decentering showed higher levels of psychological distress. This psychological distress was associated with more negative parenting. Additionally, these negative parenting practices were linked to greater levels of maladjustment in the children as reported by the mothers. These each direct associations aligned with empirical data [8–10, 13, 21, 22], suggesting that the indirect association between maternal decentering and children's maladjustment as reported by the mothers found in this study was convincing.

Specifically, greater maternal decentering was associated with lower negative parenting through a reduced level of psychological distress. This indirect relationship aligns with previous research. In terms of the association between decentering and psychological distress, increased decentering predicted positive treatment outcomes, such as the alleviation of depressive and anxiety symptoms [21–23]. Additionally, a substantial body of research indicates that psychological distress in mothers is linked to increased negative parenting [e.g., 13, 14]. The indirect negative relationship between maternal decentering and negative parenting identified here is consistent with the results of previous studies. Thus, alleviating psychological distress in mothers may be a crucial for improving maternal parenting.

Additionally, greater maternal decentering was directly associated with lower negative parenting. This relationship may involve reduced reactivity to internal experiences due to decentering [19]. Skowron et al. [54] revealed that more emotionally reactive mothers were more likely to engage in abusive parenting. Moreover, anger reactivity in mothers with substance abuse is positively associated with a higher risk to committing abusive parenting [55]. Furthermore, mothers at elevated risk of committing abusive parenting were more likely to report anger-intensifying thinking styles [56]. Elevated maternal reactivity, particularly to anger, provokes harsh, negative parenting. Therefore, greater decentering may prevent mothers from parenting negatively through lower reactivity to internal negative experiences.

4.3 Theoretical contribution and clinical implications

The first theoretical contribution of this study lies in revealing an indirect association between maternal decentering and child maladjustment. While previous studies have reported individual prospective relationships among decentering, psychological distress, parenting behaviors, and children's adjustments [8–10, 13, 21, 22], none had explored the indirect associations among all these variables. Therefore, this main finding in this study may advance our understanding of the functions of decentering.

Notably, the finding that greater maternal decentering is directly related to positive parenting is crucial. This result expands our knowledge of decentering, as earlier studies did not yield similar findings. The direct positive association between maternal decentering and positive parenting suggests that mothers' tendencies to experience or preserve internal events in their minds may play a role in improving parenting behaviors. Based on this suggestion, interventions to improve decentering may contribute to the acquisition of positive parenting behaviors.

Our findings suggest that psychological distress is more likely related to negative rather than positive parenting. Particularly, the coefficient for the association between psychological distress and positive parenting was extremely small (i.e., $B < |0.1|$), while that for the association between psychological distress and negative parenting was small to moderate (i.e., $B = 0.373$). In support of this finding, a meta-analytic study observed that, compared to non-depressed mothers, depressed mothers exhibited higher levels of negative parenting with a moderate effect size but slightly lower levels of positive parenting with a small effect size [57]. Furthermore, consistent with a previous finding [58], this study revealed a weak correlation between positive and negative parenting. Thus, it suggests that positive and negative parenting behaviors are independent of each other; in other words, improving positive parenting behaviors may not necessarily lead to reduced negative parenting behaviors. Based on the findings in this study and previous research, interventions aimed at improving parenting should focus on two processes: alleviating parental psychological distress (i.e., depressive and anxiety symptoms) to decrease negative parenting behaviors and facilitating the development of positive parenting practices. However, it is important to note that traditional parent training programs, such as Barkley's program [59],

primarily emphasize teaching effective parenting strategies to parents. Incorporating improving parents' mental health into such traditional programs is crucial. Further study is required to develop and evaluate integrated parent training, addressing parent mental health problems and poor parenting practices.

5 Limitations and future directions

First, due to the study's design, causal inferences cannot be made. Additionally, because all variables were assessed at the same time point, the ability to effectively assess the hypothesized paths in this study is limited. Although other empirical studies have shown evidence of causality in this model, further research is needed to clarify the observed associations in our study. It is crucial to investigate whether interventions, such as cognitive therapy, that improve decentering encourage mothers to improve their parenting. Second, the mothers who registered with the research company may not be representative of Japanese mothers with children aged 3–6 years. However, the sample in this study showed diversity in terms of residential area and household incomes. We believe that this diversity in the sample, along with the sample size, were advantages of the current study. Third, all data were collected from mothers in this study. Future research may collect data from different respondents, such as parents and their children. For example, scores reporting maladjustment in children can differ between various respondents. Santos et al.'s meta-analytic study [60] revealed that parents' and teachers' ratings of children's antisocial behaviors show low to moderate concordance; parents typically perceive their children's behaviors more negatively than teachers do. Fourth, the measurement methods might also have biased the study results. Previous research showed a non-significant correlation between self-reported and observed parenting [61] and a moderate correlation between parent- and child-reported parenting [62]. Another study revealed that mothers with maltreatment histories reported greater levels of negative parenting than those without such history, yet observations showed non-significant differences in their parenting [63]. Therefore, the self-reported method may not be inappropriate for measuring parenting. Finally, our study's results might not apply to fathers or to children of different ages. Therefore, this study should be replicated with samples from different populations. However, maternal parenting is more closely associated with psychosocial adjustment than paternal [64, 65]. Another study demonstrated a stronger parenting effect during early compared to later childhood [66, 67]. Therefore, the current study results are applicable for clinical practice.

6 Conclusion

Although this study has certain limitations, it has provided valuable and significant findings. It is the first study to demonstrate the positive association between decentering and more positive and less negative parenting behaviors. Moreover, the findings suggest that enhancing decentering skills may enable mothers to simultaneously enhance their mental health and promote better parenting behaviors. These findings represent a substantive advancement in our understanding of effective parenting practices.

Author contributions All authors contributed to the study conception and design. Material preparation and data collection were performed by YM. The data analysis was conducted by YM and AU. The first draft of the manuscript was written by YM, and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

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Data availability The datasets utilized and/or analyzed in the present study can be obtained from the corresponding author on a reasonable request.

Declarations

Ethics approval and consent to participate The study was approved by the ethics board of Kanazawa University (Approval Number: 2021-40). All participants provided informed consent and their identities were anonymized.

Consent for publication Only participants who granted consent for publication were allowed to respond to this study's online survey.

Competing interests The authors declare no competing interests.

Appendix

We found the following four significant differences among these indirect associations.

1. Between the association among decentering, psychological distress, and children's maladjustment as reported by the mothers (i.e., decentering→maternal psychological distress→children's maladjustment) and the association among decentering, psychological distress, positive parenting, and children's maladjustment as reported by the mothers (i.e., decentering→maternal psychological distress→positive parenting→children's maladjustment; $B = -0.047$, 95% CI [− 0.062, − 0.032], $SE = 0.008$)
2. Between the association among decentering, positive parenting, and children's maladjustment as reported by the mothers (i.e., decentering→positive parenting→children's maladjustment) and the association among decentering, psychological distress, positive parenting, and children's maladjustment as reported by the mothers ($B = -0.063$, 95% CI [− 0.080, -0.048], $SE = 0.008$)
3. Between the association among decentering, positive parenting, and children's maladjustment as reported by the mothers (i.e., decentering→positive parenting→children's maladjustment) and the association among decentering, psychological distress, negative parenting, and children's maladjustment as reported by the mothers (i.e., decentering→maternal psychological distress→negative parenting→children's maladjustment; $B = -0.027$, 95% CI [− 0.044, − 0.010], $SE = 0.009$)
4. Between the association among decentering, psychological distress, positive parenting, and children's maladjustment as reported by the mothers and the association among decentering, psychological distress, negative parenting, and children's maladjustment as reported by the mothers ($B = 0.037$, 95% CI [0.281, 0.461], $SE = 0.005$).

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