



# Adolescent Mothers' Relationships with their Mothers and their Babies' Fathers during Pregnancy and Postpartum

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## Abstract

While lack of social support for adolescent mothers has been tied to parenting stress and postpartum depression, the types of support received by adolescent mothers from their mothers and the fathers of their babies (FOBs) and changes in this support over time have not been thoroughly characterized. We performed a secondary analysis of data from a randomized controlled trial of 106 adolescents at an urban prenatal clinic between February 2007 and August 2008. Information on social support was collected at 20–24 weeks gestation, in the hospital after delivery, and at 6-weeks, 3-months, and 6-months postpartum using the Arizona Social Support Interview Schedule. We assessed the amount and types of support provided by mothers and FOBs, compared support between mothers and FOBs and assessed changes in support over time. The prevalence of support for adolescent mothers from their mothers and FOBs was similar, but FOBs provided more types of support compared with mothers at specific time points. Support from mothers peaked after delivery, whereas support from FOBs remained stable over time. FOBs provided more social-type support and intimate support than mothers did but were also frequently a source of social strain. Adolescent mothers' FOBs and mothers have unique roles to play in their support networks. Understanding patterns of social support for adolescent mothers has the potential to inform future interventions to augment support for this vulnerable population, and, as a result, to influence maternal and early childhood health outcomes.

**Keywords** Adolescent pregnancy · Social support · Grandparents · Fathers · Family relations

## Introduction

Adolescent motherhood continues to be a significant public health problem for the United States, leading to poor maternal and child health outcomes, which may be ameliorated by social support. Although adolescent pregnancy rates have decreased in the United States, the adolescent birth rate continues to be higher than any other industrialized country (Martinez et al. 2011). Adolescent mothers are at increased risk for postpartum depression (PPD) (Fraser et al. 1995; Wambach and Cole 2000) and parenting

stress compared with adult mothers (Larson 2004). Both parenting stress and PPD have been independently associated with impaired cognitive and behavioral development of children (Crnic et al. 2005; Grace and Sansom 2003). In addition, PPD has been shown to be part of the causal pathway linking parenting stress to delayed infant development (Huang et al. 2014). Social support for adolescent mothers from the fathers of their babies (FOBs) and from their mothers has been shown to decrease the incidence of PPD (Brown et al. 2012; Cox et al. 2008), increase parenting competence (Anglely et al. 2015; Leahy-Warren et al. 2012) and decrease parenting stress (Fagan and Lee 2010; Gee and Rhodes 2003), positively impacting the health of adolescent mothers as well as the health of their children. The study of social support is complicated by a lack of consensus around several key aspects of its theoretical conceptualization, which is subsequently demonstrated by its varied operationalization within research (Veiel 1985). Theoretical approaches to social support may follow one of three frameworks: (a) the network model that focuses on an individual's social integration into a group and the interconnectedness of those within that group, (b) the received

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support model that focuses on the support that an individual has actually received and (c) the perceived support model that focuses on the support that an individual believes to be available should he or she need it (Hlebec et al. 2009; Sarason et al. 1990). Reflecting the diverse theoretical framework, assessment tools that evaluate social support take unique approaches to measuring (a) the direction of support, i.e., either its receipt or its conveyance, (b) the disposition of support, i.e., the perceived availability of support or the actual utilization of support, (c) the content of support, i.e., tangible components (physical or material support) or intangible components (positive feedback and advice) and (d) the reporting of support, i.e., whether tools choose to simply document the existence of support or to further characterize the quality of support through measures such as participant satisfaction or stress (Tardy 1985).

Adolescence is a stage where social support shifts dramatically as adolescents move away from parents, establishing a peer-based support system and intimate partner relationships (Vaux 1985). Reflecting this unique developmental stage, existing studies of the social support networks of adolescent mothers point to both the adolescent's mother and the FOB as important sources of support (Furstenberg and Harris 1993; Gee et al. 2007). Forty to eighty percent of adolescent mothers reported receiving social support from FOBs (Gee and Rhodes 2003; Howard et al. 2006) and 52–86% of adolescent mothers reported receiving support from their mothers (Hunter 1997; Sarri and Phillips 2004). Adolescent mothers may identify their mothers as sources of social support more often than FOBs (Nitz et al. 1995). Studies examining trends in cohabitation by adolescents from the 1980s to the 1990s found that 26 percent of adolescent mothers cohabited with their FOBs and that the incidence of cohabitation with FOBs remained stable over time (Manning and Cohen 2015). Several studies discussed a negative association between support from the mother of the adolescent and the FOB, where adolescent mothers who have stronger relationships with their mothers might receive less support from their FOB (Fagan and Barnett 2003; Gavin et al. 2002). Other studies found differences in support offered by FOBs based on either the father's age (Bunting and McAuley 2004; Mollborn and Lovegrove 2011) or the age difference between the FOB and their adolescent partners (Kalil et al. 2005). Specifically, teenage FOBs struggled to provide financial support for their children and were less likely to be married to the mothers of their children than adult fathers. FOBs who had greater age differences with their partners provided consistently low levels of financial and childcare support over a 1-year interval postpartum, while FOBs who had smaller age differences with their partners provided high levels of support initially, which subsequently declined. There is a paucity of data on patterns of social support over time, particularly

within the early postpartum period (Devito 2007, 2010). Existing literature shows that support for adolescent mothers from FOBs decreased during the years following the baby's birth, but these studies did not examine the immediate postpartum period (Gee et al. 2007; Larson et al. 1996). Although some researchers have reported specific types of support provided by either adolescents' mothers or FOBs, none have assessed the types of support provided by these relationships concurrently (Logsdon et al. 2004; Mollborn and Lovegrove 2011).

In this study, we aimed to characterize the social support provided for adolescent mothers by their mothers and FOBs during the prenatal and early postpartum period. Our goals were to (a) assess the perception of various types of social support for adolescent mothers from their mothers and FOBs; (b) examine how the perception of support provided by these relationships changes over time; and (c) evaluate associations between the perception of support provided by mothers and FOBs, namely whether the perception of support from participants' mother results in decreased odds of receiving support from their FOB. Based on existing literature, we hypothesized that a greater number of participants would perceive their mothers as a source of social support than their FOBs. We also hypothesized that the mean number of types of support from mothers would remain stable over the early postpartum period while support from FOBs would decline. Finally, we hypothesized that there may be a negative association between the mean number of types of support provided by these two relationships.

## Method

### Participants

One-hundred and six pregnant adolescents were recruited from an urban prenatal clinic at a tertiary care center in Providence, Rhode Island between February 2007 and August 2008 as part of a randomized controlled trial (Phipps et al. 2013). Participants were  $\leq 17$  years old when they conceived their pregnancy, were  $\leq 25$  weeks gestational age during their first prenatal visit, were not receiving mental health services from a healthcare provider, and did not meet criteria for a current affective disorder, substance use disorder, anxiety disorder (excluding simple phobia), or psychosis as determined by the relevant modules of the Structured Clinical Interview for the Diagnostic and Statistical Manual for Mental Disorders (SCID), 4th edition (DSM-IV) Childhood Diagnoses (Hein et al. 1998). For our analysis, we also excluded subjects who did not participate in the study after delivery ( $n = 6$ ).

## Procedure

The original study was a randomized controlled trial assessing the efficacy of an antepartum interpersonal-therapy based intervention in reducing the incidence of postpartum depression in adolescent mothers. The REACH intervention targeted factors that play a significant role in development of PPD in adolescent mothers, namely poor social support, role transitions and life stressors. All study surveys were completed during in person interviews by study personnel, including the SCID, which was completed by personnel who had been trained by the hospital psychiatrist to both administer and score the assessment appropriately. The intervention, which was administered separately from all other surveys by a designated interventionist, addressed participants' entire support network, including but not limited to participants' mothers and FOBs.

As part of the study, data were collected on social support at 20–24 weeks gestation, in the hospital after delivery, 6-weeks postpartum, 3-months postpartum, and 6-months postpartum using the Arizona Social Support Interview Schedule (ASSIS) (Barrera 1980). Additionally, surveys conducted at 20–24 weeks gestation, 3-months and 6-months postpartum collected data on maternal and paternal age, education status, race and ethnicity as well as maternal housing status (i.e., cohabitation with parents, husband or boyfriend). These surveys were all conducted during in-person interviews with the study's research assistants in a research office adjacent to the prenatal clinic.

The Institutional Review Board of Women & Infants Hospital in Providence, Rhode Island approved the study protocol (WIH IRB# 792655).

## Measures

The ASSIS is a standardized assessment of social support that uses a grid to describe a participants' perceived and actual sources of support within the past month in seven categories: material support (e.g., money or objects), physical support (e.g., transportation or housework), intimate support (e.g., people with whom participants can discuss personal and private things), advice, positive feedback, social-type support (e.g., people who connect participants with friends and social events), and strain (e.g., people with whom participants have unpleasant disagreements or who make participants angry or upset) (Barrera 1980). Participants are asked to name each relationship in their life that provides them with social support and are then asked to further characterize the types of support that these relationships provide. The tool also includes a composite score section that sums the total number of actual and perceived support sources across all support types and relationships.

## Data Analyses

Data from the ASSIS were analyzed to determine the types of social support that adolescent mothers received from their mother and FOB during the prenatal and early postpartum periods, similar to methodology used in previously published studies (Gee and Rhodes 2003). Mothers were identified within the ASSIS data collection grid as "mom" or "mother." FOBs could be referred to as "BF (boyfriend)," "FOB (father of the baby)," "fiancé," or "husband" in the ASSIS. We cross-referenced the demographic information collected within ASSIS (race, age, first and last initial) with demographic data about the FOB collected in the demographic survey at the 20–24 week prenatal visit to confirm we were including data provided for the FOB and not a different romantic partner. Upon initial analysis, negligible differences were found between reports of perceived and actual support; therefore, our analysis assessed and reported on perceived support only. In addition to evaluating for the perception of various types of support, we created summed support scores by assigning each participant's mother and FOB a value between 0 and 6 based on the number of support types they provided at each time point.

We determined the proportion of participants' mothers and FOBs that provided any support and each type of support at each of the five time points. McNemar's tests were used to assess differences in these proportions between participants' mothers and FOBs. We used paired *t*-tests to compare differences in the summed support score of each participant's mother and FOB and to evaluate changes in summed support scores over time. We used a repeated measures ANOVA and omnibus F-test to assess overall change in support across all time points. Logistic regression was used to assess associations between support by participants' mothers and FOBs. Data analysis was performed with SAS software (version 9.3; SAS Institute, Cary, NC). Bonferroni corrections were utilized to adjust for multiple analyses, where we considered a significance level of alpha ( $p = 0.05$ ) divided by *m* (number of analyses) to be significant. For the data in Table 1, a *p*-value of 0.001 was considered significant because 35 concurrent analyses were performed; for the data in Table 2, a *p*-value of 0.010 was considered significant because five concurrent analyses were performed; and for the data in Table 3, a *p*-value of 0.006 was considered significant because eight concurrent analyses were performed (support for two relationships).

## Results

The median age of the 100 study participants was 16 years (Table 4). More than half of participants identified

**Table 1** Counts and frequencies of perceived support by time point, support type, and relationship

Support type	FOB <i>N</i> (%)	Mother <i>N</i> (%)	McNemar chi-square statistic (1 DF) for differences in proportion	<i>p</i> -value for differences in proportion of MG vs. FOB providing support	Association between maternal and FOB support (odds ratio (95% CI))
20–24 week prenatal visit ( <i>N</i> = 100)					
Any support (A–F)	77 (77.0)	71 (71.0)	0.95	0.418	0.92 (0.33–2.50)
A–intimate	58 (58.0)	36 (36.0)	10.08	0.002	0.68 (0.29–1.59)
B–material	50 (50.0)	56 (56.0)	0.72	0.480	1.00 (0.45–2.22)
C–advice	28 (28.0)	37 (37.0)	1.98	0.211	0.71 (0.29–1.72)
D–positive feedback	44 (44.0)	35 (35.0)	2.08	0.200	0.44 (0.19–1.01)
E–physical	41 (41.0)	46 (46.0)	0.47	0.583	1.37 (0.61–3.03)
F–social	58 (58.0)	12 (12.0)	40.69	< 0.001 <sup>a</sup>	0.42 (0.11–1.64)
G–social strain	22 (22.0)	21 (21.0)	0.04	1.000	0.26 (0.09–0.75)
Post-delivery in hospital ( <i>N</i> = 100)					
Any support (A–F)	75 (75.0)	79 (79.0)	0.40	0.636	2.32 (0.62–8.33)
A–intimate	60 (60.0)	52 (52.0)	1.45	0.291	0.625 (0.28–1.41)
B–material	57 (57.0)	65 (65.0)	1.39	0.302	0.84 (0.37–1.92)
C–advice	38 (38.0)	53 (53.0)	4.41	0.049	1.02 (0.46–2.27)
D–positive feedback	47 (47.0)	45 (45.0)	0.09	0.883	0.74 (0.34–1.64)
E–physical	47 (47.0)	60 (60.0)	3.31	0.092	1.03 (0.46–2.32)
F–social	60 (60.0)	24 (24.0)	25.92	< 0.001 <sup>a</sup>	0.54 (0.20–1.45)
G–social strain	12 (12.0)	9 (9.0)	0.69	0.581	0.12 (0.03–0.54)
6-weeks postpartum ( <i>N</i> = 96)					
Any support (A–F)	80 (83.3)	68 (70.8)	3.60	0.081	3.33 (0.71–16.67)
A–intimate	61 (63.5)	39 (40.6)	11.00	0.001 <sup>a</sup>	0.54 (0.23–1.30)
B–material	59 (61.5)	57 (59.4)	0.09	0.880	0.84 (0.72–1.92)
C–advice	40 (41.7)	40 (41.7)	0.00	1.000	0.66 (0.29–1.52)
D–positive feedback	52 (54.2)	37 (38.5)	5.00	0.036	0.70 (0.31–1.61)
E–physical	57 (59.4)	54 (56.3)	0.19	0.771	1.01 (0.44–2.27)
F–social	55 (57.3)	20 (20.8)	27.22	< 0.001 <sup>a</sup>	0.37 (0.12–1.12)
G–social strain	34 (35.4)	12 (12.5)	18.62	< 0.001 <sup>a</sup>	0.08 (0.02–0.39)
3-months postpartum ( <i>N</i> = 96)					
Any support (A–F)	74 (77.1)	66 (68.8)	1.88	0.230	0.57 (0.21–1.53)
A–intimate	61 (63.5)	43 (44.8)	7.36	0.010	0.61 (0.26–1.42)
B–material	56 (58.3)	57 (59.4)	0.02	1.000	0.62 (0.27–1.41)
C–advice	39 (40.6)	42 (43.8)	0.21	0.761	0.71 (0.31–1.61)
D–positive feedback	57 (59.4)	36 (37.5)	9.80	0.003	0.61 (0.26–1.45)
E–physical	54 (56.3)	51 (53.1)	0.21	0.761	0.68 (0.30–1.52)
F–social	56 (58.3)	22 (22.9)	26.27	< 0.001 <sup>a</sup>	0.33 (0.11–0.98)
G–social strain	29 (30.2)	8 (8.3)	17.64	< 0.001 <sup>a</sup>	0.12 (0.02–0.625)
6-months postpartum ( <i>N</i> = 97)					
Any support (A–F)	73 (75.3)	73 (75.3)	0.00	1.000	0.74 (0.26–2.08)
A–intimate	58 (59.8)	42 (43.3)	6.10	0.020	0.50 (0.22–1.16)
B–material	53 (54.6)	62 (63.9)	1.65	0.253	1.18 (0.51–2.70)
C–advice	38 (39.2)	36 (37.1)	0.12	0.864	0.33 (0.14–0.79)
D–positive feedback	49 (50.5)	37 (38.1)	3.79	0.073	0.39 (0.17–0.90)
E–physical	52 (53.6)	58 (59.8)	0.90	0.430	0.51 (0.22–1.15)
F–social	55 (56.7)	21 (21.7)	24.08	< 0.001 <sup>a</sup>	0.58 (0.21–1.61)
G–social strain	28 (28.9)	9 (9.3)	13.37	< 0.001 <sup>a</sup>	0.28 (0.07–1.15)

Statistical assessment for differences in proportion of fathers of the baby (FOB) vs. participants' mothers providing each support type at any time point using McNemar's test and for association between maternal (independent variable) and FOB (dependent variable) support using odds ratios and 95% confidence intervals

<sup>a</sup>These results are statistically significant after utilizing the Bonferroni correction to adjust for conducting 14 analyses, such that a *p*-value of  $\leq 0.001$  is considered statistically significant

themselves as Hispanic (55%), while approximately a third identified as Caucasian (14%) or African American (18%). The average level of educational attainment was 10th grade. The FOBs had a median age of 17 years, with 40% over the

age of 18. At the start of the study, most participants lived with their parents ( $n = 68$ ), and only eight participants lived with their husband or boyfriend. Over time, the number of

**Table 2** Average summed support provided by father of the baby vs. participant's mother at each time point and differences between support from father of the baby and mother compared at each time point using paired *t*-test

Time point	<i>N</i>	Mean number of support types provided by father of the baby (SD)	Mean number of support types provided by mother (SD)	Paired <i>T</i> statistic	<i>p</i> -value for paired <i>t</i> -test	Effect size (Cohen's <i>d</i> )
20–24 week prenatal visit	100	2.79 (2.05)	2.22 (1.90)	2.15	0.034	0.288
Post-delivery visit	100	3.09 (2.30)	2.99 (2.19)	0.32	0.750	0.045
6-weeks postpartum	96	3.38 (2.19)	2.57 (2.18)	2.64	0.010 <sup>a</sup>	0.371
3-months postpartum	96	3.36 (2.31)	2.61 (2.21)	2.51	0.014	0.332
6-months postpartum	97	3.14 (2.34)	2.64 (2.10)	1.78	0.078	0.225

<sup>a</sup>These results are statistically significant after utilizing the Bonferroni correction to adjust for conducting multiple analyses, such that a *p*-value of  $\leq 0.010$  is considered statistically significant

participants living with parents decreased while the number living with husbands or boyfriends increased.

While the proportion of adolescent mothers reporting supportive relationships with their mothers and FOBs was similar, the number of support types provided by these relationships differed. Over the course of the prenatal and early postpartum period, the majority of adolescent mothers reported receiving at least one type of support from both FOBs and their mothers (Table 1). There was no difference between the proportion of adolescent mothers who reported supportive relationships with their mothers and the proportion of adolescent mothers who reported supportive relationships with their FOBs at any time point (Table 1). For example, 77 participants reported support from FOBs and 71 participants reported support from their mothers at the 20–24 week prenatal visit (Table 1,  $p = 0.418$ ). However, FOBs provided more types of support on average than participants' mothers at 6-weeks postpartum (Table 2;  $p = 0.01$ , paired *T* statistic = 2.64, Cohen's  $d = 0.371$ ).

Adolescent mothers' perception of social support from participants' mothers and FOBs also appeared to have different patterns over time (Fig. 1). The average number of support types provided by participants' mothers increased between 20–24 weeks gestation and in-hospital post-delivery (Table 3,  $p < 0.001$ ; paired *T* statistic =  $-3.79$ ; Cohen's  $d = -0.536$ ) and subsequently decreased by 6-weeks postpartum ( $p = 0.006$ ; paired *T* statistic = 2.80; Cohen's  $d = 0.404$ ). Across all time points, support from mother ( $p < 0.001$ ; omnibus *F*-test = 5.04) increased.

Adolescent mothers perceived that their mothers and FOBs provided different types of support (Table 1). Participants' FOBs provided more social-type support compared with their mothers at all measured time points. The FOBs also provided more intimate support at the 6 week postpartum visit. There were no significant differences between participants' mothers and FOBs in provision of material support, physical support, advice, or positive feedback. Notably, FOBs were more likely to be a source of social

strain for participants than mothers at 6-weeks, 3-months, and 6-months postpartum.

When assessing whether the perception of support from the mother was related to perception of support from the FOB, participants were less likely to experience social strain in their relationship with their FOB if they experienced strain in their relationship with their mother at all time points except the 6-months postpartum visit (Table 1). There was also a negative association for social-type support at 3-months postpartum (OR: 0.33, 95% CI: 0.11–0.98), advice at 6-months postpartum (OR: 0.33, 95% CI: 0.14–0.79), and advice at 6-months postpartum (OR: 0.39, 95% CI: 0.17–0.90). For example, participants with social-type support from the mother at 3-months postpartum had 0.33 the odds of receiving social-type support from the FOB at 3-months postpartum.

## Discussion

Our study assessed the perception of various types of social support in adolescent mothers' relationships with their mother and FOB. We found that the proportion of adolescent mothers reporting supportive relationships with their mother and FOB was similar. However, adolescent mothers perceived that FOBs provided more types of support than mothers did at 6-weeks postpartum. Over time, the number of support types provided by mothers increased until immediately after delivery and then declined. In contrast, the number of support types provided by FOBs remained stable over the prenatal and early postpartum period. Our study contributes information about the importance of adolescent mothers' relationships with FOBs and changes in their relationships with their mothers that could guide the focus and timing of future interventions.

Consistent with existing literature, the proportion of supportive relationships for adolescent mothers with their mothers and FOBs was relatively high in our study. Though

**Table 3** Changes in average summed social support by participant’s mother and father of the baby between time points, using paired *t*-tests, as well as across all time points, using repeated measures ANOVA and omnibus *F*-test

Time point interval	<i>N</i>	Mean change in summed support	Paired <i>T</i> statistic	<i>p</i> -value for paired <i>t</i> -test	Effect size (Cohen’s <i>d</i> )	Omnibus <i>F</i> -test	<i>p</i> -value for <i>F</i> -test
<b>Mother</b>							
20–24 weeks prenatal visit to delivery	100	+ 0.77	-3.79	< 0.001 <sup>a</sup>	-0.536	5.04	< 0.001 <sup>a</sup>
Delivery to 6-weeks postpartum	96	-0.46	2.80	0.006 <sup>a</sup>	0.404		
6-weeks to 3-months postpartum	94	+ 0.02	-0.16	0.875	-0.023		
3-months to 6-months postpartum	93	+ 0.03	-0.18	0.856	-0.026		
<b>Father of the baby</b>							
20–24 weeks prenatal visit to delivery	100	+ 0.30	-1.62	0.109	-0.229	2.72	0.029
Delivery to 6-weeks postpartum	96	+ 0.25	-1.61	0.111	-0.232		
6-weeks to 3-months postpartum	94	+ 0.05	-0.32	0.751	-0.047		
3-months to 6-months postpartum	93	-0.23	1.33	0.187	0.195		

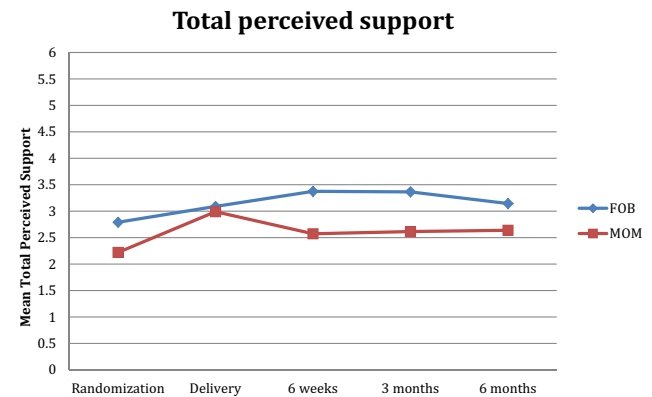
<sup>a</sup>These results are statistically significant after utilizing the Bonferroni correction to adjust for conducting multiple analyses, such that a *p*-value of ≤ 0.006 is considered statistically significant

**Table 4** Overview of study population (*N* = 100)

Median participant age at prenatal visit (range)	16.0 (13.0–18.0)
Median age of father of the baby at prenatal visit (range)	18.0 (15.0–37.0)
Race/ethnicity, <i>n</i> (%)	
Hispanic	55 (55.0)
African-American (non-Hispanic)	18 (18.0)
Caucasian (non-Hispanic)	14 (14.0)
Other	13 (13.0)
Median grade level (Range)	10 (8–12)
Education status, <i>n</i> (%)	
Currently in school	79 (79.0)
Not in school, HS grad	4 (4.0)
Not in school, not HS grad	17 (17.0)
Lives with mother, <i>n</i> (%)	
20–24 weeks prenatal visit	68 (68.0)
3-months postpartum <sup>a</sup>	56 (58.3)
6-months postpartum <sup>b</sup>	54 (55.7)
Lives with father of baby, <i>n</i> (%)	
20–24 weeks prenatal visit	8 (8.0)
3-months postpartum <sup>a</sup>	16 (16.7)
6-months postpartum <sup>b</sup>	18 (18.5)
Lives with both mother and father of baby, <i>n</i> (%)	
20–24 weeks prenatal visit	8 (8.0)
3-months postpartum <sup>a</sup>	7 (7.3)
6-months postpartum <sup>b</sup>	9 (9.3)

<sup>a</sup>*N* = 96

<sup>b</sup>*N* = 97



**Fig. 1** Average summed support provided by father of the baby vs. participant’s mother at each time point

some studies suggested that adolescent mothers receive support from their mothers more often than from FOBs, our study showed no differences in the proportion of adolescent mothers reporting supportive relationships with these two individuals (Hunter 1997; Nitz et al. 1995). Previously

published studies indicated that support provided to adolescent mothers by FOBs varied based on the FOBs' age or their age difference with the adolescent mother, but our data showed no difference in support based on these variables (Bunting and McAuley 2004; Kalil et al. 2005).

In terms of chronological patterns in support over time, some studies have indicated that social support for adolescent mothers from their mothers and FOBs declined from the prenatal to postnatal period (Barnet et al. 1996; Brown et al. 2012) and that the perinatal period may therefore be a critical time for intervention (Kalil et al. 2005). Examining this period closely, we found the number of support types provided by participants' mothers peaked immediately after delivery and then significantly declined by 6-weeks postpartum. For interventions that seek to retain social support for adolescent mothers from their mothers, the first six weeks following delivery may be a critical time period. Of note, over time, the prevalence of cohabitation with partners in our study increased from the prenatal visit to the 6-month postpartum visit. While the prevalence of cohabitation in our study is lower than estimates in the literature (Manning and Cohen 2015), there is a paucity of literature about trends in cohabitation with FOBs over the antepartum and early postpartum period, so the trend in our data showing increasing cohabitation during this period is a unique finding. Further research is needed to better understand the relationship between teenage childbearing, social support, and partner cohabitation.

Our study adds a comparative perspective to existing literature examining the types of social support provided to adolescent mothers by their mothers or FOBs (Logsdon et al. 2004; Mollborn and Lovegrove 2011). Overall, our data shows that existing literature may underestimate the role FOBs play in the social support networks of adolescent mothers. While the proportion of adolescent mothers reporting supportive relationships with their FOBs and their mothers were similar, FOBs provided a stable amount of support over time, whereas support from the mother declined between delivery and 6-weeks postpartum. We were also able to reexamine an existing theory in the literature that increased support for adolescent mothers from their mothers may prevent them from developing strong relationships with FOBs (Fagan and Lee 2010; Gavin et al. 2002). Consistent with existing literature, our data showed a negative association for a limited number of domains of support for adolescent mothers from their mothers and FOBs at 3- and 6-months postpartum. Participants that received social-type support at 3-months postpartum and advice or positive feedback at 6-months postpartum from their mothers were less likely to receive those support types from their FOBs at those time points. Interestingly, there was also a negative association between social strain from mothers and FOBs at all time points except for 6-months

postpartum, meaning participants who experienced strain in their relationships with their mothers were less likely to experience strain in their relationships with their FOBs. Altogether, these findings suggest that the social support networks of adolescent mothers may include unique roles for their mothers and FOBs.

## Limitations

This study constitutes a secondary data analysis of a randomized controlled trial where half the study population received an intervention aimed at reducing postpartum depression that included some elements of augmenting social support. However, our analysis found that overall social support did not differ by randomization group or the main outcome measure (data not shown), so we are not concerned that it had a substantial effect on our findings. Both the intervention and control group received interpersonal attention as part of the study, which may have positively influenced the levels of social support observed in this study relative to the general adolescent population. We also chose to focus on participants' relationships with the mother and FOB in our analysis, but this does not provide a complete picture of adolescent mothers' entire social support networks; for example, one study participant reported receiving no support from either the mother or FOB at all time points, instead relying on other relationships.

The generalizability of this study's findings may also be limited by specific characteristics of the study population. First, more than half of participants had a Hispanic background, which may have led to higher levels of social support than what would be expected in the general population. Latina mothers turn to family members, especially their mothers, more often during times of stress and are more receptive to specific support types such as advice and childcare than mothers of other ethnicities (Garcia-Preto 1996; Ramos-McKay et al. 1988); young Latina mothers are also more likely than African American adolescent mothers to be in long-term relationships with their partners but are also more likely to report receiving lower levels of childcare and emotional support from these partners than their African American or Caucasian peers (Becerra and de Anda 1984; Wasserman et al. 1990). Second, the criteria for study eligibility excluded any adolescent mother with history of psychiatric disease, a subpopulation that may be at higher risk for poor social support.

There were some aspects of demographic and social support data that our study did not assess, which could be further evaluated in future research. We did not collect data on adolescent mothers' socioeconomic status (SES), which may have influenced how these participants perceived the provision of tangible types of support

from their relationships. In addition, data on FOBs' employment or SES was also not collected, which has been shown to play a role in the social support provided by this relationship (Coley and Chase-Lansdale 1999). Third, a relatively high proportion of our study population continued to participate in school, which is likely reflective of local resources allocated toward efforts to retain this population in school that may not be generalizable to populations outside of Rhode Island. Finally, while our study assessed the prevalence of various support types, we did not assess quality of the support provided, which may also change over time. Further research is required to better assess the impact of these factors on social support for adolescent mothers.

In summary, this study characterized the types and amounts of social support for adolescent mothers during the perinatal period. In this diverse cohort, FOBs provide adolescent mothers with substantial social support in the prenatal and early postpartum period. The social support networks of adolescent mothers may include unique roles for their mothers and FOBs that do not compete with each other. The first six weeks following delivery may be a key time period for interventions for adolescent mothers that seek to augment or retain social support from their mothers, which peaks immediately following the delivery of the baby. A more nuanced understanding of the patterns of social support for adolescent mothers at this critical stage of their parenting lives can inform future social support interventions to improve outcomes for mothers and their children.

**Author Contributions** N.R.K. abstracted data for secondary analysis, assisted with data analyses, and wrote sections of the paper. V.A. D. conducted data analyses and wrote sections of the paper. C.F.W., collected data for original study, assisted with logistics of this study, and collaborated on writing and editing of the final manuscript. M.G.P. was the principal investigator of original study and also provided material support for all aspects of this study, collaborated on study design and on writing and editing of the final manuscript.

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## Compliance with Ethical Standards

**Conflict of Interest** The authors declare that they have no conflict of interest.

**Ethical Approval** The protocol of the REACH study, whose data was used in this analysis, was in accordance with the ethical standards of the institutional review board of Women and Infants Hospital, Providence, Rhode Island, and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. All REACH participants formally consented to this study.

**Informed Consent** All procedures followed were in accordance with the ethical standards of the responsible committee on human

experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2000. Informed consent was obtained from all patients for being included in the study.

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