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Readiness for Parenthood, Dietary Habits, and Thinness Orientation in Female University Students: An Exploratory Analysis

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Abstract

Background: This study examined the relationships between readiness for parenthood, eating habits, and thinness-oriented attitudes among Japanese female university students. The university years represent a formative stage during which young women establish lifestyle practices and psychosocial attitudes that may affect their future pregnancy, childbirth, and parenting.

Methods: An online questionnaire survey was conducted in September 2024 with 78 female students aged 19 years or older enrolled at University A, yielding 67 valid responses. Readiness for parenthood, eating habits, and thinness orientation were assessed using validated scales. Data were analyzed using SPSS, descriptive statistics, multivariate analysis of variance (MANOVA), and analysis of covariance (ANCOVA).

Results: Although the overall model did not reveal significant associations, exploratory analyses suggested several meaningful relationships. Childcare experience was positively associated with the "meaning of becoming a parent," indicating that hands-on caregiving strengthens favorable attitudes toward parenthood. Participants who had revised their eating habits scored higher on the "succession of generations" factor, suggesting that dietary reflection may foster intergenerational responsibility. Regarding thinness orientation, women with higher body weight satisfaction exhibited a stronger sense of the childcare mission and educational awareness, whereas a stronger desire for thinness was linked to perceiving childcare as burdensome.

Conclusion: These findings highlight that readiness for parenthood is influenced by health behaviors and body image perceptions in multifaceted ways. Clinically, interventions that promote accurate body image, encourage balanced eating habits, and provide early exposure to childcare experiences may facilitate healthier transitions to parenthood. From a public health perspective, university-based programs could play a critical role in preventing maladaptive eating patterns and enhancing reproductive and parenting preparedness among young women. Further research with larger and more diverse populations is essential to clarify these complex interrelations and to develop comprehensive health promotion strategies.

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Introduction

Female university students are at a life stage in which strengthening parental readiness and establishing appropriate eating habits are important for a healthy future. Parental readiness refers not only to the abilities required to fulfill parental roles [1], but also to a broader range of psychological aspects, including interest in children, awareness of childcare, and attitudes toward childcare [2]. Recent social changes, such as a decline in the number of siblings and weaker community ties, have reduced opportunities to develop these qualities. Consequently, many individuals are reported to become parents without sufficient preparation [3]. Previous studies have indicated that parental readiness is also associated with feelings toward children [4], while insufficient readiness has been linked to a higher risk of negative parenting behaviors and child abuse [5]. These findings suggest that parental readiness affects not only pregnancy and childbirth outcomes but also the long-term health of the next generation.

Eating habits are shaped by social and cultural contexts and reflect consistent patterns of food choice, quantity, and timing [6]. Within the framework of the Developmental Origins of Health and Disease (DOHaD) [7], maternal nutrition before and during pregnancy has been shown to influence not only the mother's health but also fetal development and disease susceptibility later in life [8,9]. Therefore, establishing healthy eating habits among university students who are likely to become parents in the near future is a critical issue. However, among young women today, a distorted body image (e.g., perceiving themselves as overweight despite not being obese) [10] and a strong thinness orientation have raised concerns about inappropriate eating habits [11]. According to the Ministry of Health, Labour and Welfare [12], 20.2% of women in their twenties are underweight, (Body Mass Index [BMI] <18.5), which is the highest proportion among all age groups. Their mean daily energy intake (1,630 kcal) also falls short of the estimated requirement for physical activity level I (1,750 kcal/day). Therefore, re-evaluating body perceptions and eating behaviors and establishing healthy eating habits are critical not only for lifelong health but also for protecting future reproductive health and the health of the next generation.

This study focused on three factors related to future pregnancy and childbirth among female university students: parental readiness, eating habits, and thinness orientation. Each of these areas has been

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studied extensively, and a substantial body of knowledge has been accumulated independently. For example, studies on parental readiness have shown that a trusting relationship with the mothers promotes its development among adolescent females [13]. Regarding eating habits, "diet"-related topics are frequently studied as factors associated with thinness, and previous research has noted links between thinness, energy intake, and nutrient balance [14]. In studies on thinness, perceiving oneself as overweight—rather than aspiring to an ideal body shape—has been more strongly associated with inappropriate dieting behaviors [15]. Collectively, these findings indicate that each factor independently influences young women's health and attitudes. However, despite numerous findings in each individual domain, these three factors are likely to be interrelated rather than act independently, and their combined effects remain poorly understood. In particular, few studies have simultaneously examined these three factors among female university students, a population at a critical transitional stage into adulthood. The present study aims to fill this research gap by investigating the interrelationships among parental readiness, eating habits, and thinness orientation in female university students. By clarifying these associations, this study aims to provide new evidence on how psychological and behavioral factors together influence future reproductive health, thereby contributing to both public health and educational strategies that promote healthy pregnancies and the well-being of the next generation.

Materials and Method

Study design

To examine the relationships among participant characteristics, parental readiness, eating habits, and thinness orientation, we employed a correlation design (Figure 1).

Definitions

Parental readiness

Defined by Hattori [1] as "awareness of becoming a parent". In this study, parental readiness was operationalized as the score obtained from the Parental Readiness Scale.

Eating habits

Conscious and repetitive patterns of individual eating behaviors [16]. The evaluation items included the following three aspects.

(a) "Do you combine staple foods, main dishes, and side dishes at least twice a day?" (hereafter referred to as the frequency of intake)

(b)Energy intake

(c) "Have you consciously changed your eating habits recently?" (hereafter referred to as changes in eating habits).

Thinness orientation

Refers not only to weight-loss behaviors but also to internal desires and values such as wanting to be thin, not wanting to gain weight, and a preference for thin body types. Evaluation consisted of body indices and body image assessments.

(a) Body indices were measured using the following three items: height, weight, and BMI.

(b) Body image assessment was measured by the following items:

(i) Weight satisfaction: "Please select the option that best reflects your satisfaction with your weight."

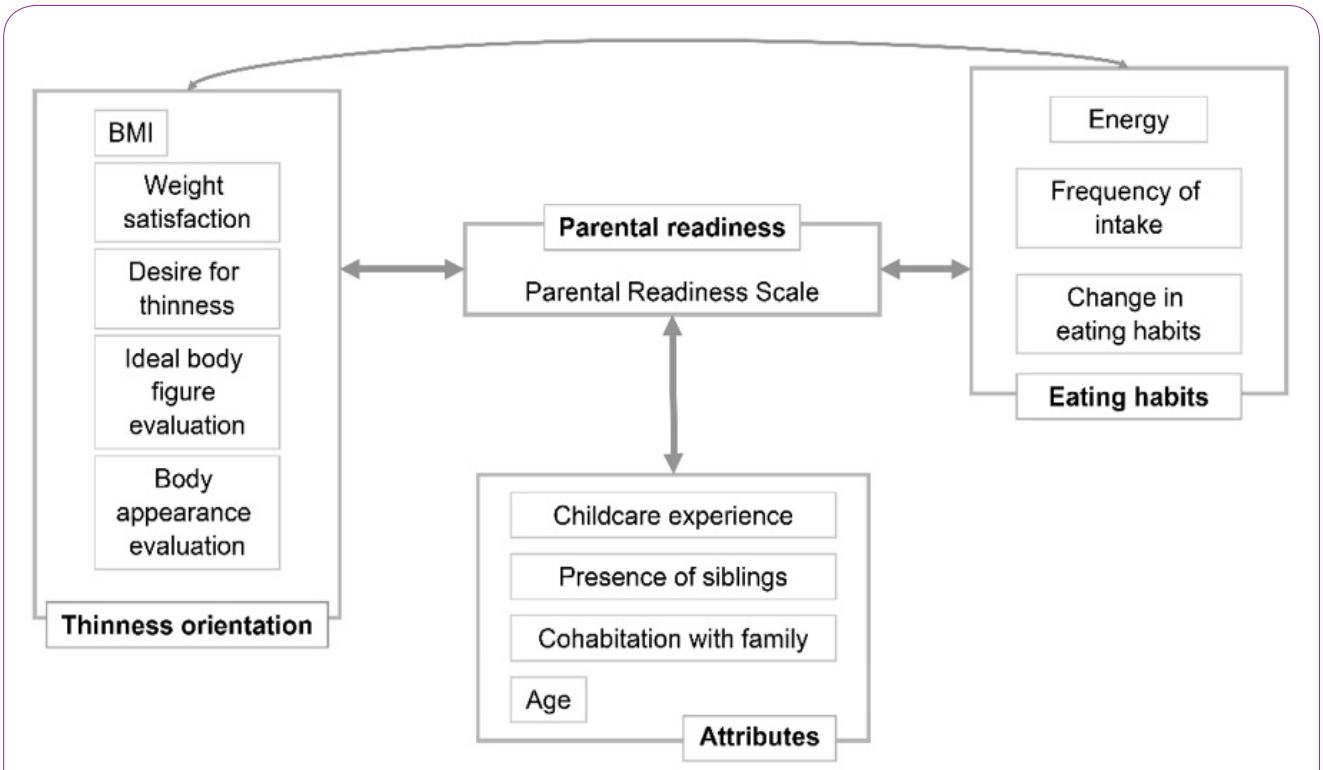

Figure 1: Conceptual framework.

(ii) Desire for thinness: "Please select the option that best reflects how you would like your weight/body shape to be."

(iii) Ideal body figure evaluation: The participants selected their ideal body silhouette from a chart. The difference between the chosen silhouette and the silhouette corresponding to their actual BMI was calculated.

(iv) Body appearance evaluation: Participants selected the silhouette they believed others perceived them to be. The difference between the silhouette and the silhouette corresponding to their actual BMI was calculated.

BMI classification

Based on the Japan Society for the Study of Obesity criteria: BMI <18.5, underweight; BMI ≥18.5 and <25 = normal weight; BMI ≥25 = overweight/obese.

Participants

The study included 78 female students from University A (a women's university in the faculty of humanities), all aged 19 years or older. Participants had no prior experience with pregnancy, childbirth, or childcare, and their native language was Japanese. The age cutoff of 19 years was not intentionally set by the study design; rather, the study population consisted only of students aged 19 years or older. No additional inclusion or exclusion criteria were applied. Participation was voluntary, and non-consenting or incomplete cases were removed prior to analysis to ensure data quality. We employed a convenience sampling approach because participants were recruited from students enrolled in a specific course. This method was selected in consideration of the time and logistical constraints during the study period. The sample size (N = 78) was determined by the number of students registered for the course at the time of the survey. Although no a priori power analysis was conducted, effect sizes were reported for all analyses to complement significance testing. The obtained sample size was considered sufficient for the exploratory use of MANOVA and ANCOVA, while acknowledging that replication with larger samples would strengthen generalizability.

Data collection

Data collection period

September 27–28, 2024

Data collection method

An online self-administered questionnaire survey was conducted using Microsoft Forms. The survey was conducted after class, and responses were collected electronically to ensure confidentiality and prevent external access. Participation was voluntary and anonymous, and informed consent was obtained before data collection. The sample was a convenience sample, as participants were recruited from among students enrolled in a particular course. No personal identifying information was collected, and data access was restricted to the study team.

Survey content (Table 1)

Basic attributes

Five attributes were assessed: age, sex, cohabitation with family, presence of siblings, and childcare experience. Binary (yes/no) questions were used for "cohabitation with family" and "presence of siblings." Childcare experience was assessed using a 5-point Likert scale (1–5) to indicate frequency.

Parental Readiness Scale

Parental readiness was measured using the scale developed by Hattori [1], which consisted of 43 items across five factors. Each item was rated on a 4-point scale (1–4), yielding a total possible score range of 43–172. The reliability and validity of this scale have been previously confirmed [1]. Permission for use was obtained from the developer.

Eating habits

The frequency of intake was assessed using a 4-point scale [17]. Energy intake and "changes in eating habits" were measured using the Brief Self-Administered Diet History Questionnaire (BDHQ) [18]. The BDHQ estimates nutrient intake based on dietary patterns over the previous month, and its reliability and validity have been established [19]. Permission to use the BDHQ was obtained, and the data analysis was carried out by a specialized agency.

Thinness orientation

(a) Body indices: Body mass index (BMI) was calculated from height and weight.

(b) Body image evaluation: Weight satisfaction and desire for thinness were assessed using 5-point Likert scales (1–5). "Ideal body figure" and "body appearance evaluations" were assessed using an Asnax silhouette chart [20]. Following Kanayama's method [21], responses were converted into numerical values. Since each silhouette corresponds to a BMI category, the difference for "ideal body figure" and "body appearance evaluation" was calculated by subtracting the value corresponding to the selected silhouette from that corresponding to the participant's actual BMI.

Data analysis

Analyses were conducted using SPSS Statistics 29.

Primary analyses

Descriptive statistics were calculated for body indices. Normality was assessed using the Shapiro–Wilk test. Variables with normal distributions are presented as mean ± standard deviation, and non-normal variables are presented as median (interquartile range [IQR], 25–75%).

Secondary analyses

Multivariate Analysis of Variance (MANOVA) was performed to examine the effects of all independent variables and covariates on dependent variables. Subsequently, exploratory univariate analyses of covariance (ANCOVA) were conducted for each dependent variable to identify significant differences. Post hoc tests with Bonferroni correction were performed to compare groups of independent variables and clarify group differences. Wilks' lambda was used as the multivariate test statistic, with significance set at $p < 0.05$. All statistical tests were two-tailed. Associations among the independent variables were examined using chi-square tests, with Cramér's V calculated as the effect size. Correlations between covariates were assessed using Kendall's rank correlation coefficient (r). The sample size was determined by course enrollment; therefore, no a priori sample size calculations were performed. Given the exploratory nature of this

Table 1: Survey content.

Category	Items	Content	Measurement methods and scales	
Basic attributes	Age/Sex	Age/Sex	Self-administered responses	
	Cohabitation with family	Are you currently living with any family member(s)?	Dichotomous (1 = No / 2 = Yes)	
	Presence of siblings	Do you have siblings?	Dichotomous (1 = No / 2 = Yes)	
	Childcare experience	Frequency of caregiving experience with young children (preschool-aged)	5-point scale (1 = "not at all" – 5 = "very frequent")	
Parental Readiness Scale	43 items (five factors)	Awareness of becoming a parent	4-point scale (1–4); total score range 43–172 (Hattori, 2008)	
Eating habits	Frequency of intake	Do you combine staple foods, main dishes, and side dishes at least twice a day?	4-point scale (1 = "almost never" – 4 = "almost every day")	
	Energy	Energy intake	Assessed using the BDHQ	
	Change in eating habits	Have you consciously changed your eating habits recently?	Dichotomous (1 = No / 2 = Yes)	
Thinness orientation	Body measurements	Height, weight, and BMI	Self-administered responses; BMI was calculated	
	Body image evaluation	Weight satisfaction	Weight satisfaction	5-point scale (1 = "dissatisfied" – 5 = "satisfied")
		Desire for thinness	How would you like your weight/ body shape to be?	5-point scale (1 = "want to gain weight" – 5 = "want to lose weight")
		Ideal body figure evaluation	Using the Asnax silhouette chart, participants selected their ideal figure, and the difference from the silhouette corresponding to their actual BMI was calculated	Silhouette numbers were converted into scores
		Body appearance evaluation	Using the Asnax silhouette chart, participants selected how they believed others perceived their appearance, and the difference from the silhouette corresponding to their actual BMI was calculated	Silhouette numbers were converted into scores

study, a post hoc power analysis was not conducted. Instead, effect sizes were reported for all analyses to complement significance testing—partial η^2 for ANCOVA, Cramér's V for chi-square tests, and Kendall's τ(rank correlation coefficient) for correlations.

Ethical considerations

This study was approved by the Ethical Committee for Experimental Research involving Human Subjects of Japan Women's University (Approval No. 601). Participation was voluntary, with assurances of no disadvantage for non-participation and no impact on grades. The responses were processed and anonymized. Online informed consent was obtained from all participants before their participation.

Results

Participant characteristics

Responses were obtained from 78 students (response rate: 100%), with 67 valid responses (response rate: 85.9%). Participants' ages ranged from 19 to 23 years. Descriptive statistics were as follows: mean (SD) height, 157.1 (5.1) cm; weight, 50.2 (6.4) kg; BMI, 20.3 (2.4); and age, 20.3 (0.9) years. For variables that were not normally distributed, the median and interquartile range (IQR) were calculated. Using BMI <18.5 as the objective indicator of thinness orientation, 20.9% of the participants were classified as underweight (Table 2).

Parental Readiness Scale scores

The median (IQR) total score on the Parental Readiness Scale was 151 (140–160). By factor, the scores were: Factor 1, 39 (34.5–44.8); Factor 2, 55 (50.5–56); Factor 3, 32 (29–35); Factor 4, 19 (16–20); and Factor 5, 8 (6–10). The Parental Readiness Scale scores according to BMI classification are shown in Table 3. No significant differences were observed between BMI classification and readiness scores (Table 3).

Eating habits

The median (IQR) scores were as follows: "frequency of intake," 3 (2–4); "energy intake," 1,370.0 kcal (1,203.5–1,551.9 kcal). Seventeen participants (25.4%) reported making conscious changes to their eating habits.

Table 2: Participants' body image and Body Mass Index (BMI) results.

Items	Study Participants Total number 67 Mean age 20.3		Median (IQR) Body Mass Index (BMI) of participants					
			Underweight group 14, 20.9%		Normal weight group 50, 74.6%		Obese group 3, 4.5%	
	Average value	(Standard deviation)	Median value (IQR)		Median value (IQR)		Median value (IQR)	
Height (cm)	157.1	(5.1)	158.5	(153.0-160.0)	157.2	(155.0-160.0)	153.0	(152.0-154.5)
Weight (kg)	50.2	(6.4)	44.0	(42.3-45.0)	50.0	(48.0-54.5)	64.0	(62.0-67.0)
BMI	20.3	(2.4)	17.8	(17.4-18.2)	20.3	(19.6-21.5)	26.3	(26.3-28.1)

IQR: interquartile range (25th–75th percentiles)

Table 3: Parental Readiness Scale results.

	Factor 1 total score (points)		Factor 2 total score (points)		Factor 3 total score (points)		Factor 4 total score (points)		Factor 5 total score (points)		Parental Readiness Scale total score (points)	
	Median value (IQR)		Median value (IQR)		Median value (IQR)		Median value (IQR)		Median value (IQR)		Median value (IQR)	
Underweight group	37	(35.3-44.8)	54.5	(52.6-56)	33.5	(29.5-35)	18	(15.3-19.8)	8	(6.3-9.5)	153	(141.8-159.3)
Normal weight group	39	(34.3-43.8)	55.5	(50-56)	32	(29.3-35)	19	(16-20)	8	(6-10)	150	(140.3-160)
Obese group	43	(38-45)	56	(50.5-56)	32	(24.5-33.5)	20	(19-20)	7	(6.9-9.5)	152	(144-155)
Total	39	(34.5-44.8)	55	(50.5-56)	32	(29-35)	19	(16-20)	8	(6-10)	151	(140-160)

IQR: interquartile range (25th–75th percentiles)

Thinness orientation

The median (IQR) values were as follows: weight satisfaction, 2 (2–4); desire for thinness, 4 (4–5); ideal body figure evaluation, 0 (−1–0.5); body appearance evaluation, 1 (1–2); and BMI, 20.0 (18.8–21.4).

Attributes

The median (IQR) score for "childcare experience" was 1 (1–1.5). Regarding cohabitation with family, 54 participants (80.6%) lived with their families, whereas 13 (19.4%) did not. Regarding siblings, 58 participants (86.6%) reported having siblings, while 9 (13.4%) reported none.

Relationships among parental readiness, eating habits, and thinness orientation

Multivariate analysis of covariance (MANCOVA) was conducted. The dependent variable was the Parental Readiness Scale (total, sub-factor totals, and sub-factor items). The independent variables were changes in eating habits, the presence of siblings, and cohabitation with family. The covariates were the frequency of intake, energy intake, weight satisfaction, desire for thinness, ideal body figure evaluation, body appearance evaluation, BMI, childcare experience, and age. Wilks' lambda (Λ) was used for significance testing, and partial eta squared (partial η^2, hereafter denoted as η^2) was calculated as an index of effect size.

In the full model including all variables, Wilks' Λ was not significant (Wilks' $\Lambda = .002$, $F(215, 99.88) = 1.225$, $p = .126$, $\eta^2 = .723$). By contrast, Roy's Largest Root was significant (Roy's Largest Root = 8.232, $F(43, 23) = 4.403$, $p < .001$, $\eta^2 = .892$), suggesting the possibility of strong effects on specific dependent variables (Table 4). Although confidence intervals were not reported, effect sizes (e.g., partial η^2, Cramér's V, Kendall's τ) were consistently included to complement significance testing. However, no consistent overall associations were observed between parental readiness and the explanatory variables, indicating that the study did not confirm the expected interrelationships among parental readiness, eating habits, and thinness orientation.

Multivariate testing of individual variables showed that "weight satisfaction" demonstrated a trend toward significance (Wilks' $\Lambda = .083$, $F(43, 9) = 2.315$, $p = .090$, $\eta^2 = .917$), but did not reach statistical significance. No other variables showed significant effects (Table 5).

Exploratory analysis of covariates (Table 6)

A univariate analysis of covariance was performed for each dependent variable. Several variables demonstrated significant associations with the direction of the effects, as indicated by the unstandardized regression coefficients (B). A summary of these findings is provided in Table 6.

(a) Relationship with childcare experience

In the first factor of the Parental Readiness Scale, several items were significantly associated with childcare experience.

Specifically, the total score for Factor 1, as well as the items "1-1: happiness," "1-2: enrichment of life," "1-3: enjoyment," "1-4: gaining a sense of purpose," "1-10: opportunities for personal learning," and "1-11: having an expanded family," all showed positive associations.

Table 4: Multivariate test results with independent variables and covariates entered.

Independent variables and covariates		Value	F value	Significance probability	Partial eta squared
Cohabitation with family * Siblings * Change in eating habits * Frequency of intake * Weight satisfaction * Desire for thinness * BMI * Age * Energy intake * Childcare experience * Ideal body figure evaluation * Body appearance evaluation	Wilks' lambda	0.002	1.225	0.126	0.723
	Roy's largest root	8.232	4.403	0.000	0.892

Table 5: Multivariate test results for independent variables and covariates.

Independent variables and covariates	*Wilks' Λ*	F value	Hypothesis degrees of freedom	Error degrees of freedom	Significance probability	Partial eta squared
Frequency of intake	0.201	0.830	43.000	9.000	0.683	0.799
Weight satisfaction	0.083	2.315	43.000	9.000	0.090	0.917
Desire for thinness	0.181	0.944	43.000	9.000	0.588	0.819
BMI	0.263	0.585	43.000	9.000	0.884	0.737
Age	0.200	0.835	43.000	9.000	0.678	0.800
Energy	0.263	0.587	43.000	9.000	0.883	0.737
Childcare experience	0.185	0.921	43.000	9.000	0.607	0.815
Ideal body figure evaluation	0.234	0.685	43.000	9.000	0.806	0.766
Body appearance evaluation	0.215	0.766	43.000	9.000	0.737	0.785
Cohabitation with family	0.110	1.689	43.000	9.000	0.204	0.890
Presence of siblings	0.190	0.895	43.000	9.000	0.628	0.810
Change in eating habits	0.318	0.449	43.000	9.000	0.962	0.682
Cohabitation with family * Presence of siblings	0.171	1.016	43.000	9.000	0.533	0.829
Cohabitation with family * Change in eating habits	0.227	0.714	43.000	9.000	0.782	0.773
Presence of siblings * Change in eating habits	0.220	0.741	43.000	9.000	0.759	0.780
Cohabitation with family * Presence of siblings * Change in eating habits	1.000	.	0.000	30.000		

Table 6: Results of analysis of variance of covariates on dependent variables.

Dependent variables	Covariates	F value	Significance probability	Partial eta squared	Unstandardized regression coefficient (B)
Factor 1 total score	Childcare experience	7.336	0.009	0.126	3.401
1-1: happiness	Childcare experience	7.039	0.011	0.121	0.327
1-2: enrichment of life	Childcare experience	5.755	0.020	0.101	0.315
1-3: enjoyment	Childcare experience	5.041	0.029	0.090	0.317
1-4: gaining a sense of purpose	Childcare experience	7.061	0.010	0.122	0.325
1-10: opportunities for personal learning	Childcare experience	11.244	0.002	0.181	0.409
1-11: having an expanded family	Childcare experience	5.581	0.022	0.099	0.288
1-12: developing gratitude toward one's own parents	Frequency of intake	8.126	0.006	0.137	0.264
2-7: the ability to discipline and educate children	Weight satisfaction	4.665	0.036	0.084	0.152
2-8: having a sense of mission in raising children	Weight satisfaction	6.694	0.013	0.116	0.224
	Ideal body figure evaluation	4.204	0.045	0.076	-0.256
3-2: restriction of freedom	Childcare experience	4.437	0.040	0.080	-0.198
3-3: vague feelings of anxiety	Energy	6.267	0.016	0.109	0.000
3-4: physical and psychological burden	Energy	4.428	0.040	0.080	0.000
3-8: feeling burdened by carrying the responsibility for a child's life	Desire for thinness	4.473	0.039	0.081	0.423
3-9: the need for self-control	Age	4.425	0.040	0.080	-0.215
4-4: need to adopt a willingness to learn about parenting	Energy	4.408	0.041	0.080	0.000

This indicates that participants with more frequent childcare experience tended to score higher on these positive items.

Conversely, "3-2: restriction of freedom" showed a negative association, suggesting that participants with greater childcare experience tended to score lower on this negative item.

(b) Relationship with eating habits

Exploratory analyses identified significant relationships between eating habits and the Parental Readiness Scale. The item "1-12: developing gratitude toward one's own parents" showed a significant association with the frequency of food intake. Participants with higher eating frequency tended to have higher scores on this item. In addition, energy intake showed small positive associations with "3-3: vague feelings of anxiety," "3-4: physical and psychological burden," and "4-4: need to adopt a willingness to learn about parenting."

(c) Relationship with thinness orientation

Weight satisfaction was significantly associated with "2-7: the ability to discipline and educate children" and "2-8: having a sense of mission in raising children," with participants who had higher weight satisfaction tending to score higher on these items. Ideal body figure evaluation was also significantly associated with "2-8: having a sense of mission in raising children," indicating that participants who selected a thinner silhouette than their actual body tended to show higher scores on this item. Furthermore, a stronger desire for thinness was significantly associated with "3-8: feeling burdened by carrying the responsibility for a child's life," suggesting that participants with a stronger thinness orientation tended to feel a greater sense of responsibility in childrearing.

Exploratory analysis of independent variables (Table 7)

Exploratory analyses revealed several significant effects of the independent variables on specific parental readiness factors. A summary of these findings is provided in Table 7.

(a) Changes in eating habits: Significant effects were observed for the total score of Factor 5, "5-2: leaving one's own descendants," and "5-3: fostering the next generation."

(b) Cohabitation with family: Living with family was associated with higher scores for "1-1: happiness" and "2-12: building a family and supporting a partner and children."

(c) Presence of siblings: Having siblings showed significant effects for "1-1: happiness," "1-3: enjoyment," and "1-4: gaining a sense of purpose."

Post hoc tests revealed that the group who reported changes in their eating habits scored significantly higher on the Factor 5 total, "5-2: leaving one's own descendants," and "5-3: fostering the next generation."

Participants living with family scored significantly higher on "1-1: happiness" and "2-12: building a family and supporting a partner and children."

In contrast, participants with siblings scored lower on "1-1: happiness," "1-3: enjoyment," and "1-4: gaining a sense of purpose" (Table 8).

Correlations among independent variables

A significant association was observed between cohabitation with family and the presence of siblings ($p < .001$, Cramér's $V = 0.90$), indicating a very strong relationship. No other significant associations were found among the independent variables.

Correlations among covariates

The significant correlations among the covariates were as follows: Frequency of intake with childcare experience ($r = –.234$, $p = .032$). Weight satisfaction with thinness desire ($r = –.683$, $p < .001$), ideal body figure evaluation ($r = .630$, $p < .001$), and BMI ($r = –.462$, $p < .001$). Thinness desire with ideal body figure evaluation ($r = –.603$, $p < .001$) and BMI ($r = .557$, $p < .001$). Ideal body figure evaluation with body appearance evaluation ($r = .212$, $p = .045$) and BMI ($r = –.573$, $p < .001$). No other significant correlations were observed.

A simplified conceptual diagram of the effects of covariates and independent variables on the Parental Readiness Scale is shown in Figure 2. To avoid excessive visual complexity, the figure depicts only significant associations between explanatory variables and scale items, as indicated by the arrows (without the distinction of directionality). Correlations between the covariates and independent variables are represented by bidirectional arrows within each group.

Table 7: Results of analysis of variance for independent variables on the dependent variables.

Independent variables	Dependent variables	F value	Significance probability	Partial eta squared
Change in eating habits	Factor 5 total score	8.417	0.005	0.142
	5-2: leaving one's own descendants	8.424	0.005	0.142
	5-3: fostering the next generation	8.936	0.004	0.149
Cohabitation with family	1-1: happiness	4.119	0.048	0.075
	2-12: building a family and supporting a partner and children	4.509	0.039	0.081
Presence of siblings	1-1: happiness	4.244	0.045	0.077
	1-3: enjoyment	6.134	0.017	0.107
	1-4: gaining a sense of purpose	4.199	0.046	0.076

Table 8: Post hoc test results for independent variables.

Dependent variables	Independent variables			Mean difference (I-J)	Standard error	Significance probability	95% confidence interval for the mean difference	
		(I)	(J)				Lower limit	Upper limit
Factor 5 total score	Change in eating habits	No change	Changed	-3.508	1.209	0.005	-5.936	-1.081
5-2: leaving one's own descendants		No change	Changed	-1.31	0.451	0.005	-2.216	-0.404
5-3: fostering the next generation		No change	Changed	-1.298	0.434	0.004	-2.170	-0.426
1-1: happiness	Presence of siblings	No	Yes	-0.732	0.355	0.045	-1.445	-0.019
1-3: enjoyment		No	Yes	-1.007	0.407	0.017	-1.824	-0.191
1-4: gaining a sense of purpose		No	Yes	-0.721	0.352	0.046	-1.427	-0.015
2-12: building a family and supporting a partner and children		No	Yes	-0.693	0.278	0.016	-1.252	-0.134
1-1: happiness	Cohabitation with family	No	Yes	0.695	0.342	0.048	0.007	1.382
2-12: building a family and supporting a partner and children		No	Yes	0.57	0.268	0.039	0.031	1.109

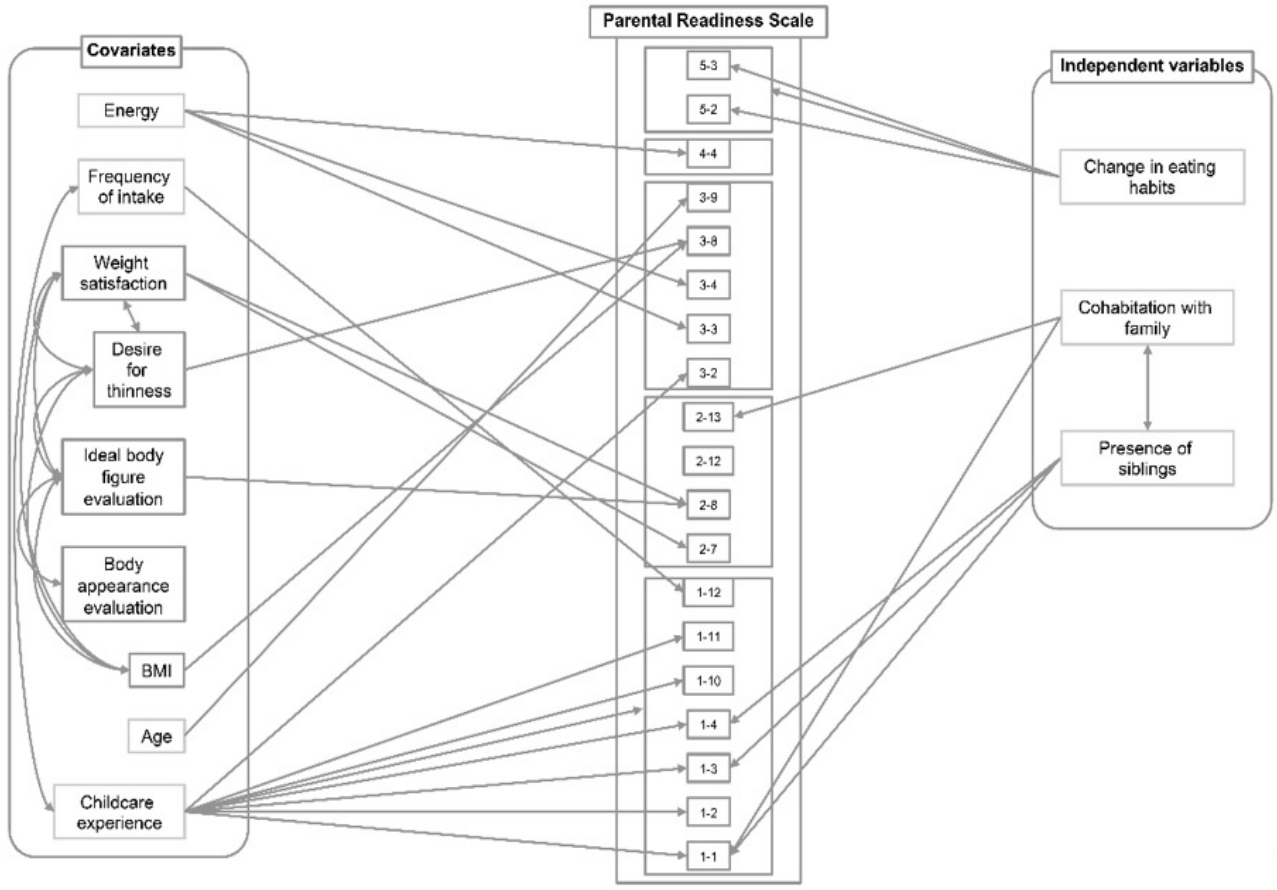

Figure 2: Model of the effects of covariates and independent variables on the Parental Readiness Scale.

Discussion

This study examined the relationship between parental readiness, eating habits, and thinness orientation among female university students. Although no significant effects were observed in the overall model, exploratory analyses suggested associations between specific subfactors of parental readiness and participants' eating habits, body evaluation, and thinness orientation. These findings indicate that the research objective was only partially achieved: while broad interrelationships among the three factors were not confirmed, several specific associations emerged.

Relationship between the Parental Readiness Scale and childcare experience

Factor 1 of the Parental Readiness Scale (significance of becoming a parent) was significantly associated with positive perceptions such as "happiness" and "enrichment of life." These results are consistent with previous studies showing that direct childcare experiences foster favorable attitudes toward parenting [22]. At the same time, negative perceptions such as "restriction of freedom" were less pronounced among those with more childcare experience, suggesting that actual engagement in caregiving may mitigate negative stereotypes. This highlights the potential importance of creating opportunities for students to interact with infants and young children in order to cultivate parental readiness.

Relationship with eating habits

The group that reported changing their eating habits scored significantly higher on Factor 5 (generativity), suggesting that proactive lifestyle modifications may extend beyond health maintenance to psychological preparedness for parenting. Unlike previous studies emphasizing the risks of disordered eating for maternal and child health (DOHaDs), our findings demonstrate that active engagement in healthy eating behaviors can strengthen psychological readiness for parenthood. This result aligns with prior evidence documenting dietary improvements during the transition to parenthood [23], shaped by determinants such as health concerns, role modeling, and infant needs [24,25]. Notably, the present study suggests that such favorable changes may occur even earlier—before pregnancy—highlighting the importance of health education programs targeting young women to reinforce both nutritional health and parental preparedness.

Relationship with thinness orientation

A desire for thinness showed a significant positive association with perceiving childcare as a greater burden, whereas higher weight satisfaction was linked to more positive perceptions of parental roles, such as "the ability to discipline and educate children" and "having a sense of mission in raising children" . These findings suggest that subjective body evaluations may influence the psychological aspects of parental readiness. In particular, the observation between stronger thinness desire and greater feelings of burden may reflect a desire for control underlying thinness orientation. Desire for control refers to individual differences in the general level of motivation to regulate life events [26]; individuals with a high desire for control have been reported to prefer self-regulated coping strategies under stress, expend excessive effort in task performance, and be less likely to interrupt or abandon tasks [27]. From this perspective, the stronger the preoccupation with an ideal body shape, the more likely childrearing responsibilities are perceived as burdens that exceed one's controllability, thereby increasing the sense of burden. Time pressure and competing priorities have likewise been identified as contextual barriers that shape eating behavior during the transition to parenthood [24]. Considering that young Japanese women often harbor strong thinness desires and experience internal psychological pressure not to gain weight, even when they are not medically underweight [28], this tendency may be linked to an increased sense of psychological burden in the maternal role.

In contrast, higher weight satisfaction was associated with positive evaluations of parenting roles, consistent with prior studies linking body satisfaction to self-esteem [29], and it can be interpreted as an indication that a sense of physical and mental well-being fosters a positive attitude toward parenting roles. However, it should be noted that the group with higher weight satisfaction in this study also included individuals in the underweight BMI category (BMI <18.5). Thus, some participants may have been satisfied with their current body because they were underweight. Therefore, "high weight satisfaction" cannot be simply interpreted as reflecting desirable psychological traits. Rather, it may reflect excessive thinness orientation and carry physical health risks, warranting caution when interpreting its relationship with parental readiness. Furthermore, evaluation of the ideal body figure showed a negative association with "2-8: having a sense of mission in raising children," whereas thinness desire was positively associated with the same subscale. These results suggest that the cognitive aspect of body image (ideal body figure evaluation) and the affective aspect (thinness desire) may exert opposing influences on parental readiness. From a public health perspective, this highlights the need to address both the physical risks associated with underweight status and the psychological pressures of thinness ideals when considering the development of maternal roles.

Relationships among parental readiness, eating habits, and thinness orientation

The exploratory findings suggest that parental readiness is related to both lifestyle factors, such as eating habits, and psychological factors, such as thinness orientation. This interpretation aligns with prior work describing the transition to parenthood as a "window of opportunity" for favorable dietary change [23], and with evidence that such changes are shaped by determinants at the individual, interpersonal, and home-environment levels [24,25]. In contrast, no statistically significant correlations were observed between eating habits (frequency of food intake and energy intake) and thinness orientation (weight satisfaction, desire for thinness, evaluation of ideal body image, body appearance, BMI). Previous studies reported that young women with a stronger drive for thinness tend to have insufficient nutritional intake [30]. However, in the present study, the overall energy intake did not meet the estimated requirements, and the narrow interquartile range (≈350 kcal) indicated that intake was concentrated in the low-energy range. As a result, differences in eating habits by degree of thinness orientation may not have been clearly manifested, and the universally low intake may have attenuated potential associations.

Taken together, these results indicate that parental readiness is associated with both eating habits and thinness orientation, but the interrelationships among the three factors remain unclear. Future studies should include participants with more diverse nutritional statuses and incorporate analyses considering the adequacy of energy intake to more precisely elucidate these relationships. Moreover, the present study was limited to female students from a single university, resulting in a relatively homogeneous sample size. To enhance the generalizability, future research should recruit participants from different regions and backgrounds, including working and married women. In addition, conducting MANOVA with a small sample across multiple dependent variables carries the risk of instability, highlighting the need to secure sufficient cases and to carefully balance the ratio of dependent variables to cases and the number of observations per factor [31,32]. Finally, because our sample comprised pre-parenthood female students from a single institution, the generalizability of the findings is limited, and direct comparability with studies during

pregnancy and postpartum is restricted. Nonetheless, evidence of favorable dietary shifts during the transition to parenthood [23] and the role of determinants at individual, interpersonal, and home environment levels [24,25] provide a useful framework for interpreting potential changes in eating behavior. From a public health perspective, these insights underscore the importance of targeting young women before pregnancy to promote healthier lifestyles and strengthen parental readiness.

Conclusions

This study examined the relationships between parental readiness, eating habits, and thinness orientation among female university students. While multivariate analysis revealed no overall association among the three factors, exploratory analyses identified specific links between certain covariates or independent variables and subfactors of parental readiness. These findings suggest that subjective body evaluations and lifestyle behaviors may differentially shape readiness for future parenting.

From a theoretical perspective, the results extend existing models of parental readiness by highlighting the potential role of psychological constructs such as thinness orientation, which may exert both facilitating and hindering influences on perceptions of parental roles. From a practical standpoint, the findings underscore the importance of university-based health education initiatives that encourage balanced eating habits and realistic body image, thereby enhancing psychological preparedness for parenting and contributing to future maternal and child health.

As a preliminary study, these findings also point to the need for larger-scale, multisite investigations with diverse samples and rigorous longitudinal designs to further clarify these relationships.

Competing Interests

The author declare that they have no competing interests.

Author Contributions

HK took primary responsibility as the first author, overseeing the entire study and contributing to the conception and design of the research, data collection, data analysis and interpretation, and preparation of the final manuscript.

TH contributed to the conception and design of the study, provided advice and critical review based on the study findings, and participated in the preparation of the final manuscript.

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