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RESEARCH ARTICLE

Parental Differential Treatment and Sibling Relationship Quality as Predictors of Adolescents' Adjustment in Addis Ababa City

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Abstract:

Background:

Positive adjustment is instrumental for proper development during adolescence and later life. Adolescents' experience of Parental Differential Treatment (PDT) and poor sibling relationships have been associated with poor behavioral outcomes and adjustment problems. However, the extent of the problem is hardly known in communal cultures.

Objectives:

The study was conducted to assess the levels of adjustment of adolescents in Addis Ababa city. Additionally, the study explored PDT and the quality of sibling relationships as correlates of adolescents' adjustment.

Methods:

A correlational research design was employed to meet the objectives of the study. A sample of 291 adolescents participated in the study. Sibling Inventory of Differential Experience, Adjustment Inventory and Sibling Relationship Questionnaire were used to gather the required information. Descriptive statistics, correlational analysis, hierarchical multiple regression and moderation analysis were employed to analyze the data and to address the research questions.

Results:

The result indicated that the adjustment status of adolescents was not satisfactory. A higher level of perceived PDT was reported by participants, and girls experienced elevated levels of PDT than males. PDT and Sibling relationship quality were directly related as well as significant predictors of adolescents' adjustment. Moreover, age moderated the relationship between PDT and adolescent adjustment.

Conclusion:

The findings of the study implied that works need to be done to improve the parent-child and sibling relationship to enhance the adjustment status of adolescents in Addis Ababa city.

Keywords: Adolescents, Adjustment, PDT, Sibling relationship quality, Sibling inventory, Adolescents' adjustment.

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1. INTRODUCTION

Adolescence is a stage with high risks in terms of adjustment problems [1]. Many adolescents have problems adjusting to the developmental and social changes that accompany the stage, which may increase the risks of mental health concerns [2]. Studies estimated that 75% of mental illnesses occur before the age of 25 [3] and 10 – 20% of adolescents globally experience mental health concerns and adjustment problems [4]. Ministry of Health estimated that 12% to 25% of adolescents in Ethiopia are living with mental health problems [5]. Adolescent psychological adjustment refers to the mental health of the young person and includes conduct and school problems, peer relationships and general social and emotional functioning [6].

During adolescence, the process of adjustment is multifaceted and complex, requiring a comprehensive approach from various perspectives. Despite the complexity and

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multifaceted nature of adolescent adjustment, most previous studies have failed to embrace a holistic approach, which encompasses various areas such as social, emotional, and educational. Instead, the majority of studies have primarily focused on emotional adjustment, assuming that the manifestation of emotional problems indicates adjustment issues among adolescents in general [7 - 9].

In Ethiopia, despite its importance for the overall functioning of adolescents the issue of adjustment is not well explored. The existing scant studies focused on the adjustment of university students [10 - 13] and found that adjustment problems are prevalent among first years students attributed to factors including living far away from home, homesickness, and difficulties in socializing or making friends [10, 12]. This study explored the adjustment status of adolescents in Addis Ababa inclusively from educational, social, and emotional aspects to provide a general picture regarding the trend and magnitude of the problem in the study area.

According to WHO, a considerable number of adolescents globally experience adjustment problems and mental health issues as a result of multiple determinant factors including poor parental treatment and conflicting relationships with significant others [4]. Although the social norms of various cultures promote equitable treatment of offspring, Parental Differential Treatment (PDT) is common since parents observe differences among their children in their personalities, needs, and behavior [14]. This non-shared family experience [15] makes siblings raised in the same family to be different from one another in behavioral problems and personalities as children rose in different families [16, 17].

PDT is siblings' perception of parental behaviors being directed unequally towards them and their siblings and that parents show more affection and lesser control towards one child and have stricter rules or have more conflict and lesser affection towards the other child [18]. PDT occurs in up to 65% of families [19], and many studies suggest that PDT of offspring plays a unique role in adolescent development by fostering opportunities for social comparison between siblings [18, 20].

The theory of social comparison, as posited by Festinger in 1954, is a crucial framework for comprehending parental differential treatment. According to this theory, parental differential treatment is a type of comparison whereby adolescents evaluate their treatment by parents in relation to that of their siblings. By engaging in such comparisons, children are able to develop a sense of self-worth and establish their respective roles and responsibilities within the family unit. Throughout adolescence, these comparisons assume particular significance, given the cognitive and perspective-taking changes that occur during this developmental phase. Adolescents navigate transitions and construct their identities by means of heightened social comparisons. Perception of Inequity in treatment (PDT), whether intentional or not, has been linked to maladjustment during adolescence [20].

Studies consistently indicated that PDT is a deleterious phenomenon for the disfavored child. Receiving less favorable treatment than a sibling is positively associated with externalizing behavior, aggression, depressed mood, anxiety, and low self-esteem [18, 21]. Additionally, extant research work highlighted that PDT is negatively linked to adolescents' academic achievement [22] as well as mental health [20], and is positively associated with problem behaviors [23]. Prior studies examined the main effects of differential parental treatment, especially with respect to internalizing behavior, rejection sensitivity [24], psychological wellbeing [25], and health-related behavior [8], and reported similar findings that PDT is related to poor behavioral outcomes.

Although prior studies have confirmed the negative effects of PDT on adolescents' adjustment in general, the issue is hardly understood in non-western cultures. The nature of PDT and its potential effect on adjustment remains an uninvestigated social problem, particularly in the Ethiopian context. Many previously published studies in Ethiopia explored the relationship between parenting styles and adolescents' risky behavior (*e.g.*, [26 - 28]). There are also studies that focused on parenting practices and values, parenting styles, parent-adolescent communication, family relationships, level of parental involvement, and parental behavior as main factors in determining children's behavioral outcomes (*e.g.*, [26, 29 - 31]). However, to the knowledge of the researcher, no study was conducted on the differential treatment of siblings by parents, although it appears to have a significant negative impact on the behavioral, social, and emotional adjustment of adolescents. Studying the adjustment problems of adolescents in relation to parental treatment could contribute a lot by exploring risk factors and generating areas of intervention that could help adolescents at risk of adjustment problems to develop into healthy adults.

Despite the inconsistencies in findings, since the seminal work of Daniels and Plomin [16], PDT has been related to child adjustment. However, less work has been done considering potential correlates, including whether the sibling relationship quality exacerbates (or mitigates) the adolescents' social, emotional, and educational adjustment problems. The issue is relevant, given that PDT usually accounts for only a small percentage of the explained variance in adjustment measures [32]. The direct link between PDT and outcomes is usually rather weak and inconsistent [33], and the prediction of adjustment may be enhanced by exploring other family context factors, such as sibling relationship quality.

Sibling relationship is a construct that is expressed in dimensions of sibling warmth and sibling conflict in which sibling warmth reflects positive aspects of the relationship, such as intimacy, affection, support, companionship, and closeness, whereas sibling conflict consists of negative aspects such as quarreling, fighting, aggression, hostility, and coercion [34].

Identifying potential correlates is important for understanding which adolescents are most at risk of PDT-related adjustment problems, and thus could inform areas of interventions intended to reduce risk factors for poor adjustment. Therefore, this study would further extend the studies on adolescents' adjustment by examining the extent to which sibling relationship quality serves as an additional influential variable that may either enhance or mitigate the

adjustment problems of adolescents.

According to social comparison theory, individual factors such as age, gender, and birth order are essential variables that determine the process of sibling comparison and are instrumental in the process of identity formation among adolescents [35]. Previous studies have examined the effects of gender and age of the child on the PDT - adolescence adjustment link, and their findings are inconsistent. For example, although studies confirmed that the effect of PDT is apparent among children with same-sex siblings, no clear evidence is found regarding the dyads that are affected more. Hibbard and Buhrmester [36] reported that brother-brother dyads experience PDT-related problems more than sister-sister dyads. On the contrary, gender does not seem to affect the link between PDT and adjustment [37].

Conflicting findings are also reported concerning the impact of age. Some studies indicate that the effect of PDT is more significant on older children than on younger ones [20] while others report that the negative effect of PDT decreases with age [38] and that younger children are more sensitive to the existing PDT than older children. Although there is a lack of clarity in the conclusions of research findings, in line with the majority of the studies, it seems that the link between PDT and adolescents' adjustment would be stronger among brother-brother dyads and siblings with small age gaps. Additionally, the effect of PDT would likely be stronger for younger children than the old ones.

To sum up, the purpose of the present study was to assess the status of adjustment of adolescents in Addis Ababa city and examine its association with PDT and sibling relationship quality. It also aimed to determine the moderating effects of age and gender on the link between PDT and adolescents' adjustment. The result of this research would add valuable information by bridging the identified gaps in the existing literature as well as by providing important input to parental education intervention programs in contexts where PDT is found to have a negative effect on adolescents' adjustment. More specifically, the study is intended to answer the following basic research questions.

1. What is the status of emotional, social, and educational adjustment of adolescents in addis ababa

2. Is there a gender difference in the level of adjustment among study participants

3. Is there a gender difference in perceived PDT among participants

4. Is there a relationship between adolescents' adjustment, PDT, and sibling relationship quality

5. Are gender and age moderate the relationship between PDT and adolescent adjustment?

2. METHODS

2.1. Design

The purpose of the present study was to assess the adjustment status of adolescents in Addis Ababa City and to scrutinize its relationship with PDT and sibling relationship quality. Because it fits the purpose of the study, a non-experimental correlation design was applied in the study.

2.2. Participants and Sampling

A multistage random sampling method was used to select participants for this study. In the first stage, three sub-cities were selected (Nefas Silik Lafto, Kirkos, and Yeka Sub-Cities) randomly using a lottery method among the 11 sub-cities of the Addis Ababa City Administration. Then, 3 secondary schools were selected randomly from the 3 sub-cities (one from each). Fitawrari Lake, Abyot Kirs, and Minilik secondary schools were selected as study sites. A preliminary assessment was carried out in the selected schools to identify adolescent participants who fulfilled the inclusion criteria. The inclusion criteria were being grade 9 and 10 students (male and female) aged between 14 to 17 years, living with an intact family (both with father and mother) and who have at least one closer aged (1-3 years gap with the participant adolescents) same-sex sibling at home.

The preliminary assessment result showed that there were a total of 1918 students in the three schools of which 1287 (F= 791 and M= 496) were eligible to be considered as samples for the study. According to Krejcie and Morgan [39], 300 participants were an adequate sample size for the study. By adding a 15% non-response rate, a total of 350 participants were selected from the three schools proportionally and randomly for the study (140=Fitawrari Lake, 120= Abyot Kiris, 90=Minilik II Schools) to fill out the questionnaires.

2.3. Measures

2.3.1. Parental Differential Treatment

PDT is the perceptions of adolescents regarding parental behavior (*i.e*., affection and control) that are directed unequally towards them and their siblings as measured by the modified version of the Sibling Inventory of Differential Experience (SIDE) [16]. Adolescents were rated on a five-point scale (1 = 'applies more to my sister/brother' 2 = 'applies a little more to my sister/brother,' 3 = 'applies equally to me and my sister/brother,' 4 = 'applies a little more to me,' 5 = 'applies more to me,') how their mothers and fathers treated them compared to their siblings. Participants were asked to report paternal and maternal differential treatment separately and the analysis was done accordingly.

The tool comprised 9 items to measure two factors (affection and control) as constructs of differential treatment. The Affection scale consisted of five items tapping parental pride, interest, favoritism, enjoyment, and sensitivity. The Control scale contained four items measuring parental strictness, punishment, blame, and discipline.

The absolute score of PDT was used to examine the status of perceived PDT among participants. Utilization of absolute scores is recommended by previous studies to determine the degree of parental differential treatment [8, 20, 37]. The relative score of PDT was transformed to an absolute score by assigning 0 for 3, 1 for 2 and 4, and 2 for 1 and 5. Thus, the five Likert scale values were converted into three scale values, *i.e*. 0, 1, and 2 (0= no difference in sibling experience, 1= some

difference in sibling experience, and 2= much difference in sibling experience). The sum of the scores of the two constructs gives information about paternal/maternal differential affection and control.

The internal consistency of the SIDE is within an acceptable range (α=0.71) [16]. The reliability coefficient was also computed on this study data and found to be α=0.72, 0.71, and 0.70 for the global scale, affection, and control sub-scales respectively.

2.3.2. Adolescents' Adjustment

Adolescents' Adjustment is the perception of adolescents regarding their level of social, emotional, and educational adjustment to conditions inside and outside the school and is assessed by employing the Adjustment Inventory (AI) [40]. The inventory was selected for this study's purpose since it measures adjustment comprehensively from various domains (social, emotional, and educational) which are key areas of adjustment during the adolescence stage. Additionally, the tool is found to be suitable for the current study because it was constructed and standardized to assess the adolescent's level of adjustment. The inventory seeks to segregate well-adjusted adolescents (age group 14 to 18 years) from poorly adjusted adolescents in the three areas of adjustment: Emotional, Social, and Educational [40].

The inventory contains 60 items, with 20 items in each area of adjustment. The items are designed to be answered as yes or no (0 = yes, 1 = no) so that the scores range from 0 to 60 for overall inventory and 0 to 20 for each area of adjustment.

The responses of the participants were rescored based on the scoring protocol for poor adjustment [40] and scores were summed to determine the emotional, social, educational, as well as overall adjustment levels of adolescents. The result was computed differently for males and females as per the direction of the scoring protocol of AI. The general rule of the scoring suggests that the higher value is a low adjustment for both the global scale as well as the subscales [40]. Similarly, the adjustment level was labeled as 'Very Unsatisfactory', 'Unsatisfactory', 'Average', 'Very Good', and 'Excellent' based on the scores of participants as per the scoring protocol of AI [40].

The reliability of the original tool was found to be acceptable (*Cronbach's alpha* ranges from 0.90 to 0.96) [40] to adapt the tool for this study purpose. Similarly, the reliability test conducted in the present study and the result informed (α=0.86 for the global scale and α=0.74 to 0.72 for the sub-scales) that the tool is reliable to measure adjustment.

2.3.3. Sibling Relationship Quality

Sibling Relationship Quality is the degrees of warmth/closeness and conflict the adolescent experiences in a relationship with his or her sibling. The adapted version of the sibling relationship questionnaire (SRQ) [41] was used to assess the quality of sibling relationships. The questionnaire intends to assess the respondents' perceptions of the relationship and behaviors toward their siblings.

SRQ is a self-report measure composed of 48 items intended to measure 4 constructs of sibling relationship quality: Warmth/Closeness, Relative Status/Power, Conflict, and Rivalry. Warmth and conflict are central elements to explain sibling relationships [42] and predict adjustment in adolescence [43]. Thus in this study, the warmth/closeness and conflict dimensions (n=30 items) of SRQ were used to measure sibling relationship quality among adolescent participants. Thus, the adapted and used SRQ in the current study comprised 30 items intended to measure warmth/closeness (21 items), and conflict (9 items) that is developed on a 5-point Likert-type scale (from 1 = hardly at all to 5 = extremely much). The value of the 21 items for the warmth scale was summed, and higher scores indicate more sibling warmth. Similarly, items for the conflict scale were added, and higher scores indicate more sibling conflict.

The reliability coefficients of the original SRQ range from 0.71 to 0.81 [41]. The internal consistency of sub-scales of SRQ was also proven to be good in later studies ranging from 0.93 to 0.94 [44]. The internal consistency test carried out on this study data yielded Cronbach's alpha coefficients of 0.85, 0.90, and 0.83 for global scale, closeness, and conflict sub-scales, indicating the internal consistency of the items to measure the intended attributes.

2.4. Procedures

Before commencing the present study, approval was obtained from the Research and Ethics Committee of the School of Psychology at Addis Ababa University, and ethical clearance was secured. The research project received approval on May 09/2022, with Reference Number: Ref SoP-Eth Co/009/2022. Additionally, the researcher obtained authorization from the respective schools' management to conduct the survey during class hours. Written approval from the school principals was obtained to allow their students to participate in the study. Furthermore, the students were informed about the research and allowed to participate voluntarily. The data collection process occurred between May and June 2022.

The questionnaires were distributed to a total of 350 adolescent participants during the class hour in their respective schools. 305 questionnaires were returned (87% response rate) of which 14 questionnaires were disregarded due to incomplete information. Finally, information from 291 participants was considered to meet the intended purpose of the study.

2.5. Data Analysis

Descriptive statistics (frequency, percentage, mean and standard deviation) were computed to describe the demographic characteristics of study participants. To assess the levels of adjustment, the data from the adjustment inventory were subjected to descriptive statistical analysis, and interpretation was done consequently. Independent sample t-test analysis was computed to investigate gender differences in adjustment and PDT among study participants. Additionally, the Pearson correlation coefficient was computed to examine the existing relationship between PDT, sibling relationship quality, adolescents' adjustment as well as other variables. Multiple hierarchical regression analyses were conducted to

explore to what extent parental differential treatment and the quality of the sibling relationship predict adolescents' adjustment. The moderating roles of gender and age on the link between parental differential treatment and adolescents' adjustment were analyzed by using PROCESS MACRO (model 2) of the SPSS version.

3. RESULTS

3.1. Demographic Characteristics of Study Participants

The demographic characteristics of the study participants are presented in Table **1**. The majority of this study's participants were taken from grade 10(74.6%) and were females (67.4%). A similar proportion of older and younger participants took part in the study. The mean age of the respondents was 16.74 (SD=1.31) and the average number of siblings at home was 3 (SD=1.73).

3.2. Adjustment Status of Adolescents of Addis Ababa City

As indicated in Table **2** below, the majority of the male participants (67.2%) demonstrated an unsatisfactory level of social, emotional, and educational adjustment. The proportion of male adolescents that manifested excellent or good adjustment is low (7.4%). On the other hand, the majority of female adolescent participants (77%) level of adjustment was average and unsatisfactory. The composite value of adjustment indicated that 80.9% of study participants' level of adjustment was average and below average. The proportion of adolescents at levels A or B is very low (18%) compared to the other levels of adjustment.

Table 1. Demographic characteristics of the participants (n=291).

Variables	-
Grade level, *n (%)* 9th grade 10th grade	 74(25.4) 217(74.6)
Gender, *n (%)* Male Female	 95(32.6) 196(67.4)
Birth order, *n (%)* Younger Older	 150(51.5) 141(48.5)
Age of the respondents, *M (SD)*	16.74(1.31)
Number of siblings at home, *M (SD)*	3(1.73)

Table 2. Levels of adjustment of the respondents (n=291).

Type of Adjustment	Level of Adjustment	Male		Female		Total	
		F	%	F	%	F	%
Emotional	A	2	2.1	7	3.57	9	3.06
	B	18	18.9	83	42.33	101	34.34
	C	25	26.25	42	21.42	67	22.78
	D	25	26.25	38	19.38	63	21.42
	E	25	26.25	26	13.26	51	17.34
Social	A	2	2.1	4	2.04	6	2.04
	B	14	14.7	37	18.87	51	17.34
	C	20	21	53	27.03	73	24.82
	D	39	40.95	65	33.15	104	35.36
	E	20	21	37	18.87	57	19.38
Educational	A	5	5.25	26	13.26	31	10.54
	B	11	11.55	32	16.32	43	14.62
	C	20	21	57	29.07	77	26.18
	D	30	31.5	55	28.05	85	28.9
	E	29	30.45	26	13.26	55	18.7
Total	A	1	1.05	0	0	1	0.34
	B	7	7.35	45	22.95	52	17.68
	C	23	24.15	67	34.17	90	30.6
	D	40	42	68	34.68	108	36.72
	E	24	25.2	16	8.16	40	13.6

Note: A= excellent, B= Good, C= Average, D=Unsatisfactory, E= Very Unsatisfactory.

Table 3. Gender difference in adjustment among adolescents (n=291).

Types of Adjustment	Sex	N	Mean	SD	df	t	P
Emotional Adjustment	Male	95	4.72	2.59	289	4.78	0.00
	Female	196	3.22	2.47			
Social Adjustment	Male	95	3.08	1.89	289	4.37	0.00
	Female	196	2.10	1.75			
Educational Adjustment	Male	95	6.05	3.21	289	4.15	0.00
	Female	196	4.40	3.16			
Total Adjustment	Male	95	13.85	6.49	289	5.29	0.00
	Female	196	9.72	6.12			

Table 4. Gender difference in differential parental treatment (n=291).

PDT Variables	Sex	N	Mean	SD	Df	T	Sig.
Maternal Affection	Male	95	3.91	2.31	289	-1.92	0.56
	Female	196	4.50	2.53			
Maternal Control	Male	95	2.72	1.80	251.32	-1.24	0.22
	Female	196	3.01	2.11			
Paternal Affection	Male	95	3.60	2.34	289	-2.52	0.01
	Female	196	4.38	2.55			
Paternal Control	Male	95	2.65	1.77	221.72	-1.67	0.96
	Female	196	3.05	2.15			

The result (Table **3**) also indicated that there is a gender difference in the level of adjustment among adolescents. Males demonstrated poor adjusted compared to females in emotional *(t (289) = 4.78, p<0.01),* social *(t (289) =4.37, p<0.01)* educational *(t (289) = 4.15, p<0.01),* and total adjustment *(t (289) = 5.29, p<0.01)* compared to females. The result generally depicted that adjustment problems are more apparent among male dyad adolescents than females.

3.3. Gender Difference in Perceived Parental Differential Treatment among Adolescents

From the minimum possible value of 0 (indicating equal parental treatment) in maternal and paternal affection, the mean value of 3.60/4.50 and 3.60/4.38 indicates that there is a reported differential parental affection among siblings. Similarly, the mean value of 2.72/3.01 for maternal control and 2.65/3.05 for paternal control reveals that there is perceived differential parental control among participants (Table **4**).

Analysis of the difference in parental differential treatment among male and female participants showed that maternal affection was similar for female-female dyads and male-male dyads *(t (289) =-1.92, p>0.05).* There was no gender difference in maternal control *(t (251) =-1.24, p>0.05)* and paternal control *(t (221) =-1.67, p>0.05).* Mothers and fathers tend to show no significant difference in controlling the behavior of female and male siblings at home. The result indicated that females experience more affection *(t (298) =-2.52, p<0.05)* from their fathers than males. This indicates that parental differential treatment was more noticeable among female-female dyads than males.

3.4. Relationship between PDT, Adolescents Adjustment, and Quality of Sibling Relationship

Among all the demographic variables age, sex, and educational level of the father were found to have a statistically significant correlation with the adolescent's adjustment. Age was positively and significantly correlated with emotional *(r=0.14, p<0.05)* social *(r=0.22, p<0.01)* educational *(r=0.17, p<0.01)* as well as total adjustment *(r=0.20, p<0.01)* of adolescents. The positive relationship between adjustment and age indicates that as age increases, so do adjustment-related problems during the adolescence stage. A statistically significant relationship was also observed between sex and emotional *(r=-0.27, P<0.01),* social *(r=-0.25, P<0.01),* educational *(r=-0.24, p<0.01)* and total adjustment *(r=-0.30, p<0.01).* Adolescent male students have more adjustment-related issues compared to their counterparts female adolescents. Paternal education level was also found to have a significant positive correlation with the emotional and social adjustment of adolescents. This implies that adolescents with fathers of better educational levels were found to have poor adjustment compared to adolescents with fathers with lower educational levels (Table **5**).

The correlation matrix indicated that maternal affection was found to have a statistically significant negative correlation with emotional *(r=-0.20, p<0.01)* social *(r=-0.18, p<0.01)*, and educational adjustment *(r=-0.18, p<0.01)* of adolescents. The result also revealed that there is a statistically significant negative relationship between maternal differential affection and adolescent adjustment in general *(r=-0.22, p<0.01).* On the other hand, the analysis depicted that there is no significant relationship between adolescents' adjustment and maternal control and paternal affection except for the relationship between paternal affection and adolescents' emotional

adjustment *(r=-0.16, p<0.01).* However significant positive correlation was found between paternal control and adolescents emotional *(r=0.25, p<0.01)* social *(r=0.27, p<0.01),* educational adjustment *(r=0.19, p<0.01)* as well as global adjustment *(r=0.27, P<0.01).* Statistically significant negative relationship was also found between sibling warmth and emotional *(r=-0.26, p<0.01)* social *(r=-0.30, p<0.01),* educational *(r=-0.32, p<0.01)* and global adolescents adjustment*(r=-0.35, p<0.01).* No relationship was observed between sibling conflict and adolescents emotional *(r=0.10, p>0.05)* and social adjustment *(r=0.10, p>0.05).* However, the relationship between sibling conflict and adolescents' global adjustment and educational adjustment was positive and statistically significant *(r= 0.24, P<0.01, r=0.19, p<0.01)* respectively.

3.5. Predicting Adolescents' Adjustment from PDT and Sibling Relationship Quality

To assess whether or not PDT and sibling relationship quality predict levels of adolescents' adjustment, hierarchical multiple regression analysis was computed. Before conducting hierarchical multiple regressions, the relevant assumptions of this statistical analysis were tested. While running hierarchical multiple regression analysis, successive models were applied to generate the main and combined effects of the predictor variables. In each model, additional predictor variables were included at each successive step. In this analysis, several child family controls (for example age, gender, parental education level, and parental occupation status) were added to minimize the risks of type one error and control for confounding variables [45].

A three-stage hierarchical multiple regression was conducted with adjustment as the dependent variable. In an attempt to predict adolescents' adjustment, control variables were regressed on the adjustment variable in step one. In step two, maternal affection and paternal control were added to the model to determine the unique effects of maternal affection and paternal control without consideration of the sibling relationship quality. In step 3, quality sibling relationship variables were added to determine the unique effects of sibling relationships on adolescents' adjustment (Table **6**).

Table 5. Correlation between adolescents 'adjustment, parental differential treatment, sibling relationship, and demographic variables (n=291).

-	EA	SA	EA	A	MA	MC	PA	PC	SW	SC
Age (A)	.14*	.22**	.17**	.20**	-.11	.05	.02	.05	-.09	.02
Sex (S)	-.27**	-.25**	-.24**	-.30**	.11	.07	.15*	.09	.34**	-.06
Educational Level of the Father (FE)	.12*	.16**	.04	.12	-.10	-.07	-.11	-.09	-.12	.05
Emotional Adjustment (EA)	-	.56**	.62**	.87**	-.20**	.03	-.16**	.25**	-.26**	.10
Social Adjustment(SA)	-	-	.48**	.75**	-.18**	.09	-.05	.27**	-.30**	.10
Educational Adjustment (EA)	-	-	-	.89**	-.18**	.09	-.07	.19**	-.32**	.24**
Total adjustment (A)	-	-	-	-	-.22**	.08	-.11	.27**	-.35**	.19**
Maternal Affection (MA)	-	-	-	-	-	.43**	.65**	.24**	.11	-.10
Maternal Control(MC)	-	-	-	-	-	-	.39**	.57**	.01	-.01
Paternal Affection (PA)	-	-	-	-	-	-	-	.34**	.07	-.11
Paternal Control(PC)	-	-	-	-	-	-	-	-	-.06	-.01
Sibling Warmth (SW)	-	-	-	-	-	-	-	-	-	-.13*
Sibling Conflict (SC)	-	-	-	-	-	-	-	-	-	-

Note: ** P<0.01, * P< 0.05.

Table 6. Results of hierarchical multiple regression to predict adolescents adjustment by maternal differential treatment (MDT) and quality of sibling relationship (n=291).

Variable	Model 1			Model 2			Model 3		
-	B	SEB	β	B	SEB	β	B	SEB	β
Birth order	-2.6	2.26	-.20	-1.46	2.16	-.11	-1.80	2.08	-.14
Grade Level	-.72	.94	-.05	-.62	.90	-.04	-.66	.88	-.05
Age	1.36	.54	.29*	.95	.52	.20	.93	.50	.19
Sex	-4.77	.95	-.35**	-4.63	.89	-.34**	-3.68	.90	-.27**
Number of siblings at home	-.22	.25	-.06	-.32	.24	-.08	-.22	.23	-.06
Age of a closer age sibling	-.43	.45	-.18	-.15	.44	-.06	-.17	.42	-.07
The educational level of the mother	-.81	.48	-.15	-.76	.45	-.14	-.62	.44	-.11
The educational level of the father	.35	.41	.08	.37	.39	.08	.22	.38	.05
Maternal occupation	.29	.51	.04	.36	.48	.05	.41	.46	.05
Paternal occupation	.41	.68	.04	.23	.64	.02	.15	.62	.01
Maternal affection	-	-	-	-.60	.34	-.23*	-.58	.32	-.22*

(Table 6) contd.....

Variable	Model 1			Model 2			Model 3		
Paternal control	-	-	-	.90	.22	.27**	.79	.21	.24**
Sibling warmth/closeness	-	-	-	-	-	-	-1.74	.53	-.20**
Sibling conflict	-	-	-	-	-	-	.95	.41	.14*
R^2	0.19			0.29			0.35		
Change in R^2	0.19**			0.10**			0.06**		
F	5.07**			6.64**			7.52**		

Note: **P<0.01, *P<0.05.

Table 7. The moderating effects of gender and age.

Model	IV: Maternal Affection (MA)			IV Paternal Control (PC)		
-	**B**	***SE***	***T***	**B**	***SE***	***T***
Independent variable (IV)	0.17	.18	0.97	0.29	.21	1.30
Age (A)	0.15	.35	0.43	-1.08	.96	-1.13
IV X A	-0.31	.15	-2.08*	-.89	.51	-1.74
Sex (S)	-0.78	.95	-0.81	0.24	.34	0.70
IV x S	0.01	.41	.01	-0.06	.18	-0.31
Constant	14.12	.44	32.01***	14.31	.44	32.47***
R2 *F (5,285)*	0.03 1.50			0.02 1.13	-	-

The hierarchical multiple regression revealed that at Stage one, adolescents and family control variables had a significant contribution to the regression model, *F (10,216) = 5.07, p<0.01)* and accounted for 19% of the variation in adolescents' adjustment. The result showed that age (*β =0.29, p<0.05*) and sex (*β =-0.35, p<0.01*) were significant independent contributors to the variance in adjustment.

After introducing the parental differential treatment (maternal affection and paternal control) in the second step the total variance explained by the model as a whole was 29%, *(F (13, 213) = 6.64, p<0.01)*. The aforementioned PDT variables explained an additional 10% of the variation in adjustment after controlling adolescents and family context variables (ΔR^2 *=0.10, F (3,213) = 9.84, p < .01*). Paternal control was found to be the main direct unique contributor to the variance in adjustment (*β=0.27, p<0.01*) indicating that the more paternal control on adolescents' behavior, the more likely it compromises their adjustment. It uniquely explains 13.91% of the variation in adolescents' adjustment. On the other hand, the second main contributor, maternal affection, was also found to have a significant contribution to adolescents' adjustment *(β=-0.23, p<0.05)* that the more maternal affection the fewer adjustment problems adolescents likely to encounter in the course of development. It uniquely explains 8.8 percent of the variation.

Adding sibling relationship quality variables (sibling warmth/closeness and sibling conflict) to the regression model explained an additional 6% of the variation in adjustment, ΔR^2 *=0.06, F (2,211) = 9.70, p < .01*. Adolescents' Sibling warmth was found to have a significant contribution *(β=-0.20, p<0.01)* along with sibling conflict *(β=0.14, p<0.05)*. The result indicates that the more warmth or close relationship the adolescent has with the sibling, the less adjustment problem he or she is likely to manifest. It also indicates that sibling conflict contributes significantly to adolescents' adjustment problems. In model 3, paternal controls also remain to be the main contributor to the variance in adolescent adjustment problems *(β=0.24, p<0.01),* explaining 12.25% of the variance.

Together all the independent variables accounted for 35% of the variance in adjustment, (R^2*=0.35, F(8,226)=7.52, P<0.01)*. By Cohen's guidelines [46], this represents a large effect ($f^2 = 0.67$).

3.6. The Moderating Effects of Age and Sex on the link between Adolescents Adjustment and Differential Treatment

To examine whether or not there is a difference in the nature of the relationship between PDT and adjustment as a result of gender and age, moderation analysis was conducted using PROCESS MACRO model 2.

As indicated in the table the model does not show a significant independent contribution of any of the predictor variables. However, the interaction effect was found to be significant. Age was found to have a significant moderating effect on the relationship between maternal affection and adolescent adjustment *(t=-2.08, p<0.05)*. Conditional effect analysis figure (Fig. **1**) indicated that the effect of maternal affection on adjustment gets stronger with age indicating that the effect of less maternal affection gets worse with increasing age of adolescents. On the other hand, the result depicted that when maternal affection increases for older adolescents it enhances their adjustment more than younger ones (Table **7**).

The analysis showed that the interaction effects of paternal control and age were not significant *(t*=-0.31, *p>0.05),* indicating that age does not moderate the link between paternal control and adjustment. Similarly, sex was also found to have no significant interaction effect with paternal control on adolescents' adjustment (*t=-1.74, p>0.05*). The relationship between paternal control and adjustment does not vary for male and female adolescents.

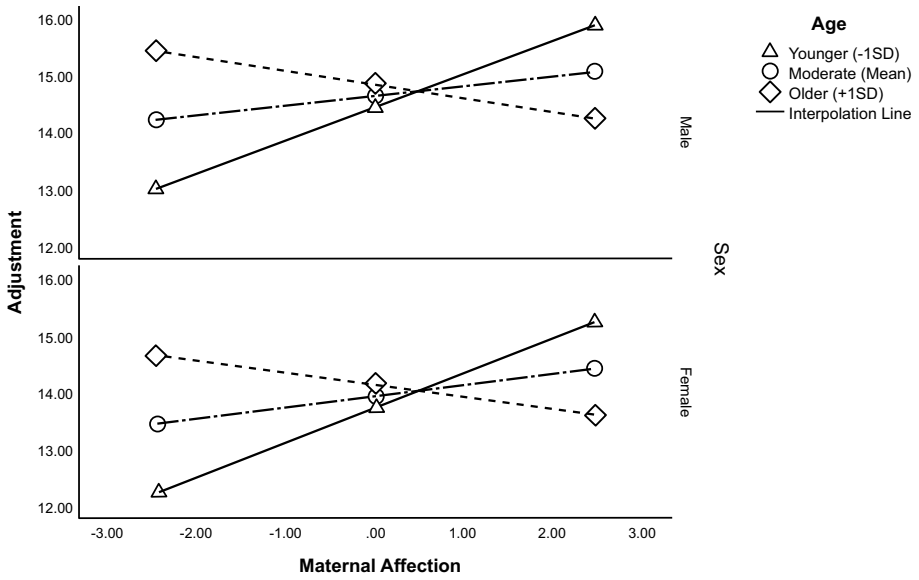

Fig. (1). The moderating effects of age and sex.

4. DISCUSSION

One of the objectives of this study was to assess the adjustment status of adolescents in Addis Ababa. The finding depicted that a considerable portion of the study participants reported adjustment problems. The finding is consistent with previous studies that stated adjustment-related problems and mental health issues are more prevalent among adolescents than people at any other stage of human development [4, 47]. This implies during adolescence, well-being decreases and psychological problems increase [48]. Particularly in the past few decades, a growing number of youths reported poor adjustment and mental health problems [49] due to difficulties in coping with cognitive, social, and academic challenges [50]. Adolescence is therefore, a developmental stage with high risks in terms of psychological problems, subjective well-being, and adjustment [1, 50].

Research on gender differences indicated that girls are more vulnerable to mental health issues and adjustment problems than boys [51, 52]. On the contrary, boys manifest more behavioral and adjustment problems than girls [53]. The present study confirmed the findings of the later study that male adolescents were found to have more problems in their social, emotional, and educational adjustment compared to female participants. This indicates that the issue of adjustment is more pertinent among males than females.

The finding of this study also disclosed that most adolescents scored higher values on the PDT scale evidencing that adolescents are experiencing perceived parental differential treatment. Consistently with studies in the Western context [19, 20, 54], the issue of PDT was also apparent in non-western cultures. Social comparison theory (SCT) affirms the idea that the perception of PDT would be inevitable among adolescents of the same-sex dyad [35]. However, it was not clear regarding the dyad that experienced a higher level of PDT. The present study supported previous research findings that denote the experience of PDT is similar for males and females [36]. Maternal differential treatment and paternal differential treatment (control) turned out to be similar for males and female adolescents. Unlike the finding that reported higher prevalent rate of PDT among brother- brother dyads [37] this study disclosed that the perception of PDT (paternal affection) was more noticeable among females than males. Since females form a more secured attachment with their fathers than males during adolescence [55, 56], it is reasonable to find higher rate of paternal affection among females than males.

The findings of the study showed that adjustment was positively related to age, signifying that adjustment-related issues become a concern for adolescents at a higher age than young ones. Previous studies also indicated that adjustment-related issues in the presence of PDT would be an issue for older children more than young ones [20, 22]. On the other hand, the effect of PDT on adjustment was found to be decreased with age [38] implying that adjustment-related problems as a result of PDT affects younger ones than older siblings

Unlike studies that documented no gender difference in the experience of PDT among adolescents [37, 57], this study finding revealed that adjustment issues were found to be related to gender and the case is more rampant among male adolescents than females. This finding comes out to be consistent with a previous study that showed brother-brother dyads experienced more problems in association with parental differential treatment compared to mixed-gender and sister-sister dyads [36].

Correlational analysis result showed that adolescents' adjustment problem is found to be negatively correlated to maternal differential treatment (maternal affection) and positively correlated to paternal differential treatment (paternal control). Previous Western-based studies consistently reported a positive relationship between unfair parental treatment and poor adjustment during the adolescence stage [20, 21]. No relationship was observed between paternal affection/maternal control and adolescent adjustment.

Sibling relationship quality of warmth/closeness was found to have a significant negative relationship with the emotional, social, educational, and global adjustment problems of adolescents. Sibling relationship quality directly contributes to behavior problems in children [58]. The finding showed that conflict was significantly and positively related to poor education and global adolescent adjustment. As stated in various studies, a negative aspect of sibling relationships is highly prevalent during adolescence [59, 60].

PDT has been associated with poor sibling relationships [20, 21] and delinquent and risky behaviors [20, 21, 23, 61]. Hierarchical multiple regression analysis yielded a finding that depicts PDT (maternal affection and paternal control) significantly predict adolescents' adjustment problems, implying that adolescents who experience more maternal affection demonstrate better adjustment while adolescents who experience much paternal control face adjustment-related problems. The findings also indicated that paternal control was observed to be the main predictor of adolescents' adjustment problems. The impact of high-quality sibling relationships (more affection and less conflict) on adolescents' adjustment is consistently positive across the literature. Children who reported better sibling relationships in a family tend to demonstrate higher scores in well-being measures [42], less risky sexual behavior, and lower substance use [62]. Findings indicate that when parenting is low in warmth or high in negativity, PDT becomes a predictor of an adolescent's poorer adjustment [21, 63].

Age is found to moderate the relationship between PDT (maternal affection) and adolescents' adjustment. It implies that higher maternal affection for older adolescents results in better adjustment. A handful of studies reported a stronger correlation between perception of PDT (less warmth and higher control) and adjustment problems for older, as compared to younger siblings [21, 64], possibly because older siblings' higher and more privileged family status is threatened by a later born sibling [65]. However, the sex of the adolescent did not moderate the link between differential treatment and adjustment. Higher maternal affection was found to result in a better adjustment for both females and males.

CONCLUSION

The main objective of this study was to assess the adjustment status of adolescents in Addis Ababa and examine its relationship with PDT and Sibling relationship quality. The finding revealed that significant numbers of adolescents (mainly male adolescents) are struggling with poor social, emotional and educational adjustment. The study also showed that PDT is common in non-Western cultures, that male and female adolescents experience PDT (maternal affection and maternal/paternal control) in the same manner. However, paternal affection was found to be higher among female dyads than males. Poor adjustment is negatively related to maternal differential treatment (affection) and positively correlated with paternal differential treatment (control). Thus, the study indicated that maternal affection and paternal control are significant predictors of adjustment during the adolescence stage. Similarly, sibling warmth is related negatively to adjustment problems while conflict is associated positively with poor adjustment, and they significantly predicted adjustment during the adolescence stage. The relationship between PDT (maternal affection) and adjustment is moderated by age but not by gender. Higher maternal affection is related to better adjustment outcomes for older adolescents than young ones.

Finally, this study is probably the first attempt to explore the adjustment status of adolescents in relation to PDT and sibling relationship quality in Addis Ababa. Therefore more research works need to be done to explore the problem in depth. Additionally, since the issue is apparent in the research area, intervention works that are being/about to be/ implemented with the aim of improving family well-being need to incorporate elements that address PDT and sibling relationship quality to enhance adjustment status of adolescents.

LIST OF ABBREVIATIONS

PDT	=	Parental differential treatment
SIDE	=	Sibling Inventory of Differential Experience
SRQ	=	Sibling relationship questionnaire
EA	=	Educational adjustment
TA	=	Total adjustment
MA	=	Maternal affection
MC	=	Maternal control

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

The research is conducted based on ethical clearance issued by the research and ethics committee of the school of Psychology of Addis Ababa University with Reference Number: Ref SoP-Eth Co/009/2022.

HUMAN AND ANIMAL RIGHTS

No animals were used in this study. All procedures performed in studies involving human subjects were in accordance with the ethical standards of the institutional and/or research committee and with the 1975 Declaration of Helsinki as revised in 2013.

CONSENT FOR PUBLICATION

Informed consent was obtained from all the participants.

STANDARDS OF REPORTING

STROBE guidelines were followed.

AVAILABILITY OF DATA AND MATERIAL

All the data and supporting information are provided within the article.

FUNDING

The authors have not received any Founds from any sources.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest financial or otherwise.

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