

The Impact of Parental Marital Quality on Family Intimacy among Deaf College Students: The Mediating Role of Perceived Discrimination

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Abstract: This paper explores the interconnections of parental marital quality, family intimacy, perceived discrimination and social adaptation within samples of hearing-impaired college learners. Questionnaires were distributed to 200 participants for quantitative testing, and three core conclusions were drawn from statistical outputs. First, parental marital quality holds a positive correlation with family intimacy, while these two factors both show negative correlations with perceived discrimination. Second, the pre-designed moderated mediation structural model failed to pass data verification. Third, after excluding the interference of social adaptation indicators, perceived discrimination forms a significant mediating path between parental marital quality and family intimacy. Improved parental marital conditions cut down students' perceived discrimination levels, and weakened unfair treatment perceptions will further lift family intimacy. The above results identify perceived discrimination as a critical transmission channel connecting internal household interactions and emotional bonding, and supply practical references to design supporting plans for hearing-impaired undergraduates.

Keywords: Marital Quality; Family Intimacy; Perceived Discrimination; Social Adaptation; Hearing-impaired College Students.

1. Introduction

According to ecological systems theory, individual development is shaped by multilayered environmental systems, among which the family microsystem serves as the most foundational context for children's growth. Parental marital quality is a key component of overall family functioning. It reflects how spouses evaluate their daily marital interactions and emotional bonding, and marital satisfaction is often adopted to measure such relational conditions. Stable and positive marital relationships benefit parents' emotional wellbeing. Healthy family interactions build a more harmonious living atmosphere and coordinate daily family operation, which further supports children's comprehensive physical and psychological growth [1–4].

Family intimacy profoundly shapes young individuals' social development. Close emotional ties connect every family member and maintain balanced daily interaction. Warm and responsive family communication teaches youth effective interpersonal strategies, allowing them to accumulate positive social experience from an early age. These steady domestic resources lay a solid foundation for individuals to adapt to complex social environments in later life [5–7].

Social adaptation has long been a core research topic in developmental studies. Previous literature emphasizes that family environments significantly shape individual adaptive ability. Daily family atmosphere and caregiver parenting styles directly affect how young people adjust to external society. Positive family support improves social adaptability, while adverse family conditions hinder individual development through both direct and indirect influencing pathways [8–9].

Compared with ordinary student groups, hearing-impaired college students face unique challenges in language expression, social cognition, and interpersonal communication.

Their social adaptation relies heavily on stable family support and positive emotional nurturing. Because of developmental and communicative characteristics, this group is more sensitive to family atmosphere and external social attitudes. Although existing studies have explored various factors influencing social adaptation, most research focuses on mainstream populations or discusses single family variables independently. Few studies systematically clarify how parental marital quality influences the social adaptation process of hearing-impaired college students, leaving an unexplored gap in family and special education research.

Perceived discrimination refers to individuals' subjective sense of unfair treatment triggered by group identity. As a socially vulnerable group, hearing-impaired individuals often encounter explicit or implicit prejudice in daily social interaction. Such negative external experiences greatly affect their psychological state and social performance. Nevertheless, few studies combine systematic family variables and discriminatory perception to explore their interactive effects on the development of hearing-impaired students.

To fill the above research gap, this study establishes a complete analytical framework based on mature theories and previous empirical findings, proposing a set of structured research hypotheses. It first assumes that parental marital quality can positively predict social adaptation levels among hearing-impaired college students. Second, family intimacy functions as an intermediate variable in this relationship, such that positive marital conditions strengthen family intimacy and further promote students' social adaptation. Third, perceived discrimination moderates the pathway from family intimacy to social adaptation. Students with different levels of discriminatory perception may show distinct responses to family emotional resources, leading to varied adaptive performances. This integrated moderated mediation model explains how internal family factors and individual subjective

experience jointly influence the social development of hearing-impaired youth. The findings can provide practical analytical references for understanding family influencing factors of hearing-impaired students and offer effective support for their psychological adjustment and social development.

According to theoretical deduction, this study initially constructs a moderated mediation model and proposes corresponding hypotheses. However, preliminary data analysis does not fully support the original model. For this reason, the research further conducts exploratory testing and supplements an alternative pathway interpretation.

The core logical path of this model is as follows: parental marital quality can generate negative predictive effects on perceived discrimination; perceived discrimination is a negative predictor of family intimacy; meanwhile, perceived discrimination serves as the mediator connecting parental marital quality and family intimacy (See Figure 1).

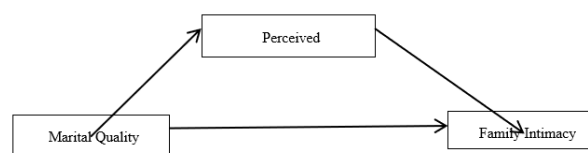


Figure 1. Mediation Model

2. Research Methods

2.1. Study Population

Convenience sampling was employed in this study. The study subjects consisted of hearing-impaired college students and their parents, who were surveyed via a questionnaire. A total of 202 questionnaires were collected. After excluding incomplete responses and outliers, 200 valid questionnaires were obtained, resulting in a valid response rate of 99.01%. The detailed distribution of the participants is shown in Table 1.

Table 1. Distribution of Participants

Demographic Variables	Category	Frequency	Percentage %
Gender	Male	105	52.5
	Female	95	47.5
Only child	Yes	72	36.0
	No	128	64.0
Family Type	Two-parent	165	82.5
	Single-parent	35	17.5
Degree of hearing loss	Mild	44	22.0
	Moderate	75	37.5
	Severe	55	27.5
	Very severe	26	13.0
Marital Quality Respondent	Father	99	49.5
	Mother	101	50.5

2.2. Research Tools

2.2.1. Marriage Quality Questionnaire

Marital quality was measured using the Marital Satisfaction Subscale of the Olson Marital Quality Questionnaire to assess fathers' and mothers' marital satisfaction. Each subscale consists of 10 items; higher scores indicate greater marital satisfaction. A 5-point scale was used, with 1 indicating "definitely agree" and 5 indicating "definitely disagree." The Cronbach's α coefficients for the fathers' and mothers' questionnaires were 0.81 and 0.82, respectively.

2.2.2. Family Closeness Scale

Family closeness was measured using the Family Closeness subscale from the Family Closeness and Adaptation Scale (FACES II—CV), developed by Olson and revised by Fei Lipeng et al. This subscale consists of 16 items and uses a 5-point scale; higher scores indicate greater family closeness. The Cronbach's α coefficient for this scale in this study was 0.80.

2.2.3. Perceived Discrimination Questionnaire for Persons with Disabilities

Perceived discrimination was measured using the Perceived Discrimination Questionnaire for Persons with Disabilities, developed by Liu Xia and Shen Jiliang and revised by Li Wentao, to assess the level of perceived discrimination among students with visual impairments. The questionnaire consists of 10 items and has a unidimensional structure. It employs a 5-point rating scale, with the total score calculated by summing all items; a higher score indicates a higher level of perceived discrimination among students with visual impairments. In this study, the Cronbach's α coefficient

for this questionnaire was 0.91.

2.2.4. Social Adaptation Ability Scale

Social adaptation ability was assessed using the Social Adaptation Ability Diagnostic Scale developed by Professor Zheng Richang of Beijing Normal University. The scale consists of 20 items designed to measure social adaptation ability. The scoring criteria are as follows: for odd-numbered items, selecting "Yes" results in a deduction of 2 points, selecting "Unsure" yields 0 points, and selecting "No" results in an addition of 2 points. For even-numbered items, selecting "Yes" yields 2 points, "Not sure" yields 0 points, and "No" yields -2 points. The total score is calculated by summing the scores of all items, ranging from -40 to 40; a higher score indicates stronger social adaptability. This scale has been widely used by researchers in middle school and college student populations. In this study, the scale's internal consistency reliability (Cronbach's α) was 0.730, meeting statistical standards.

2.3. Data Processing

2.3.1. Data Screening

The research adopted the ± 3 standard deviation criterion to identify and eliminate outliers. Two sets of invalid sample data were removed, as they contained missing questionnaire content and extreme numerical values. After this round of data cleaning, the reserved dataset satisfied the criteria of normal distribution.

2.3.2. Data Analysis

This study adopted SPSS 26.0 for statistical analysis. Independent-samples t-tests and one-way ANOVA were used

to analyze demographic differences in parental marital quality, family closeness, perceived discrimination and social adaptation. Pearson correlation analysis examined the relationships among these variables. Hayes' (2013) PROCESS macro based on hierarchical regression was applied to test the moderated mediation model and the mediating effect of perceived discrimination.

3. Research Results

3.1. Tests for Differences

This study employed an independent samples t-test. The results of the gender difference test showed that there were no significant differences in social adaptation ($t = -0.678$, $p = 0.498$), family closeness ($t = -0.673$, $p = 0.502$), or perceived discrimination ($t = 0.260$, $p = 0.795$) scores between the 105 male and 95 female participants. Regarding whether participants were only children, there were no significant differences between the 72 only children and the 128 non-only children in terms of social adaptation ($t = 0.282$, $p = 0.779$), family closeness ($t = 0.499$, $p = 0.618$), and perceived discrimination ($t = -0.880$, $p = 0.380$). Results regarding family type differences indicated that there were no significant differences in scores for social adaptation ($t = 1.641$, $p = 0.102$), family closeness ($t = -1.497$, $p = 0.136$), or perceived discrimination ($t = 1.843$, $p = 0.067$) between the 35 participants from single-parent families and the 165 from two-parent

families. The test for differences in the Marriage Quality Questionnaire revealed no significant difference in marriage quality scores between the 99 questionnaires completed by fathers and the 101 completed by mothers ($t = -0.865$, $p = 0.388$). The results of the one-way ANOVA showed that there were no significant overall differences in social adaptation ($F = 1.247$, $p = 0.294$), family intimacy ($F = 0.930$, $p = 0.427$), or perceived discrimination ($F = 0.343$, $p = 0.794$) among participants with different degrees of hearing loss.

3.2. Descriptive Statistics and Correlation Analysis of Variables

As shown in Table 2, the correlation coefficients for all variables were significant at the 0.01 level. Among these, parental marital quality was significantly positively correlated with family closeness ($r = 0.862$, $p < 0.01$), and was significantly negatively correlated with both the social adaptation and perceived discrimination of children with hearing loss ($r = -0.218$, -0.827 , $p < 0.01$); Family closeness was significantly negatively correlated with both the social adaptation and perceived discrimination of children with hearing impairments ($r = -0.219$, -0.821 , $p < 0.01$), while perceived discrimination was significantly positively correlated with the social adaptation of children with hearing impairments ($r = 0.210$, $p < 0.01$).

Table 2. Descriptive statistics and correlation analysis of variables (n = 200)

	M ± SD	Social Adaptation	Family Intimacy	Perceived Discrimination	Marital Quality
Social Adaptation	-3.27 ± 5.97	1			
Family Intimacy	54.87 ± 9.63	-0.219**	1		
Perceived Discrimination	29.61 ± 6.79	-0.210**	-0.821**	1	
Marital Quality	32.81 ± 6.32	-0.218**	0.862**	-0.827**	1

Note: ** $p < 0.01$.

3.3. Testing the Moderated Mediation Model

We conducted a moderated mediation analysis using Model 14 in the PROCESS plugin of SPSS 26.0, with parental marital quality as the independent variable, family closeness as the mediating variable, perceived discrimination as the moderating variable, and social adaptation of college students with hearing impairments as the dependent variable. We tested the confidence intervals by drawing 5,000 bootstrap samples. The regression results showed that parental marital quality significantly and positively predicted family closeness ($\beta = 1.313$, $t = 23.880$, $p < 0.001$); However, when parental marital quality, family closeness, perceived discrimination, and the family closeness $\times$ perceived discrimination interaction term were jointly included in the equation to predict the social adaptation of hearing-impaired students, the direct predictive effect of parental marital quality on social adaptation was not significant ($\beta = -0.067$, $t = -0.474$, $p > 0.05$). The main effects of family closeness and perceived discrimination did not reach statistical significance, and the predictive effect of the family closeness $\times$ perceived discrimination interaction term was also not significant ($\beta = -0.009$, $t = -1.646$, $p > 0.05$). After introducing the interaction term, the R^2 did not change significantly ($\Delta R^2 = 0.013$, $F = 2.708$, $p > 0.05$). Further conditional indirect effect results indicate that at low, medium, and high levels of perceived discrimination (corresponding to scores of 23.00, 29.00, and 37.00), the 95% Bootstrap confidence intervals for the

indirect effect "parental marital quality $\rightarrow$ family closeness $\rightarrow$ social adaptation of children with hearing impairments" were $[-0.253, 0.262]$, $[-0.319, 0.171]$, and $[-0.427, 0.084]$, respectively, with all intervals containing 0; The mediation index with moderation is -0.012 , with a 95% Bootstrap confidence interval of $[-0.025, 0.0004]$ that crosses 0, indicating that family closeness does not significantly mediate the relationship between parental marital quality and the social adaptation of children with hearing impairments, and that perceived discrimination does not significantly moderate the latter half of this mediation path.

3.4. Mediation Effect Test

The mediation analysis was conducted using Model 4 in the PROCESS plugin of SPSS 26.0, with parental marital quality as the independent variable, perceived discrimination as the mediator, and family closeness as the dependent variable. The social adaptation of children with hearing impairments was included in the model as a control variable, and confidence intervals were estimated based on 5,000 Bootstrap repetitions. First, controlling for the social adaptation of children with hearing impairments, parental marital quality significantly and negatively predicted perceived discrimination ($\beta = -0.880$, $t = -20.006$, $p < 0.001$), while the predictive effect of social adaptation on perceived discrimination was not significant ($\beta = 0.035$, $t = 0.754$, $p > 0.05$); Further, when parental marital quality, perceived discrimination, and social adaptation were jointly included in a regression equation to predict family

closeness, the results showed that parental marital quality significantly and positively predicted family closeness ($\beta = 0.876$, $t = 9.616$, $p < 0.001$), perceived discrimination significantly and negatively predicted family closeness ($\beta = -0.484$, $t = -5.712$, $p < 0.001$), while the predictive effect of social adaptation on family closeness did not reach statistical significance ($\beta = -0.037$, $t = -0.660$, $p > 0.05$). Direct effect results indicated that the direct effect of parental marital quality on family closeness was significant (Effect=0.876, 95% CI [0.696,

1.056]); the indirect effect value for the mediation path “parental marital quality $\rightarrow$ perceived discrimination $\rightarrow$ family intimacy” was 0.426, with a 95% Bootstrap confidence interval [0.2796, 0.5730]. Since the interval does not include 0, this indicates that perceived discrimination plays a significant mediating role between parental marital quality and family intimacy, meaning the mediation model holds (Table 3).

Table 3. Mediation Analysis

Variables	Equation 1 (Dependent Variable: Perceived Discrimination)			Equation 2 (Dependent Variable: Family Intimacy)		
	β	t	95% CI	β	t	95% CI
Marital quality	-0.880	-20.005***	[-0.968, -0.794]	0.876	9.616***	[0.696, 1.056]
Perceived Discrimination				-0.484	-5.712***	[-0.651, -0.316]
Social Adaptation	0.035	0.754	[-0.057, 0.127]	-0.037	-0.660	[-0.146, 0.073]
R ²	0.685			0.780		
F	213.841***			231.579***		

Note: *** $p < 0.001$; unstandardized regression coefficients; confidence intervals obtained via 5,000 Bootstrap samples; social adaptation is a control variable.

4. Discussion

Drawing on Family Systems Theory and Bronfenbrenner’s ecological framework, this paper explores the predictive mechanism of parental marital quality on social adaptation among 200 hearing-impaired undergraduates. This research constructs a moderated mediation model, where family intimacy acts as the mediating variable and perceived discrimination serves as the moderating variable. Significant correlations existed among all core research variables, yet the collected empirical data failed to validate the initial research assumptions. We therefore carried out supplementary exploratory statistical analysis and obtained a new finding: when the predictive effect of social adaptation was controlled, perceived discrimination exerted a notable mediating effect linking parental marital quality to family intimacy. To put real-life observations into statistical findings: when parents maintain harmonious marriages, hearing-impaired college students report weaker feelings of perceived discrimination. Less unfair treatment stress then strengthens emotional closeness across the whole family.

Drawing on all data outputs collected in this survey, the following sections unpack variable correlations, interpret gaps between preset hypotheses and actual test results, and discuss the study’s value for special education practice and academic research.

4.1. Correlation of Parental Marital Quality and Family Intimacy

Data analysis reveals a clear positive trend linking parental marital quality to family intimacy among hearing-impaired undergraduates. When parents maintain steady, peaceful partnerships, every family member can build tighter emotional connections with one another. This discovery echoes the core logic of Family Systems Theory, which regards the marital subsystem as the core pillar of all family interactions; it also matches conclusions from past research focused on deaf children and teenagers I reviewed.

Families raising hearing-impaired young people face continuous pressure from rehabilitation costs, long-term therapy schedules and psychological exhaustion, conflicts about child care often emerge under such heavy burdens [10]. On the contrary, stable spousal partnerships ease negative

household moods. Parents can then build warm daily interaction atmospheres and solid emotional ties, which naturally lift overall family intimacy. Previous literature has proven marital quality shapes family closeness for mainstream youth, and this paper adds new empirical evidence to this rule within hearing-impaired student samples.

4.2. Perceived Discrimination as a Mediator Variable

After excluding the interference brought by social adaptation indicators, statistical testing verifies perceived discrimination acts as a critical mediator connecting parental marital quality and family intimacy for hearing-impaired college students. Better spousal relationships reduce students’ perceived discrimination, and this shift in personal feeling further boosts family intimacy.

Kind, consistent support from two united parents helps hearing-impaired undergraduates build positive self-images and buffer their sensitivity to discriminatory treatment. Based on intergroup threat theory and stigma theory [11], frequent experiences of unfair bias make young people feel inferior and avoid social contact. Such negative emotions cut down daily family communication and damage intimate bonds at home. By proving this mediating path, this paper broadens existing research on how internal family factors interact with individual stigma feelings.

4.3. Explanations for Rejected Moderated Mediation Hypothesis

At the start of this research, we predicted family intimacy would act as the mediator between parental marital quality and social adaptation, while perceived discrimination would moderate this whole chain of influence. Yet sample statistics do not back up this original assumption. Three practical factors lead to this mismatch between expectation and data. First, independent campus living weakens the influence of household factors on college students; second, social adaptation is jointly shaped by schoolmates, teachers and social public attitudes, not merely family environments; third, all participants in this study displayed similar levels of perceived discrimination, lacking sufficient numerical gaps to support the moderating effect test.

4.4. Suggestions for Family and School Education

Specialized intervention plans should center on improving parental marital relations. Easing students' perceived discrimination and reinforcing family intimacy can both be achieved through targeted family guidance. Colleges for deaf students and each student's household must build long-term collaborative mechanisms. Joint efforts create inclusive living and learning surroundings that support healthy social adaptation for hearing-impaired college learners.

4.5. Limitations and Directions for Follow-up Research

This study's sample coverage remains limited, so future investigators can recruit larger participant groups and add control variables such as rehabilitation years and daily cochlear implant wearing hours to optimize analysis models. Researchers can also separate individual unfair treatment experiences from group-level stigma prejudice, refine variable interaction frameworks, and further explore how marital relations and domestic environments jointly shape the long-term development of hearing-impaired young adults.

5. Conclusion

The research verifies positive correlations between parental marital quality and family intimacy in hearing-impaired undergraduates, where perceived discrimination acts as a key mediator between the two variables. The initially assumed moderated mediation path toward social adaptation receives no statistical support, which reveals unique developmental patterns specific to hearing-impaired student groups. By combining stigma-related psychological processes with internal household interactions, the results supplement empirical evidence for Family Systems Theory and offer targeted references for educational support of hearing-impaired college students.

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