

ORIGINAL ARTICLE

Intergenerational transmission of child-rearing styles mediated by adult attachment: A structural equation model approach

Nao Shiraishi MD, PhD, MPH¹  | Mikihiro Murakami MD² | Yoshitaka Goto MD² | Toshinori Kitamura MD, PhD^{3,4,5,6}

¹Department of Psychiatry and Cognitive-Behavioral Medicine, Nagoya City University Graduate School of Medical Sciences, Nagoya, Japan

²Kumamoto Paediatric Association, Kumamoto, Japan

³Kitamura Institute of Mental Health Tokyo, Institute of Mental Health Tokyo, Tokyo, Japan

⁴Kitamura KOKORO Clinic Mental Health, Tokyo, Japan

⁵T. and F. Kitamura Foundation for Mental Health Research and Skill Advancement, Tokyo, Japan

⁶Department of Psychiatry, Graduate School of Medicine, Nagoya University, Nagoya, Japan

Correspondence

Nao Shiraishi, MD, PhD, MPH, Department of Psychiatry and Cognitive-Behavioral Medicine, Nagoya City University Graduate School of Medical Sciences, 1 Kawasumi, Mizuho-cho, Mizuho-ku, Nagoya 467-8601, Japan.
Email: nao-shiraishi@umin.ac.jp

Funding information

None

Abstract

Aim: Parenting styles are determinants of psychosocial maladjustment in the subsequent generation. Modifiable factors that positively impact intergenerational transmission should be identified. Thus, this study investigated the mediating effects of adult attachment on the transmission of child-rearing styles and the combined impact of fathers' and mothers' styles on their offspring's parenting.

Methods: Overall, 396 fathers and 733 mothers participated. They were married or cohabiting when their children aged 0–10 years attended a pediatric office in Japan. The pediatricians distributed the self-report questionnaires to examine perceived rearing (the Parental Bonding Instrument), adult attachment (the Relationship Questionnaire), and demographic characteristics. We then analyzed the data using structural equation modeling that illustrated intergenerational transmission of rearing styles between grandparents and parents.

Results: Overall, 385 fathers ($M_{\text{age}} = 35.5$ years, $SD = 6.0$) and 699 mothers ($M_{\text{age}} = 33.5$ years, $SD = 5.1$) satisfied the eligibility criteria. The path models showed that adult attachment to partners mediated grandparental and parental care. However, no mediating effect was observed in other intergenerational patterns that transmitted overprotective rearing styles. Additionally, combined grandfather and grandmother care were positively associated with parental overprotection.

Conclusion: This study suggested the potential of adult attachment in mediating loving, empathic, and warm rearing styles and the combined effects of both parents' styles on promoting the next-generation parents' overprotective styles. Our findings clarify how to terminate the negative chain of the parent–child transmission.

KEYWORDS

adult attachment, covariance structure analysis, mediating effects, parent–child transmission, parenting styles

This is an open access article under the terms of the Creative Commons Attribution-NonCommercial License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited and is not used for commercial purposes.

© 2022 The Authors. *Psychiatry and Clinical Neurosciences Reports* published by John Wiley & Sons Australia, Ltd on behalf of Japanese Society of Psychiatry and Neurology.



INTRODUCTION

Rearing styles are a determinant of children's mental well-being, indicating the characteristics of intergenerational transmission. They have been conceptualized mainly using two-dimensional models, specifically responsiveness and demandingness.¹⁻³ The former refers to how parents accept and care for the child warmly to foster individuality and self-assertiveness. In contrast, the latter denotes the degree to which they control and overprotect the child confrontationally to make them well-adjusted members of society. Accordingly, the Parental Bonding Instrument (PBI) was created to assess perceived parenting styles across two dimensions: care and overprotection.^{4,5} Both low care and high overprotection are associated with offspring's depression,^{6,7} addiction,^{8,9} and conduct problems.^{10,11} To prevent problematic consequences, understanding how parental rearing styles transmit between the generations is essential. Several studies have demonstrated intergenerational transmission of child-rearing practices.¹²⁻¹⁴ For example, Tanaka et al.¹⁵ studied nonclinical Japanese fathers and mothers using the PBI. The participants rated their spouse's current rearing style, in addition to their perception of rearing that they had received as children (before 16 years of age). The current style of paternal care correlated with grandmothers' care and grandparents' low level of overprotection. In addition, the present level of paternal overprotection was associated with grandfathers' overprotectiveness. Current maternal care was associated with grandmothers' care. Although family members interact with each other and their processes could be assessed as a unit (e.g., cohesiveness¹⁶), previous studies have not examined differential effects of parents' gender and care against overprotection individually.

Despite the existing literature regarding the parenting styles' intergenerational transmission, insufficient evidence is available about its mediators. Nevertheless, cross-sectional studies^{15,17} have found that personality mediates the parenting styles between grandparents and parents. Furthermore, a cohort study¹⁸ demonstrated that the parental styles were directly transmitted between two generations and partially mediated by cooperativeness in fathers. However, in mothers, no personality trait had such a mediating effect. Adult attachment is a potential factor mediating intergenerational transmission of the rearing styles. According to Bowlby's^{19,20} theory, attachment is formed as infants innately seek continuous proximity to their caregivers, who ensure their safety as a base for exploring the external environment. The proximity needs unmet by parents can contribute to insecure attachments. The imprinting of such styles creates prototypes for interpersonal relationships with significant others in adolescence and adulthood. As infants mature, their attachments evolve, becoming adult bonds with their spouses. The adult attachment to intimate partners is associated with parenting behaviors toward their children.^{21,22} The maternal bonding toward an infant begins during the first trimester of pregnancy.²³ This development is related to the type of adult attachment throughout the three trimesters.²⁴ After adjusting for perinatal depression, poor maternal-fetal bonding predicts impaired

bonding toward the baby.²⁵ Affected by adult attachment, the formulation of prenatal bonding might prototype rearing styles in the postpartum period.^{4,21}

This study aimed to investigate the role of adult attachment to intimate partners in human development. The study is based on the same dataset as Kitamura et al.,¹⁷ but we used different objective variables to analyze whether adult attachment functions as a mediator in transmitting child-rearing styles from one generation to the next. As evidence is lacking regarding the combined effects of grandfathers' and grandmothers' child-rearing styles on how the next-generation parents raise their children, we also examined what effects—individual or in combination—explain the intergenerational transmission of parenting styles.

METHODS

Participants

We collaborated with the Kumamoto Pediatric Association and requested its members to participate in the questionnaire survey. In response, in 2002, 20 of 41 clinics agreed to partake in the study. The children eligible to participate were aged 10 years or less. They received general pediatric care from the partaking clinic. None specialized in treating severe physical, mental, or medical conditions. In addition, the parents who were eligible to complete the survey were the recruited children's fathers or mothers who were either married or cohabiting with their intimate partner; however, those parents who were separated, divorced, or widowed were excluded from this study.

We distributed the self-report questionnaires to those parents whose children visited one of the 20 clinics. A pediatrician asked the participants to partake in the survey at each site. After obtaining their informed consent, we provided the consenting parents with two questionnaire booklets, one for each. They were instructed to complete it anonymously and return it in a self-addressed, stamped envelope.

Measures

Perceived parenting styles

The PBI was used to assess the child-rearing styles of grandparents and parents.⁴ It was developed initially for a retrospective self-reported assessment of the paternal and maternal parenting styles that individuals perceived before 16 years. The participants rated 25 items regarding the rearing style of their parents on a four-point Likert scale (*very unlike/moderately unlike/moderately like/very like*). The PBI consists of two subscales: Care (12 items) and Overprotection (13 items).⁵ Higher Care scores indicated more experiences of affection, empathy, emotional warmth, and reciprocity. Higher Protection scores signified more experiences of control, overprotection, instruction, and infantilization.

In this study, we utilized the PBI according to the parents' rating regarding the recollections of their own parents' styles. This tool was also employed according to the modification by its developer to measure their present child-rearing styles. The parents were instructed to evaluate themselves.²⁶ The instrument has acceptable validity.⁵ Using a Japanese population, Kitamura and Suzuki²⁷ validated the Japanese version with a factor structure nearly identical to that of the original PBI.²⁸

Adult attachment styles

The Relationship Questionnaire measures an adult's attachment to their intimate partner.²⁹ It has four items, measured on a seven-point Likert scale (1 = *does not apply to me at all* to 7 = *applies to me greatly*), assessing the following attachment styles: secure, fearful, preoccupied, and dismissing. The parents were instructed to rate how the individual items' descriptions corresponded to their relationships with each partner. Two composite variables were created from the four attachment styles based on the following definitions: self-model = secure – fearful – preoccupied + dismissing; other-model = secure – fearful + preoccupied – dismissing. This questionnaire is valid²⁹ and reliable.³⁰ Moreover, Matsuoka et al.³¹ validated its Japanese version.

Demographic and psychosocial variables

We assessed both parents' age and gender and children's age. Although other psychosocial variables were also surveyed, they were not reported in the present study.

Statistical analyses

The means, standard deviations, and correlations between all study variables were calculated. We created a basic path model (Figure 1) to illustrate the direct transmission of child-rearing styles from the children's grandparents to parents. Adult attachment was incorporated to examine its mediating effects on intergenerational transmission. According to Kitamura et al.'s³² study, parenting models were prepared to examine the individual and combined effects of the paternal and maternal styles. Figure 2 shows that child-rearing styles (care vs. overprotection), gender (father vs. mother), and the parents as holistic entities were regarded as the latent structures for Models A, B, and C, respectively. Each model was applied to the basic path model's right side, from which the mediated path models were developed and compared in terms of the Akaike information criteria (AIC). We assumed that a model with a lower AIC would be better

FIGURE 1 Basic path model of the intergenerational transmission of the rearing styles between grandparents and parents. G-, grand-; OP, overprotection.

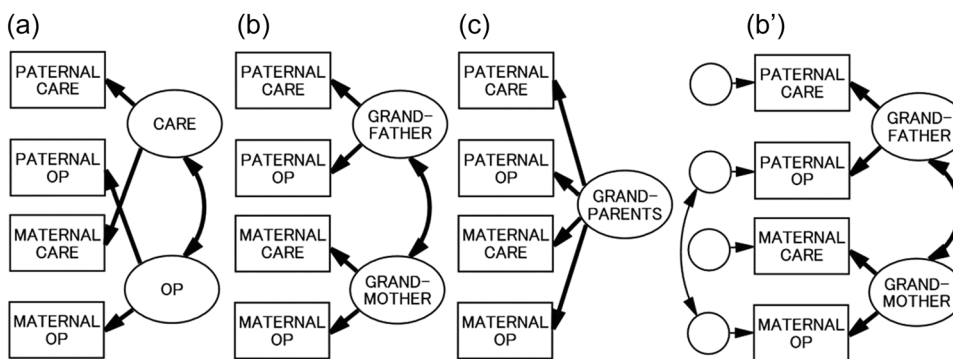
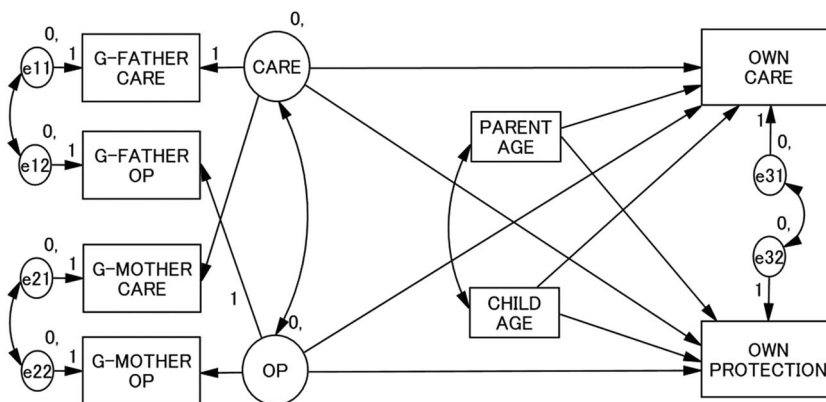


FIGURE 2 Comparison of the latent structures: (a) care vs. overprotection, (b) father vs. mother (c) single factor, and (b') father vs. mother with correlations.

than the others. We calculated the fit of the structural equation model (SEM) using the chi-square (CMIN), comparative fit index (CFI), and root-mean-square error of approximation (RMSEA) data. The conventional criteria suggest that a good fit is when $CMIN/df < 2$, $CFI > 0.97$, and $RMSEA < 0.05$; further, an acceptable fit is when $CMIN/df < 3$, $CFI > 0.95$, and $RMSEA < 0.08$.^{33,34}

Once the best model was identified by comparison, we conducted a multiple-group analysis to examine the differences between the fathers and mothers. A more constrained model was compared to a lesser constrained one, starting with a nonconstrained model. The null hypothesis was that the model with fewer constraints was correct. If the χ^2 values of the two models did not reach significance, we assumed that the model with greater constraints was the accurate one. A significant sex difference was demonstrated when the z value of a paired comparison reached a critical ratio of >1.96 . A two-tailed p -value of < 0.05 was employed to indicate statistical significance. All statistical analyses were computed using SPSS Version 20.0 and Amos Version 25.0 for Windows (IBM).

RESULTS

Overall, 759 families participated in this survey. Of these, 370 (48.7%) returned questionnaires completed by both parents. However, 389 (51.3%) submitted those that were completed either by the father ($n = 26$) or the mother ($n = 363$). The latter's response rate (96.6%) was higher than the former (52.2%). The number of separated, divorced, and widowed parents was 22, 21, and 2

(fathers/mothers = 9/13, 2/19, and 0/2), respectively; these participants ($n = 45$) were excluded. Thus, the final analytic sample included the data from 385 fathers and 699 mothers, which was considered sufficient for executing the covariance structure's present analysis. The percentages of the missing data were 6.5%, 5.6%, 4.1%, 4.1%, 4.9%, 5.2%, 4.8%, 4.7%, 1.9%, and 4.3% for own care, own protection, positive self-model, positive other-model, grandfather care, grandmother care, grandfather protection, grandmother protection, parents' age, and child's age, respectively. The fathers', mothers', and children's mean ages were 35.5 (SD = 6.0), 33.5 (SD = 5.1), and 3.5 years (SD = 2.7; range 0–10 years), respectively. A gender imbalance in children was not observed in the male-to-female ratio of 1.13.

The correlations between the variables and their means and standard deviations are presented in Table 1. Own care was correlated with higher grandparent care and positive self- and other-models, lower grandparent overprotection, own overprotection, and age of the child. Among fathers, overprotection was associated with higher overprotection of grandparents, lower own care, and the child's age. Among the mothers, overprotection was related to higher overprotection of the grandparents, lower positive self-model, and lower own care.

A lower AIC was observed in Model A than in Models B, C, and B' (Table 2). Thus, Model A was the most appropriate when nested in the mediated path model. The parents' data met the conventional criteria for the model fit: $CMIN/df = 2.283$, $CFI = 0.976$, and $RMSEA = 0.034$. In the multiple analyses, the nested model comparisons accepted the metric ($p = 0.351$) and scalar invariances ($p = 0.090$).

TABLE 1 Correlations between the intergenerational rearing styles, adult attachment, and parent-child age

	1	2	3	4	5	6	7	8	9	10
1. Own care	–	–0.27***	0.21***	0.21***	0.28***	0.34***	–0.22***	–0.19**	0.04	–0.12*
2. Own OP	–0.20***	–	–0.06	–0.02	–0.10	–0.05	0.20***	0.21***	–0.09	–0.14**
3. RQ Self-model	0.16***	–0.15***	–	0.39***	0.10	0.09	–0.15**	–0.14*	–0.02	–0.01
4. RQ Other-model	0.25***	0.03	0.36***	–	0.06	0.19***	0.01	–0.02	–0.01	–0.03
5. Grandfather care	0.15***	0	0.12**	0.14***	–	0.50***	–0.60***	–0.39***	0.05	0.08
6. Grandmother care	0.17***	0.03	0.10*	0.12**	0.42***	–	–0.39***	–0.57***	0.06	0.04
7. Grandfather OP	–0.10*	0.13**	–0.12**	–0.03	–0.51***	–0.30***	–	0.64***	–0.01	–0.08
8. Grandmother OP	–0.11**	0.18***	–0.08*	–0.06	–0.26***	–0.55***	0.51***	–	0.06	0
9. Parent age	–0.01	0.02	0.07	–0.08*	–0.08*	–0.10*	0.10*	0.11**	–	0.49***
10. Child age	–0.11**	–0.03	0.08*	–0.05	0.01	–0.05	0.03	0.04	0.52***	–
Mean	28.2	12.5	2.6	2.9	22.5	27.0	12.3	11.9	35.5	3.5
	28.7	12.7	2.7	3.4	23.1	27.0	11.2	10.8	33.5	3.6
SD	4.4	4.3	2.7	2.9	6.6	5.7	6.4	6.7	6.0	2.8
	4.1	4.3	3.3	3.2	7.4	6.6	6.4	6.6	5.1	2.6

Note: The correlations of the fathers' and mothers' data are above and below the diagonal, respectively.

Abbreviations: OP, overprotection; RQ, Relationship Questionnaire.

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



TABLE 2 Comparison of the structural equation models

Model	Content	χ^2/df	CFI	RMSEA	AIC
A	Care vs. Overprotection	3.235	0.979	0.045	154.692
B	Father vs. Mother	14.532	0.857	0.110	405.712
C	Single factor	13.353	0.858	0.105	402.462
B'	Father vs. Mother with correlations of overprotection between father and mother	5.707	0.953	0.065	207.837

Abbreviations: AIC, Akaike information criteria; CFI, comparative fit index; *df*, degrees of freedom; RMSEA, root-mean-square error of approximation.

FIGURE 3 Path model of the fathers' current rearing styles mediated by adult attachment with their potential predictors. The values in bold indicate statistically significant paths ($p < 0.05$) with a standard estimate. G-, grand-; OP, overprotection; RQ, Relationship Questionnaire.

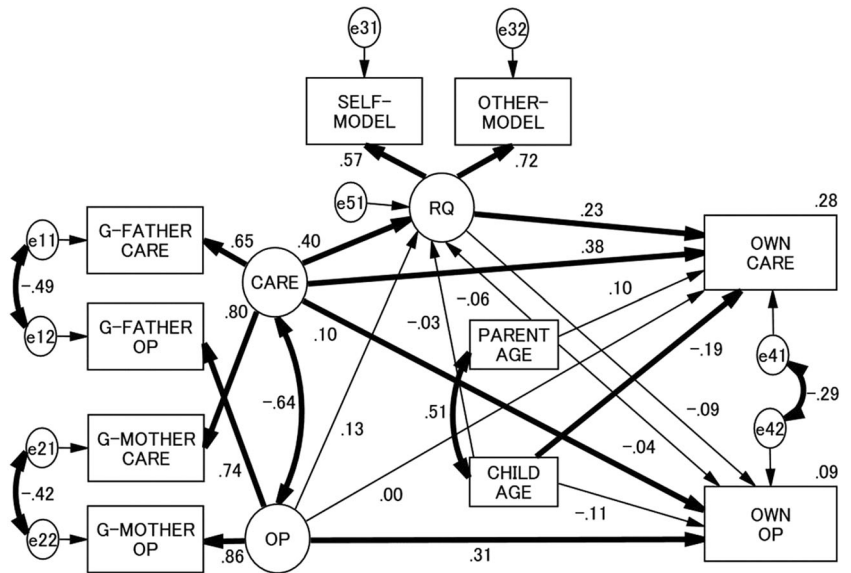
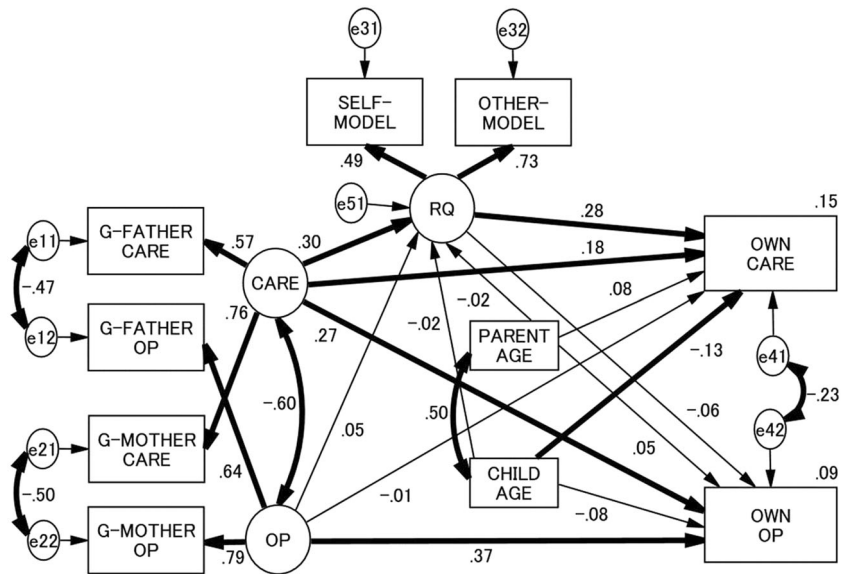


FIGURE 4 Path model of the mothers' current rearing styles mediated by adult attachment with their potential predictors. The values in bold indicate statistically significant paths ($p < 0.05$) with a standard estimate. G-, grand-; OP, overprotection; RQ, Relationship Questionnaire.



However, they rejected the residual invariance ($p < 0.001$) between the groups of fathers and mothers. Rejection indicated that both groups were to be separated in the model. Figures 3 and 4 showed that the significant paths were the same between the fathers and

mothers. Higher care of the grandparents and a lower age of children directly predicted the fathers' and mothers' care. Fathers' and mothers' overprotection was directly predicted by higher care and overprotection of the grandparents. The adult attachment styles

mediated the transition from the grandparent to the parental care. However, the other transmission patterns of the rearing styles were not mediated through adult attachment. The paired comparisons yielded no significant differences between the parents' genders in transferring the grandparent care to adult attachment ($z = -0.505$) and the latter to own care ($z = 0.099$).

DISCUSSION

The present study suggested that adult attachment styles toward partners function as mediators between grandparent care and parental care. However, such indirect effects of attachment styles were not observed in other intergenerational transmission patterns of child-rearing styles. In addition, the combination of grandfather and grandmother care was positively associated with parental care and overprotection.

Each component of the adult attachment's mediating effect has been reported previously. In addition, an association has been indicated between the past perceived parenting and the attachment to intimate partners³⁵⁻³⁸ and the child's current parenting.^{21,22} This research demonstrated that more positive self- and other-models within couples could foster their child-rearing styles with affection, empathy, and warmth, connecting both associations. A further indication is that adult attachments can transfer such parenting without transmitting the overprotective rearing styles between generations.

Regarding direct effects of child-rearing styles, parental care, and overprotection were predicted by higher care and overprotection of the grandparents. Surprisingly, parental overprotection was predicted by the grandparents' higher care. Cohort studies^{18,39} have demonstrated that positive and negative parenting styles are transmitted in the same manner in the subsequent generation. Genetics contribute to parenting transmission⁴⁰; however, transmission might be more highly influenced by the maternal than the paternal styles.¹⁸ An SEM study¹⁷ supported maternal influence. Both parents' overprotection was predicted by grandmother care and overprotection, respectively. As a novel finding, we assumed the combined effects of the fathers' and mothers' parenting styles on the following generation. The concept of *amae* was described in the book, *The Anatomy of Dependence*.⁴¹ Doi defines *amae* as the desire of the Japanese to be loved by and dependent on authority figures. *Amae* is supposed to enhance the transmission of overprotective parenting between generations because this desire could influence children to try to live up to their parents' overprotective expectations, especially when both the father and mother have rearing styles with high affection, empathy, and warmth. *Amae* is considered to be potentially associated with the combined effects of both parents' rearing styles on overprotective parenting in the next generation.

Our study has several limitations. First, the study setting was restricted to one community in a provincial prefecture, and the response rates of fathers and mothers were disproportionate (52%

and 97%, respectively). Although we collaborated with a sufficient number of general clinics, the geographical restrictions and the non-participating fathers seemingly undermined the study results' generalizability.

Second, the self-reported assessment may have been affected by a recall bias. This bias might have emerged with a similar tendency in fathers' and mothers' self-rating of their parents' and their own child-rearing styles.¹⁷ Parenting behaviors need to be observed directly to confirm whether self-rating is sufficiently valid to reflect natural behaviors.^{27,42}

Third, the cross-sectional nature of this study restricted us from inferring causal relationships. For example, the parenting styles of fathers and mothers could affect their attachment styles or vice versa. Our SEM model did not consider the possible reverse causality.^{43,44} However, longitudinal data have demonstrated that adult attachment is associated with parenting styles formed later in life.⁴⁵

Fourth, our SEM model did not account for all the determinants of the rearing styles. In fact, parenting behavior is determined by multiple factors, including externalizing behavior, academic performance,³⁹ personality traits,¹⁷ and dysphoric moods.⁴⁶ Hence, we should note that our research covered only a part of the whole picture, illustrating how parenting styles are transmitted intergenerationally.

Fifth, while the structural validity of the PBI has been confirmed in a Japanese population,^{27,28} the factor structure of grandparents' care and overprotection differed between this study and that of Kitamura et al.³² The difference might be owing to the rating instability of the parents who recollected their own parents' styles.

Despite these limitations, our study has suggested the importance of adult attachment as a mediator for transmitting loving, empathic, and warm rearing styles without engaging in overprotection between generations. Another suggestion is that both parents' child-rearing styles combine to promote the overprotection of next-generation parents. These suggestions help us understand how to intervene in the negative chain of intergenerational transmission. However, future longitudinal studies are needed to confirm our findings in order to prevent offspring's psychosocial maladjustment.

AUTHOR CONTRIBUTIONS

Toshinori Kitamura conceived and designed the survey. Mikihiko Murakami and Yoshitaka Goto performed the survey. Nao Shiraishi analyzed the data and wrote the paper.

ACKNOWLEDGMENT

We would like to thank the pediatricians who participated in this research. This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

CONFLICT OF INTEREST

N. S. has received lecture fees from Mochida Pharma for work that was not associated with this article. The remaining authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

N/A.

ETHICS APPROVAL STATEMENT

This study was approved by the Ethical Committee of the Kumamoto University Graduate School of Life Sciences.

PATIENT CONSENT STATEMENT

We obtained informed consent from all of the study participants.

CLINICAL TRIAL REGISTRATION

N/A.

ORCID

Nao Shiraishi  <http://orcid.org/0000-0003-4089-1816>

REFERENCES

- Baumrind D. Effects of authoritative parental control on child behavior. *Child Dev.* 1966;37:887. <https://doi.org/10.2307/1126611>
- Baumrind D. Patterns of parental authority and adolescent autonomy. *New Dir Child Adolesc Dev.* 2005;2005(108):61–9. <https://doi.org/10.1002/cd.128>
- Rohner RP, Pettengill SM. Perceived parental acceptance-rejection and parental control among Korean adolescents. *Child Dev.* 1985;56(2):524–8.
- Parker G, Tupling H, Brown LB. A parental bonding instrument. *Br J Med Psychol.* 1979;52(1):1–10. <https://doi.org/10.1111/j.2044-8341.1979.tb02487.x>
- Parker GB. Parental overprotection: a risk factor in psychosocial development. New York: Grune and Stratton; 1983.
- Duggan C, Sham P, Minne C, Lee A, Murray R. Quality of parenting and vulnerability to depression: results from a family study. *Psychol Med.* 1998;28(1):185–91.
- Gao J, Li Y, Cai Y, Chen J, Shen Y, Ni S, et al. Perceived parenting and risk for major depression in Chinese women. *Psychol Med.* 2012;42(5):921–30. <https://doi.org/10.1017/s0033291711001942>
- Gerra G, Zaimovic A, Garofano L, Ciusa F, Moi G, Avanzini P, et al. Perceived parenting behavior in the childhood of cocaine users: relationship with genotype and personality traits. *Am J Med Genet, Part B.* 2007;144b(1):52–7. <https://doi.org/10.1002/ajmg.b.30388>
- Grant JE, Kim SW. Parental bonding in pathological gambling disorder. *Psychiatr Q.* 2002;73(3):239–47.
- Joyce PR, Sellman D, Wells E, Frampton CM, Bushnell JA, Oakley-Browne M, et al. Parental bonding in men with alcohol disorders: a relationship with conduct disorder. *Aust N Z J Psychiatry.* 1994;28(3):405–11. <https://doi.org/10.3109/00048679409075866>
- Rey JM, Plapp JM. Quality of perceived parenting in oppositional and conduct disordered adolescents. *J Am Acad Child Adolesc Psychiatry.* 1990;29(3):382–5. <https://doi.org/10.1097/00004583-199005000-00008>
- Kovan NM, Chung AL, Sroufe LA. The intergenerational continuity of observed early parenting: a prospective, longitudinal study. *Dev Psychol.* 2009;45(5):1205–13. <https://doi.org/10.1037/a0016542>
- Van Ijzendoorn MH. Intergenerational transmission of parenting: a review of studies in nonclinical populations. *Dev Rev.* 1992;12(1):76–99. [https://doi.org/10.1016/0273-2297\(92\)90004-L](https://doi.org/10.1016/0273-2297(92)90004-L)
- Yaffe Y, Seroussi DE. Intergenerational similarity and dissimilarity in parental authority among educated women. *North Am J Psychology.* 2018;20:445.
- Tanaka M, Kitamura T, Chen Z, Murakami M, Goto Y. Do parents rear their children as they were reared themselves? Intergenerational transmission of parental styles (warmth and control) and possible mediation by personality traits. *Open Fam Stud J.* 2009;2:82–90.
- Hamilton E, Carr A. Systematic review of self-report family assessment measures. *Fam Process.* 2016;55(1):16–30. <https://doi.org/10.1111/famp.12200>
- Kitamura T, Shikai N, Uji M, Hiramura H, Tanaka N, Shono M. Intergenerational transmission of parenting style and personality: direct influence or mediation? *J Child Fam Stud.* 2009;18:541–56. <https://doi.org/10.1007/s10826-009-9256-z>
- Madden V, Domoney J, Aumayer K, Sethna V, Iles J, Hubbard I, et al. Intergenerational transmission of parenting: findings from a UK longitudinal study. *Eur J Public Health.* 2015;25(6):1030–5. <https://doi.org/10.1093/eurpub/ckv093>
- Bowlby J. Attachment and loss. In: Vol. I: Attachment. New York: Basic Books; 1969.
- Bowlby J. Attachment and loss. In: Vol. II: Separation. New York: Basic Books; 1973.
- Jones JD, Cassidy J, Shaver PR. Parents' self-reported attachment styles: a review of links with parenting behaviors, emotions, and cognitions. *Pers Soc Psychol Rev.* 2015;19(1):44–76. <https://doi.org/10.1177/1088868314541858>
- Lo CKM, Chan KL, Ip P. Insecure adult attachment and child maltreatment: a meta-analysis. *Trauma Violence Abuse.* 2019;20(5):706–19. <https://doi.org/10.1177/1524838017730579>
- Rossen L, Hutchinson D, Wilson J, Burns L, Allsop S, Elliott EJ, et al. Maternal bonding through pregnancy and postnatal: findings from an Australian Longitudinal Study. *Am J Perinatol.* 2017;34(8):808–17. <https://doi.org/10.1055/s-0037-1599052>
- Mikulincer M, Florian V. Maternal–fetal bonding, coping strategies, and mental health during pregnancy—The contribution of attachment style. *J Soc Clin Psychol.* 1999;18(3):255–76. <https://doi.org/10.1521/jscp.1999.18.3.255>
- Dubber S, Reck C, Muller M, Gawlik S. Postpartum bonding: the role of perinatal depression, anxiety and maternal-fetal bonding during pregnancy. *Arch Womens Ment Health.* 2015;18(2):187–95. <https://doi.org/10.1007/s00737-014-0445-4>
- Parker G, Fairley M, Greenwood J, Jurd S, Silove D. Parental representations of schizophrenics and their association with onset and course of schizophrenia. *Br J Psychiatry.* 1982;141:573–81.
- Kitamura T, Suzuki T. A validation study of the parental bonding instrument in a Japanese population. *Jpn J Psychiatry Neurol.* 1993;47(1):29–36.
- Uji M, Tanaka N, Shono M, Kitamura T. Factorial structure of the parental bonding instrument (PBI) in Japan: a study of cultural, developmental, and gender influences. *Child Psychiatry Hum Dev.* 2006;37(2):115–32. <https://doi.org/10.1007/s10578-006-0027-4>
- Bartholomew K, Horowitz LM. Attachment styles among young adults: a test of a four-category model. *J Pers Soc Psychol.* 1991;61(2):226–44.
- Griffin DW, Bartholomew K. The metaphysics of measurement: the case of adult attachment. In: Bartholomew K, Perlman D (Eds.) *Advances in personality relationship: attachment processes in adulthood.* Vol. 5. London: Jessica Kingsley Publishers; 1994. p. 17–52.
- Matsuoka N, Uji M, Hiramura H, Chen Z, Shikai N, Kishida Y, et al. Adolescents' attachment style and early experiences: a gender difference. *Arch Womens Ment Health.* 2006;9(1):23–9. <https://doi.org/10.1007/s00737-005-0105-9>
- Kitamura T, Ohashi Y, Murakami M, Goto Y. Bonding disorders, current adult attachment, and perceived rearing in childhood in parents of children aged 10 years old or younger: a structural equation model approach. In: Kitamura T, Ohashi Y (Eds.) *Perinatal bonding disorders: causes and consequences.* Newcastle upon Tyne: Cambridge Scholars Publishing; 2019. p. 60–81.

33. Bentler PM. Comparative fit indexes in structural models. *Psychol Bull.* 1990;107(2):238–46.
34. Schermelleh-Engel K, Moosbrugger H, Müller H. Evaluating the fit of structural equation models: tests of significance and descriptive goodness-of-fit measures. *Methods Psychol Res.* 2003;8(2):23–74.
35. Belt W, Abidin RR. The relation of childhood abuse and early parenting experiences to current marital quality in a nonclinical sample. *Child Abuse Negl.* 1996;20(11):1019–30. [https://doi.org/10.1016/0145-2134\(96\)00092-0](https://doi.org/10.1016/0145-2134(96)00092-0)
36. Brennan JL, Wamboldt FS. From the outside in: examining how individuals define their experienced family. *Communic Res.* 1990;17(4):444–61. <https://doi.org/10.1177/009365090017004003>
37. Furukawa TA, Hori S, Azuma H, Nakano Y, Oshima M, Kitamura T, et al. Parents, personality or partner? Correlates of marital relationships. *Soc Psychiatry Psychiatr Epidemiol.* 2002;37(4):164–8.
38. Kitamura T, Watanabe M, Fujino M, Aoki M, Ura C, Fujihara S. Factorial structure and correlates of marital adjustment in a Japanese population: a community study. *J Community Psychol.* 1995;23(2):117–26. [https://doi.org/10.1002/1520-6629\(199504\)23:2<117::AID-JCOP2290230203>3.0.CO;2-4](https://doi.org/10.1002/1520-6629(199504)23:2<117::AID-JCOP2290230203>3.0.CO;2-4)
39. Nepl TK, Conger RD, Scaramella LV, Ontai LL. Intergenerational continuity in parenting behavior: mediating pathways and child effects. *Dev Psychol.* 2009;45(5):1241–56. <https://doi.org/10.1037/a0014850>
40. Kendler KS, Baker JH. Genetic influences on measures of the environment: a systematic review. *Psychol Med.* 2007;37(5):615–26. <https://doi.org/10.1017/s0033291706009524>
41. Doi T, Bester J. *The anatomy of dependence.* 101. Tokyo: Kodansha International; 1973.
42. Parker G. Parental representations of patients with anxiety neurosis. *Acta Psychiatr Scand.* 1981;63(1):33–6.
43. Fraley RC, Vicary AM, Brumbaugh CC, Roisman GI. Patterns of stability in adult attachment: an empirical test of two models of continuity and change. *J Pers Soc Psychol.* 2011;101(5):974–92. <https://doi.org/10.1037/a0024150>
44. Zhang F, Labouvie-Vief G. Stability and fluctuation in adult attachment style over a 6-year period. *Attach Hum Dev.* 2004;6(4):419–37. <https://doi.org/10.1080/1461673042000303127>
45. Schlafer RJ, Raby KL, Lawler JM, Hesemeyer PS, Roisman GI. Longitudinal associations between adult attachment states of mind and parenting quality. *Attach Hum Dev.* 2015;17(1):83–95. <https://doi.org/10.1080/14616734.2014.962064>
46. Kitamura T, Uji M, Chen Z, Murakami M, Goto Y. Determinants of parenting styles of Japanese fathers and mothers with children aged 0 to 10: perceived parenting during childhood or dysphoric mood. *Open Fam Stud J.* 2014;6:8–16.

How to cite this article: Shiraishi N, Murakami M, Goto Y, Kitamura T. Intergenerational transmission of child-rearing styles mediated by adult attachment: a structural equation model approach. *Psychiatry Clin Neurosci Rep.* 2022;1:e22. <https://doi.org/10.1002/pcn5.22>