



Maternal, Paternal, and Peer Relationships Differentially Predict Adolescent Behavioral Problems

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Abstract

The current study investigated how maternal, paternal, and peer social relationships predict adolescent behavioral problems using secondary data analyses of the Longitudinal Studies of Child Abuse and Neglect (LONGSCAN). We aimed to examine differences between maternal and paternal relationships in predicting adolescent behavioral problems, and we hypothesized that parental relationships would more strongly predict adolescent behavioral problems than peer relationship in mid-adolescence. Participants were 929 adolescents at their 14-year-old visit. Hierarchical multiple regressions and multiple regression models revealed the following: Maternal relationship quality predicted fewer adolescent externalizing and total behavioral problems; paternal relationship quality predicted fewer internalizing problems; and peer popularity predicted fewer externalizing and total behavioral problems. In conclusion, mother-adolescent relationship may be more important for externalizing behavioral problems and father-adolescent relationship may be more important for internalizing behavioral problems. In middle adolescence, parental relationships are still more important than peer relationship in predicting adolescent behavioral problems. Study limitations and implications for research, policy, and practice were discussed.

Keywords maternal and paternal relationships · peer popularity · adolescent behavioral problems

Introduction

David Brooks (2012) wrote in *The Social Animal* that “it becomes ever more obvious that the swirls that make up our own minds are shared swirls. We become who we are in conjunction with other people becoming who they are” (p. xiv). As important as social relationships are for behavioral health across the human lifespan (e.g., Afifi & MacMillan 2011; Averdijk et al., 2014; Feldman et al., 2004; Miller-Graff et al., 2017), only a handful of studies simultaneously examined how multiple social relationship types (e.g., parental and peer relationships) predict adolescent behavioral problems (e.g., Howard Sharp et al., 2017; Schaefer et al., 2018). In general, higher quality of relationship with parents is associated with better adolescent adjustment (e.g., Criss et al., 2021; Formoso et al., 2000; Rosnati &

Marta, 1997; Williams & Steinberg, 2011). Yet maternal and paternal relationships are usually not differentiated in past research (exceptions see Di Maggio & Zappulla 2014; Humm et al., 2018; Lee & Park, 2017; Miranda et al., 2016). Furthermore, social relationships are important to look at as adolescents transfer primary emotional attachment from parents to peers on the path to becoming adults (Hay & Ashman, 2003).

The positive correlation between parent-adolescent relationship quality and adolescent adjustment has been well established for youth at-risk for behavioral problems. For example, in a study of 206 mostly low-income and ethnic minority families with adolescents ages 10 to 18, Criss et al., (2021) found based on parent and adolescent self-reports that higher levels of emotional dysregulation were associated with increased antisocial behavior and depressive symptoms in adolescents, yet parent-adolescent relationship quality attenuated this association. Similarly, Formoso and colleagues (2000) examined whether parental attachment mitigated the effects of family conflict in a sample of low-income, multiethnic young adolescents’ (mean age of 13.3 years) depression and conduct problems. Based

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on adolescent self-reported measures, parental attachment negatively correlated with adolescent depression and conduct problems. Further, parental attachment attenuated the relationship between family conflict and adolescent conduct problems. Likewise, in a three-year longitudinal study with 1354 serious adolescent offenders starting from when the adolescents were 16 years of age, Williams & Steinberg (2011) demonstrated how parent-adolescent relationship quality could predict adolescent well-being. Adolescent well-being was measured by increased prosocial maturity, academic orientation, and decreased internalized stress and delinquency. As expected, positive adolescent development was facilitated by high parental warmth and low parental hostility.

Whereas it seems apparent that relationship quality with parents positively associates with adolescent adjustment, few studies differentiated between maternal and paternal relationships. Noted exceptions included a study by Di Maggio & Zappulla (2014),

who studied how maternal and paternal acceptance and strictness related to Italian adolescents' internalizing and externalizing problem behaviors and life satisfaction. Using self-reports gathered from 213 adolescents aged between 14 and 16 years, Di Maggio & Zappulla (2014) found that for boys, maternal and paternal strictness negatively correlated with behavioral problems and positively related to general satisfaction. For girls, paternal acceptance negatively related to adolescent girls' internalizing and externalizing behavioral problems and maternal acceptance positively related to adolescent girls' life satisfaction.

Rosnati & Marta (1997) also revealed differences between how mother-child and father-child communication associated with adolescent adjustment in a study of 16- to 19-year-olds from adoptive and non-adoptive homes in Italy. Adolescents and their parents completed questionnaires that assessed parent-adolescent communication and support. The adolescents in addition answered questions that measured self-esteem, peer relationship quality, and academic achievement in the past year. Rosnati and Marta found that in non-adoptive families, adolescent psychosocial adjustment (i.e., higher self-esteem, friendship satisfaction, and educational success) was determined more by father-child communication quality than by mother-child communication quality. Specifically, better father-child communication predicted lower maladjustment in adolescents, but mother-child communication did not relate to adolescent psychosocial adjustment. The pattern of findings was different in adoptive families in that.

better mother-child communication predicted lower psychosocial risk in adopted adolescents, but father-child communication bore no connection to adopted adolescents' psychosocial adjustment.

In another study, Stein et al., (2009) interviewed homeless and runaway 12- to 21-year-old adolescents from Los Angeles County, California. Adolescents answered questions that separately examined the quality of relationship with their mother and father. They also answered questions that measured levels of internalizing and externalizing problems: Internalizing problems took the form of psychological distress; externalizing problems included substance use, criminal behaviors, and survival sex (i.e., engaging in sexual behavior for money). Stein and colleagues found good maternal relationship to predict less survival sex. Positive paternal relationship, on the other hand, predicted less substance use and criminal behaviors. Stein et al., (2009) suggested more research to investigate the often-neglected paternal relationship.

More recently, Hochgraf et al., (2021) reported a longitudinal study of 388 mostly Caucasian adolescents aged 12 to 20. Using self-report measures taken from the adolescents, the researchers found father-adolescent intimacy to associate with fewer adolescent depressive symptoms across most of adolescence, but mother-adolescent intimacy associated with fewer depressive symptoms only in mid-adolescence. Further, father-adolescent intimacy was associated with higher self-esteem from early through mid-adolescence, but mother-adolescent intimacy showed a less consistent pattern of association with adolescent self-esteem.

Besides maternal and paternal relationships, another important social relationship in the lives of adolescents is with peers. Whereas the benefits of quality parent-child relationship are well established (e.g., Aroian et al., 2016; Houlberg et al., 2011; Humm et al., 2018; Liu, 2006; Reyes, 2008; Spaccarelli & Kim, 1995; Srinivasa et al., 2006), findings about peer relationship have been less consistent. On the one hand, a majority of past research (e.g., Formoso et al., 2000; Lee & Park, 2017; Moses & Villodas, 2017; Wilkinson, 2010; Yoon, Yoon et al., 2018) revealed that good relationship with peers was associated with positive adolescent outcomes: Healthy emotional attachment to peers predicted higher self-esteem, better attitude toward and engagement with schools, and less depression and conduct problems; higher popularity among peers protected against physical and sexual peer victimization. On the other hand, counterintuitive findings have also emerged. For example, Segura et al., (2017) and Humm et al., (2018) found adolescents with more peer support experiencing higher levels of externalizing symptoms and mental health challenges.

Whereas maternal, paternal, and peer relationships are important predictors of adolescent behavioral health, these social relationship types may be more or less important depending on the stage of adolescent development. According to Erik Erikson's psychosocial theory (e.g., Berk 2013; Erikson, 1989; Santrock, 2018), adolescents must resolve

the identity versus identity confusion conflict before they can progress successfully into the next psychosocial stage. To do so, adolescents need to establish a sense of self by experimenting with different roles. During this period then, even though parental influence remains consequential, other factors outside the family—such as peer relationship—become more important. Empirical research (e.g., Formoso et al., 2000; Hay & Ashman, 2003) tends to confirm that for younger adolescents, parents are more influential compared to peers; for older adolescents, the pattern reverses.

As previously described, Formoso and colleagues (2000) examined whether maternal, paternal, and peer attachment mitigated the effects of family conflict in a sample of young adolescents' depression and conduct problems. Based on adolescent self-reported measures, maternal, paternal, and peer attachment negatively correlated with adolescent depression and conduct problems. Further, maternal and paternal attachment attenuated the relationship between family conflict and adolescent conduct problems. Consequently, parents may play a more important role than peers with regard to buffering the impact of family conflict on conduct problems in early adolescence.

In mid- to late-adolescence, however, peer relationship becomes increasingly influential. Using adolescent self-reports, Hay & Ashman (2003) found peer relationship more important than parental relationship for emotional stability (i.e., calmness and freedom from anxiety and depression) in a sample of older adolescents (mean age of 16 years). These findings represented a decrease in the importance of parental relationship and an increase in the importance of peer relationship compared to when the same adolescents were younger (when at the mean age of 14.5).

Whether peer relationship would start to outweigh parental relationship in predicting adolescent behavioral health in mid-adolescence is not clear-cut. Further, the stage of adolescence in which adolescents begin to transfer attachment from parents to peers may be culturally and geographically contextualized. Whereas Hay and Ashman's (2003) research in Australia suggests that at age 14, parental relationship is still a better predictor than peer relationship, Lee and Park's (2017) study with a sample of young Korean adolescents (mean age of 13.4) found anxious peer attachment style to be the strongest predictor of adolescent internalizing and externalizing behavioral problems, demonstrating the relative importance of peer attachment compared to parental attachment even in early adolescence. Yet Wilkinson's (2010) study with Australian adolescents found maternal attachment overall to be the strongest and most reliable predictor of adolescent adjustment (as measured by depression, self-esteem, and attitude toward school) as late as the age of 16 (mean age of 16.41).

The current study aims to clarify the relative importance of maternal, paternal, and peer relationships in predicting adolescent behavioral problems and whether parental relationship continues to be more important than peer relationship in mid-adolescence. Even just this brief review of several past studies (e.g., Di Maggio & Zappulla 2014; Hochgraf et al., 2021; Rosnati & Marta, 1997; Stein et al., 2009) speaks to the importance of considering maternal and paternal relationships separately and not amalgamating both relationships into the all-encompassing parental relationship. The first goal of the current study is thus to deepen our understanding of parental relationship through comparing the role maternal and paternal relationships plays in adolescent behavioral problems. The second goal of the study is to clarify whether good peer relationship relates to lower or higher levels of adolescent behavioral problems. It is important to note that given the scarcity of research simultaneously examining multiple relationship types in adolescent psychosocial adjustment, let alone research that contain a cross-cultural component, the current study is also restricted to a single geographic region and will be exploratory. The final goal for the current study is thus to shed more light on whether adolescents start to transfer their attachment from parents to peers in mid-adolescence in the United States. Because most of the past research, including those by Lee & Park (2017) and Wilkinson (2010), relied on adolescent self-report as the source of data, we will use a more diverse set of data sources to explore these questions.

The following are our research hypotheses: First, consistent with Di Maggio & Zappulla (2014), Hochgraf et al., (2021), Rosnati & Marta (1997), and Stein et al., (2009), there will be a difference between how maternal and paternal relationships predict adolescent behavioral problems. This first hypothesis is exploratory in nature due to the inconsistent pattern of past findings when differential predictions were revealed, although we hypothesize that better parental relationships overall will predict fewer problems. Second, good peer relationship will forecast lower levels of adolescent behavioral problems, in line with most previous research on the topic (e.g., Formoso et al., 2000; Lee & Park, 2017; Moses & Villodas, 2017; Wilkinson, 2010; Yoon, Yoon et al., 2018). Finally, following Erikson's psychosocial theory (e.g., Berk 2013; Erikson, 1989; Santrock, 2018) and past research (e.g., Hay & Ashman 2003; Lee & Park, 2017; Wilkinson, 2010), we hypothesize that parental relationships will still be a stronger predictor of adolescent behavioral problems than peer relationship in mid-adolescence in the U.S.

Table 1 Final Study Sample Descriptive Statistics (N = 929)

	N	%	Mean (SD)
Site			
East	187	20.5	
Midwest	176	19.3	
Northwest	181	19.8	
South	166	18.2	
Southwest	203	22.2	
Sex			
Female	426	50.8	
Male	413	49.2	
Race/Ethnicity			
Black	458	54.6	
Hispanic	59	7.0	
Other	112	13.3	
White	210	25.0	
Household Annual Income			
< \$20,000	366	41.4	
≥ \$20,000	516	58.6	
Maltreatment Through 14 Years			
No	289	31.1	
Yes	640	68.9	
Maternal Relationship Quality			4.20 (.70)
Paternal Relationship Quality			4.01 (.84)
Peer Popularity			2.96 (.93)
CBCL Internalizing Problems			50.32 (11.48)
CBCL Externalizing Problems			54.69 (11.80)
CBCL Total Problems			53.02 (12.28)

Method

Sample and Procedure

This is a secondary data analysis of the Longitudinal Studies of Child Abuse and Neglect (LONGSCAN), a consortium of studies initiated in 1991 that aimed to study the antecedents and consequences of child maltreatment. LONGSCAN involves five data collection sites (i.e., East, Midwest, Northwest, South, and Southwest) spread across the U.S. with a coordinating center at the University of North Carolina in Chapel Hill (see Runyon et al., 1998 for more details about the study design). LONGSCAN samples were selected to represent varying levels of exposure to child maltreatment,

but the vast majority came from impoverished backgrounds. The five sites differed in how they recruited at risk and control children. For example, children in the East site were selected from three pediatric clinics in low-income, inner-city neighborhoods. At risk children either exhibited inadequate growth in the first two years or had a parent who was HIV positive or reported drug use; children in the control group had no other risk factor aside from family low income. Comprehensive assessments of children, parents, and teachers began when the children were about 4 years old and occurred every two years thereafter at child ages 6, 8, 12, 14, 16, and 18. The data collection is ongoing. Data regarding child maltreatment were also regularly collected from official Child Protective Services (CPS) records.

For this study, independent and dependent variables were chosen from child 14-year visit data to represent middle adolescence. Of the 1354 children in the original LONGSCAN, 930 (68.7%) had complete data on all dependent variables and were selected as study participants. There were no differences between the selected and unselected adolescents in terms of gender and total family income. Black adolescents, however, were more likely than White, Hispanic, and other adolescents to be selected, $\chi^2(3, N=1224)=12.64, p=.005$. In addition, selected adolescents were less likely than unselected adolescents to have a CPS maltreatment record prior to age 14, $\chi^2(1, N=1354)=6.99, p=.008$. Finally, one adolescent's data were excluded because they were a multivariate outlier, leaving a final sample of 929 for the study. Table 1 contains the final sample descriptive statistics and Table 2 presents the bivariate correlation matrix of the study's independent and dependent variables.

Measures

Indicator and Demographic Variables

These variables were collected from when the children first entered LONGSCAN at the age 4 assessment time point. The indicator variable was the data collection site: Even though the five data collection sites shared many common assessment measures and data collection methods and

Table 2 Bivariate Correlation Matrix of the Study's Independent and Dependent Variables

	1	2	3	4	5	6
1. Maternal Relationship Quality	1					
2. Paternal Relationship Quality	0.43**	1				
3. Peer Popularity	0.01	0.13*	1			
4. CBCL Internalizing Problems	-0.19**	-0.17**	-0.17**	1		
5. CBCL Externalizing Problems	-0.25**	-0.18**	-0.22*	0.71**	1	
6. CBCL Total Problems	-0.22**	-0.17**	-0.25**	0.88**	0.92**	1

* $p < .05$

** $p < .01$

e-tailed

schedules, each site was unique in sample selection criteria and additional supplementary measures (Larrabee & Lewis, 2020). The varied sample selection criteria resulted in systematically different levels of actual or risk for child maltreatment. For example, the East and Midwest sites both included neighborhood controls without any reports of child maltreatment at the outset; the Southwest site, on the other hand, contained all maltreated children who were in out-of-home care from the beginning. Demographic variables included adolescent sex and race/ethnicity. Race/ethnicity variable was recoded to represent Black, White, Hispanic adolescents and an “Other” category combining Asians, Native Americans, and adolescents of mixed race/ethnic backgrounds.

Control Variables

The following two variables were chosen as controls: family income at child aged 14 and child maltreatment history through 14 years. Family income was chosen as a control variable because lower family income has been shown to associate with more emotional difficulties for adolescents (e.g., Langton et al., 2011) and improved family income predicted a decline in adolescent behavioral problems (e.g., McKinney 2002). Child maltreatment history, on the other hand, has been consistently shown to correlate with increased adolescent behavioral problems (e.g., Allen et al., 2021; Ford et al., 2018; Milojevich et al., 2018).

Household Annual Income. Caregivers estimated their family’s total annual income on a scale of 1 to 12 at the adolescent’s 14-year visit: 1 is less than \$5000; 2 is \$5,000–\$9,999; 3 is \$10,000–\$14,999; 4 is \$15,000–\$19,999; 5 is \$20,000–\$24,999; 6 is \$25,000–\$29,999; 7 is \$30,000–\$34,999; 8 is \$35,000–\$39,999; 9 is \$40,000–\$44,999; 10 is \$45,000–\$49,999; 11 is more than \$50,000; and 12 is unknown. For simplicity’s sake and following Dubowitz et al., (2016), household annual income was recoded into a dichotomous variable of either 0 (below \$20,000) or 1 (at or above \$20,000), approximating a median split.

Maltreatment Through 14 Years. LONGSCAN collected official records of child maltreatment reports to CPS on the participating child (regardless of whether the report was substantiated or not). This control variable was also recoded into a dichotomous variable of 0 and 1: 0 means that there was no such report through age 14 years and 1 means that there was at least one report. Even though reports are not the equivalent of substantiation, Jedwab et al., (2017) found most unsubstantiated child maltreatment cases became re-reported and later substantiated, supporting the use of reports as a proxy for actual maltreatment.

Independent Variables

Three independent variables were included in this study, respectively measuring adolescent social relationship with their mother/mother figure, father/father figure, and peers. These variables were taken from the 14-year assessment.

Maternal Relationship Quality. Adolescents completed a 22-item questionnaire evaluating the relationship with their mother or mother figure. Six of the 22 items measured mother-adolescent relationship quality. The questions were “How close do you feel to your mother (or someone who acts like mother to you),” “How much you think she cares about you,” “Does she trust you,” “Does she understand you,” “Do you and she get along well,” and “Do you make decisions together about things in your life?” Adolescents answered the questions using a 5-point Likert scale (“1” indicates “Not at all” or “Never”; “5” indicates “Very much” or “Always”). Higher scores reflected higher relationship quality, and the mean of the six items was used to represent maternal relationship quality. The internal consistency of these items was excellent at $\alpha=0.85$ (Knight et al., 2010).

Paternal Relationship Quality. Adolescents also completed a 43-item questionnaire evaluating the relationship with their father or father figure. Like the questionnaire about maternal relationship, six of the 43 items measured father-adolescent relationship quality on the same 5-point Likert scale, with higher numbers indicating higher relationship quality. The six questions were “How close do you feel to him,” “How much you think he cares about you,” “How often does he trust you,” “How often does he understand you,” “How often do you and he get along well,” and “How often do you and he make decisions together about things in your life?” The mean of the six items was used to represent paternal relationship quality. The internal consistency of these items was excellent at $\alpha=0.88$ (Knight et al., 2010).

Peer Popularity. Two teachers (language arts and math) were asked to estimate each adolescent’s peer status with a 7-item instrument, but only the first available teacher’s ratings were used (an option to handle this variable per Knight et al., 2010, p. 200).

Three of the items were used in this study. The first was the question of “Overall, how much is this child liked by classmates?”. Teachers answered this question on a 5-point Likert scale (“1” indicates “Very well liked”; “5” indicates “Liked very little”). The second and third items asked teachers to estimate the amount of nominations the child would get if the children in their classroom were asked to nominate the child for “Would Like MOST for Play or Work Partner” and “Good at Leading Others”. Both items were rated on a 5-point Likert scale (“1” indicates “One of the kids with the most nominations”; “5” indicates “One of the kids

with the fewest nominations”). For ease of interpretation, the three items were reverse coded so that higher numbers meant higher peer popularity. The mean of the three items was taken to represent peer popularity.

Dependent Variables

There were three dependent variables, all scored from the Child Behavior Checklist/4–18 (CBCL/4–18: Achenbach 1991) at the 14-year assessment. The CBCL is a well-established 113-item questionnaire completed by caretakers to assess child behavioral problems in the last six months. The items were rated on a 0 to 2 scale, with 0 meaning “Not true,” 1 meaning “Somewhat or sometimes true,” and 2 meaning “Very true or often true.” Eight constructs/syndromes were examined in the CBCL: social withdrawal, somatic complaints, anxiety/depression, social problems, thought problems, attention problems, delinquent behavior, and aggressive behavior.

CBCL Internalizing Problems. One broad grouping of syndromes examined by the CBCL was internalizing problems, which combined the social withdrawal, somatic complaints, and anxiety/depression scales. We used the full range of age- and gender-standardized T scores in this study: CBCL internalizing problems T scores that were less than 60 were considered normal; those from 60 to 63 were on the borderline; and those that were higher than 63 were in the clinical range.

CBCL Externalizing Problems. Another broad grouping of syndromes was externalizing problems, which combined the delinquent behavior and aggressive behavior scales. Again, we used the full range of T scores for this study: The same as for CBCL internalizing problems, T scores of CBCL externalizing problems smaller than 60 were normal, between 60 and 63 were borderline, and above 63 were clinical.

CBCL Total Problems. The total problems variable was scored by summing all the items on the CBCL questionnaire except for “Allergy” and “Asthma,” which were not behavioral problems. The same as for internalizing and externalizing problems, we used the full range of T scores for the total problems dependent variable and the same T score cut-offs

for normal, borderline, and clinical levels of total behavioral problems applied.

Data Analyses

The goal of our data analyses was to compare the relative importance of maternal, paternal, and peer relationship in predicting adolescent internalizing, externalizing, and total behavioral problems. We used SPSS version 27 to analyze the data in two steps: First, we conducted a hierarchical multiple regression on each of the dependent variables for the three social relationship types to see if each of the social relationship type accounts for additional variance beyond the indicator, demographic, and control variables. Second, we conducted multiple regressions on the three dependent variables to examine whether and how each social relationship type remained significant in the context of final models. We used one-tailed significance tests in the second step final models because of our overall prediction that better relationships with mother, father, and peers would associate with lower levels of adolescent behavioral problems.

For the hierarchical multiple regressions, the relevant variables were entered in blocks in the following order: (1) 4 dummy coded indicator variables for study site (East, Midwest, Northwest, South) with Southwest as the reference category and demographic variables (Sex with “Female” as the reference category, 3 dummy coded Race/Ethnicity variables with “Other” as the reference category); (2) control variables of household annual income (those earning less than \$20,000 a year as the reference category) and maltreatment through 14 years (those without any maltreatment reports as the reference category); and (3) independent variables of maternal relationship quality, paternal relationship quality, and peer popularity one at a time.

Indicator and demographic variables were entered first because they captured study site characteristics and basic information on adolescents. The control variables were entered next because of our interest in examining the contribution of social relationship types beyond established predictors of adolescent behavioral problems.

Table 3 Hierarchical Multiple Regression Results by Adolescent Behavioral Problems for Maternal Relationship Quality, Paternal Relationship Quality, and Peer Popularity (Following Entries of Indicator, Demographic and Control Variables Blocks)

	Maternal Relationship Quality		Paternal Relationship Quality		Peer Popularity	
	ΔR^2	<i>p</i>	ΔR^2	<i>p</i>	ΔR^2	<i>p</i>
CBCL Internalizing Problems	.022	.00	.022	.00	.009	.049
CBCL Externalizing Problems	.041	.00	.022	.00	.027	.00
CBCL Total Problems	.028	.00	.021	.00	.028	.00

Note. ΔR^2 denotes change in R^2 due to the addition of a relationship variable into the statistical model

Table 4 Final Multiple Regression Models Predicting Adolescent Internalizing, Externalizing, and Total Behavioral Problems

	CBCL Internal- izing Problems	CBCL External- izing Problems	CBCL Total Problems
	B [95% CI]	B [95% CI]	B [95% CI]
Overall Model	$F = 3.623^{***}$; $R^2 = .145$	$F = 4.773^{***}$; $R^2 = .183$	$F = 4.511^{***}$; $R^2 = .175$
Site			
East	-3.033 [-8.851, 2.785]	2.09 [-3.724, 7.904]	-.988 [-7.098, 5.121]
Midwest	-3.433 [-8.4571, .590]	-1.557 [-6.577, 3.464]	-3.896 [-9.1721, .379]
Northwest	1.723 [-1.981, 5.426]	2.176 [-1.525, 5.877]	1.59 [-2.299, 5.479]
South	.854 [-3.761, 5.469]	.842 [-3.769, 5.454]	122 [-4.724, 4.968]
Southwest	Reference	Reference	Reference
Sex			
Male	-1.008 [-3.557, 1.541]	-2.861 [-5.409, -.314]*	-2.009 [-4.685, .668]
Female	Reference	Reference	Reference
Race/Ethnicity			
Black	.180 [-4.107, 4.466]	1.403 [-2.881, 5.686]	.494 [-4.008, 4.995]
Hispanic	2.706 [-3.664, 9.076]	.041 [-6.324, 6.407]	1.376 [-5.314, 8.065]
White	-.262 [-4.315, 3.790]	.757 [-3.293, 4.806]	.748 [-3.508, 5.004]
Other	Reference	Reference	Reference
Household Annual Income			
≥20,000	-1.716 [-4.635, 1.203]	-2.419 [-5.336, .499]	-1.959 [-5.024, 1.107]
<20,000	Reference	Reference	Reference
Maltreatment Through 14 Years			
Yes	4.236 [.620, 7.852]*	6.258 [2.645, 9.872]***	5.641 [1.843, 9.438]**
No	Reference	Reference	Reference
Maternal Relationship Quality	-1.866 [-4.199, .466]	-3.515 [-5.847, -1.184]**	-2.396 [-4.846, .053]*
Paternal Relationship Quality	-1.435 [-3.131, .261]*	-.885 [-2.580, .810]	1.014 [-2.795, .767]
Peer popularity	-.996 [-2.424, .431]	-1.989 [-3.415, -.562]**	-2.056 [-3.554, -.557]**

Note. Data are presented as unstandardized regression coefficient [95% confidence interval], except where otherwise indicated

* $p < .05$, one-tailed

** $p < .01$, one-tailed

*** $p < .001$, one-tailed

Results

Hierarchical Multiple Regressions

Before entering relevant variables into final multiple regression models, it was important to determine if each of the independent variables accounted for additional variance in the dependent variables beyond the indicator, demographic, and control variables. Table 3 presented the results of the hierarchical multiple regression analyses.

As seen in Table 3, all three relationship types significantly accounted for additional variance in predicting adolescent internalizing, externalizing, and total behavioral problems beyond the indicator, demographic, and control variables.

Multiple Regressions Final Models

For these analyses, we entered all indicator, demographic, control, and independent variables simultaneously. Table 4 summarized results of the three final multiple regression models predicting adolescent internalizing, externalizing, and total behavioral problems, respectively.

Maltreatment through 14 years and paternal relationship quality significantly predicted adolescent internalizing problems. Adolescents who had at least one CPS report through 14 years displayed more internalizing problems, and adolescents with higher paternal relationship quality displayed fewer internalizing problems.

There were four significant predictors of adolescent externalizing problems: adolescent sex, maltreatment through 14 years, maternal relationship quality, and peer popularity. Male adolescents showed fewer externalizing problems. Adolescents with at least one CPS report showed more externalizing problems. Adolescents with higher maternal relationship quality and those who were more popular with their peers showed fewer externalizing problems.

As for adolescent total problems, there were three significant predictors: maltreatment through 14 years, maternal relationship quality, and peer popularity. Like the prediction of externalizing problems, adolescents with at least one CPS report showed more total behavioral problem, but adolescents with higher maternal relationship quality or more popular among peers showed fewer total problems.

Discussion

The First Hypothesis

We set out to test three research hypotheses. Our first hypothesis, exploratory in nature, was that there will be a difference between how maternal and paternal relationships predict adolescent behavioral problems, although better

parental relationships should mean fewer problems. Indeed, consistent with Di Maggio & Zappulla (2014), Hochgraf et al., (2021), Rosnati & Marta (1997), and Stein et al., (2009), our first hypothesis was supported. We found maternal relationship quality to negatively associate with adolescent externalizing and total problems and paternal relationship quality to negatively associate with adolescent internalizing problems. Therefore, supporting past research (e.g., Aroian et al., 2016; Houltberg et al., 2011; Humm et al., 2018; Liu, 2006; Reyes, 2008; Spaccarelli & Kim, 1995; Srinivasa et al., 2006;), mother-adolescent and father-adolescent relationships were shown to be reliable and powerful predictors of adolescent behavioral health.

Specifically, our findings were similar to Stein and colleagues (2009), who found good maternal relationship to predict less survival sex (arguably an externalizing behavioral problem). Dissimilar to Stein and colleagues, who found positive paternal relationship to predict less substance use and criminal behavior (also externalizing problems), we found paternal relationship quality not to associate with adolescent externalizing problems. This could be attributable to differences in our study samples. Their sample was homeless and runaway youth exhibiting noticeably higher levels of internalizing and externalizing problems; our sample was adolescents living with biological, foster, or de facto parents and on average, our sample of adolescents displayed normal levels of behavioral problems (with mean T scores below 56 in all three groupings of behavioral problems, where T scores less than 60 were within age and gender norms). The possibility that paternal relationship is particularly influential for externalizing behavioral problems in adolescents with elevated behavioral problems is a hypothesis that should be further tested.

In addition, like Rosnati & Marta (1997), who revealed adolescent self-esteem to be determined more by father-adolescent communication quality than mother-adolescent communication quality, we confirmed the unique contribution of father-adolescent relationship by revealing that paternal relationship quality was the only relationship type to predict adolescent internalizing behavioral problems, much like what Di Maggio & Zappulla (2014) found. Neither maternal relationship quality nor peer popularity was associated with internalizing problems in our study. This echoed de Minzi (2010), who found good father-child relationship (more so than mother-child relationship) to lower depressive symptoms in a sample of 8- to 12-year-olds in Argentina. Our findings also cohered with Hochgraf et al.'s (2021) study that showed father-adolescent intimacy to more consistently associate with fewer adolescent depressive symptoms and higher self-esteem than mother-adolescent intimacy.

As for why maternal relationship predicted externalizing problems but paternal relationship predicted internalizing

problems in the current study, a family systems explanation could illuminate. Perhaps because mothers spend more time with adolescents than fathers (e.g., Parke & Buriel 2010), mothers are more likely to first respond to the more noticeable adolescent externalizing problems. On the other hand, adolescents with better relationship with fathers—relative to with mothers—enjoy higher self-esteem (e.g., Rosnati & Marta 1997) and are thus more protected from internalizing problems (given the protective effect of self-esteem against internalizing symptoms, as shown in Garcia-Reid et al., 2013). Interestingly, our findings are in accord with a parenting and developmental domain effect. For example, Yau et al., (2022) found maternal support and control to correlate with adolescent academic achievement, but fathers' impact was much smaller. On the other hand, Fleming et al., (2022) found paternal pressure to predict adolescent athletic perfectionist strivings, but not maternal pressure. Our study thus supported the suggestion from Hochgraf et al., (2021) that mothers and fathers were not interchangeable and had unique roles to play in promoting adolescent behavioral health.

Moreover, our study resonated with Yoon et al., (2018), who discovered also using the LONGSCAN database that higher quality of father involvement was associated with lower levels of internalizing and externalizing behavioral problems for a sample of adolescents at age 12. However, Yoon et al., (2018) tested a sample of younger adolescents and controlled for a different set of variables than we did. Compared to Yoon et al., (2018), we additionally controlled for LONGSCAN study site, household annual income, and peer popularity. The differences in adolescent age and control variables could explain why we found paternal relationship quality to predict adolescent internalizing behavioral problems only, but Yoon et al., (2018) found paternal relationship quality to predict both internalizing and externalizing behavioral problems. Paternal relationship quality being more important for younger than older adolescents is certainly in line with Erik Erikson's psychosocial theory (e.g., Berk 2013; Erikson, 1989; Santrock, 2018). Overall then, despite our not finding an association between paternal relationship and adolescent externalizing behavioral problems at age 14, given that Stein and colleagues (2009) and Yoon et al., (2018) both found paternal relationship predictive of adolescent externalizing problems (albeit with a homeless/runaway sample and a younger sample respectively), it would be intriguing to dig deeper into the intricacies of father-adolescent relationship, like Stein and colleagues (2009) suggested.

The Second Hypothesis

Our second research hypothesis was that positive peer relationship would forecast lower levels of adolescent behavioral problems. This hypothesis was supported: Higher peer popularity was associated with lower externalizing and total adolescent problems. These findings were consistent with most past studies on the topic (e.g., Formoso et al., 2000; Lee & Park, 2017; Moses & Villodas, 2017; Wilkinson, 2010; Yoon, Yoon et al., 2018) that showed good relationship with peers to correlate with good adolescent outcome. As for Segura et al.'s (2017) and Humm et al.'s (2018) research that counterintuitively revealed adolescents with increased peer support to experience higher levels of internalizing and externalizing symptoms, their study samples might have noteworthy attributes. Indeed, Segura et al., (2017) sampled multiply victimized adolescents from residential care facilities in Spain, and Segura et al. speculated that because multiply victimized adolescents were more likely to interact with delinquent peers, the "support" from those peers might have represented a negative influence. Likewise, Humm et al., (2018) sampled from a low-income, high-violence community in South Africa, and Humm et al. proposed that support from anti-social peers led to worse outcome in adolescents. Thus, pro-social and anti-social peers could be differentiated to deepen our understanding of adolescent peer relationship and its impact.

The Third Hypothesis

Our third and final hypothesis was that parental relationships would be a stronger predictor of behavioral problems than peer relationship in middle adolescence. This hypothesis was supported. Not only did parental relationship quality predict one more grouping of adolescent behavioral problems (i.e., internalizing, externalizing, and total) than peer popularity (externalizing and total) when adolescents were around 14 years, parental relationship quality also had larger regression coefficients than peer popularity when both relationship types were significant predictors of adolescent behavioral problems. Our findings thus followed Erikson's psychosocial theory (e.g., Berk 2013; Erikson, 1989; Santrock, 2018) and concurred with past empirical research (e.g., Formoso et al., 2000; Hay & Ashman, 2003; Wilkinson, 2010). We supported Formoso et al.'s (2000) findings that parents were more important than peers in protecting against conduct problems for adolescents with a mean age of 13.3 years, although our adolescents were about a year older, and we used a sample that was more ethnically diverse and higher in psychosocial risks. Similarly, our findings were consistent with Hay & Ashman (2003) and Wilkinson (2010), who demonstrated that at ages 14

and 16 respectively, adolescent parental relationships were still more important than peer relationship for emotional stability (i.e., internalizing problems).

When peer relationship starts to outweigh parental relationships in predicting adolescent behavioral health is not clear-cut, but our findings suggest that this change-over is not complete in middle adolescence. Our findings showing the relative importance of parental relationship in middle adolescence concurred with Wilkinson (2010), who found maternal attachment to be the most reliable predictor of adolescent adjustment even in a sample of 16-year-old adolescents. Of course, our findings were discordant with Lee & Park (2017), who found anxious peer attachment style to be the strongest predictor of internalizing and externalizing behavior problems in a sample of 13-year-old adolescents from Korea. It is likely that geography, culture, tradition, and the domain of behavioral health are all important contextual variables to be examined to shed light on individuation, the process through which adolescents transfer emotional attachment from parents to peers (Hay & Ashman, 2003).

Study Limitations and Strengths

There were a number of limitations in this research. First, we were unable to study an older age group because the independent variables of interest were not available beyond the child 14-year visit in the LONGSCAN dataset. Second, the correlational nature of our research rendered any causal conclusions tentative, although ethical and practical constraints would preclude the utilization of experimentation. Third, the generalizability of our results was limited by the characteristics of the study sample. Even though child maltreatment through 14 years was statistically controlled for, maternal and paternal relationships in the LONGSCAN sample would inherently have higher conflicts than relationships in lower risk communities. Fourth, our operational definition of the quality of peer relationship by peer popularity may be limited, as being rated by a teacher as popular does not equate the adolescent feeling comfort and attachment to peers. Fifth, we conducted a cross-sectional study with a longitudinal dataset due to our specific interest in mid-adolescence. Future endeavors that compare the relative influence of social relationships in early- and mid-adolescence could utilize this longitudinal dataset to speak to changes with time. Finally, the nature of secondary data analysis was such that we only explored the data instead of explicitly collecting the data in a precise and experimental manner. Our study was therefore a tentative exploration in hopes of beginning and stimulating additional research in the area.

Nonetheless, a strength in our research was the culling of measures from diverse sources of information. Specifically, parental relationship variables were based on adolescent self-reports; peer relationship was based on teacher reports; and caretakers reported on adolescent behavioral problems. Of course, we chose to measure peer relationship using teacher reports also due to not finding another comparable measure with higher construction validity. The fact that all three of our research hypotheses were supported even though information came from various reporters strengthened the validity of our research findings.

Conclusion

In conclusion, even as adolescents individuate to rely more on peers and less on parents, parents remain powerful influencers in middle adolescence in the U.S. Moreover, mothers and fathers have unique roles to play in shaping the behavior of their adolescent offspring. Consequently, it is advantageous for policies and intervention strategies to focus on strengthening both the mother-adolescent and father-adolescent relationships. Further, in middle adolescence, maternal relationship may be most important in reducing adolescent externalizing problems whereas paternal relationship may be more important when reducing adolescent internalizing problems is the goal. Finally, peer relationship is important in middle adolescence as well, supporting efforts to strengthen this social relationship type as children enter early to middle adolescence and beyond. Brooks (2012) was indeed wise to recognize that adolescents, just as all humans, are social animals whose minds and behaviors are ever so shaped by their interactions with others.

Declarations

Conflict of interest We have no known conflict of interest to disclose.

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