Journal of Family Psychology
2006, Vol. 20, No. 4, 597–604

0893-3200/06/$12.00 DOI: 10.1037/0893-3200.20.4.597

Parenting and Community Background and Variation in Women's Life-History Development

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For a community sample of 623 low-income women (mean age = 26.9 years), the authors use life-history theory to explore relations between parenting and community background and timing of reproductive development and sexual behaviors. Among other patterns, reported levels of paternal involvement during childhood were related to delayed menarche and ages at 1st sexual intercourse and 1st childbirth. The relation between parental investment and women's reproductive delay varied with estimates of wealth in the community in which the participants grew up. The results suggest that parents increased their investment as the level of community wealth increased, and in ways that likely facilitated women's ability to compete for social status in adulthood. Implications for future research on the relation between parenting and child outcomes are discussed.

Keywords: child development, parenting style, sexual behaviors, life history, family relations

Developmental research has demonstrated a correlation between parenting quality and children's long-term physical (Flinn, 1999), emotional (Amato, 1998), and social (Jaffee, Moffitt, Caspi, & Taylor, 2003) well-being. Current attention now focuses on the relative strength of parenting on child outcomes (e.g., maladjustment) and the influences of heritable factors, extra-parental experiences (e.g., peers), and context (e.g., neighborhoods) on these outcomes. One potentially innovative approach to better understand these relations is life-history theory. Life-history research focuses on the biological trade-offs (e.g., allocation of calories to staying alive vs. growing larger) associated with the competing demands of surviving, growing, and behaviorally and socially preparing for reproduction in adulthood (Geary, 2002; Roff, 1992; Stearns, 1992; Stearns & Koella, 1986). One area of research that has successfully used life-history theory is the study of the relation between family environment and pubertal timing; having a more supportive family, especially a warm relationship with father, is related to later onset of menarche in girls (Belsky, Steinberg, & Draper, 1991; Ellis, 2004; Vigil, Geary, & Byrd-Craven, 2005).

The broader question concerns potential moderators of the relation between parental investment and other aspects of reproductive development (e.g., age of first childbirth) and of course other child outcomes (e.g., educational achievement), as well as the question of whether all children benefit equally from high levels of parental investment. K. M. Harris and Marmer (1996) found the often reported positive correlation between increased father–child involvement and children's long-term economic and educational success is stronger in wealthier families, and concluded that "the positive effect of father's behavioral involvement . . . . are less effective for children who experience long term poverty" (p. 632; see also Klebanov, Brooks-Gunn, McCarton, & McCormick, 1998; Roosa, 2000). At first glance, these findings appear counterintuitive; we might expect that children living in impoverished conditions would benefit more than their affluent peers from the added resources provided by a father.

When viewed from a life-history perspective, K. M. Harris and Marmer's (1996) results are not surprising. From this perspective, physical, behavioral, and social development are guided, in part, by evolved biases that influence developmental patterns, such as age of menarche, but within constraints that interact with local social and ecological conditions (Geary & Bjorklund, 2000). The evolved and genetically based constraints represent the age range in which the trait could be expressed, and the local conditions are the specific experiences that influence the age of actual trait expression within this range (Stearns, 1992; Stearns & Koella, 1986). One prediction is that parents increase investment in their children in higher socioeconomic (SES) contexts because this investment adds to their children's ability to compete with peers who are likely to be socially competitive (e.g., well educated) as adults (Geary, 2000; Geary & Flinn, 2001). It is possible, though not well documented, that these early levels of parental investment and local community characteristics may also influence the tim-

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The research was supported, in part, by a Gus T. Ridgel Graduate Fellowship awarded to Jacob M. Vigil. We thank Jennifer Byrd-Craven for her help on various aspects of this project.

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ing or form of expression of core components of reproductive development, such as the age of onset of reproductive behaviors (Ellis, 2004; Vigil et al., 2005). To our knowledge, very limited attention has been devoted to the possible interaction between parental investment and community-wide SES, and the timing of expression of commonly assessed life-history traits in women, such as ages of menarche and first childbirth. In this article, we introduce a model of the relations between parental investment, social competitiveness, and the timing of reproductive debut in women; we then examine a community sample of women to assess the potential utility of this model.

The Evolution of Human Parental Investment

Throughout traditional societies (Chisholm, 1993), preindustrial Western societies (Korpelainen, 2000), and almost certainly throughout human evolution, culturally successful adults have more control of valuable resources (e.g., money, live stock) and greater social influence, which are correlated with better health (Sapolsky, 2004), a longer life span, and healthier children (Adler et al., 1994; Geary, 2000). In terms of contemporary parent–child relationships, parents who have achieved high social status (e.g., college education and high income) or have inherent advantages (e.g., emotional stability) have more resources to invest in parenting (e.g., Lin, Vaughn, & Ensel, 1981). From a life-history perspective, parental willingness to invest in children coevolved with the long developmental period (Bogin, 1999) and the combination functions, in part, to facilitate children's ability to add to their *reproductive potential* before reproducing themselves (Alexander, 1987; Geary & Flinn, 2001; Kaplan, Hill, Lancaster, & Hurtado, 2000). Most generally, reproductive potential constitutes the ability to attract a desirable mate in adulthood and to invest in parenting (Geary, Vigil, & Byrd-Craven, 2004). The primary traits that comprise reproductive potential are (a) the physical components associated with fertility and the ability to birth or sire healthy children and (b) the social and behavioral components that signal the ability to invest in these children during the long period of development. Investment in the postnatal development of offspring, however, comes at a cost of reduced ability to birth or sire other offspring.

For women, the trade-off between these two aspects of reproductive investment are exacerbated by age-related changes in fertility (Mosher, 1988) and the associated reduction, relative to men, in the overall length of the reproductive life span. On the one hand, earlier reproductive maturation would lengthen women's overall reproductive life span and, thus, increase the number of children they could birth. On the other hand, early reproduction may compromise women's ability to refine, during adolescence, the social and behavioral competencies that will later allow quality investment in their children, that is, early reproduction may be at a cost to this component of their reproductive potential. With such a trade-off, delayed reproduction should occur in contexts in which girls have the opportunity to enhance their ability to later invest in children or to attract a quality mate. Early maturation and reproduction follows from the absence of such opportunity, because of the reproductive benefits—and low cost, given reduced opportunity—associated with the corresponding lengthening of the reproductive life span.

However, why delay reproduction and invest in a smaller number of children even with opportunity to enhance the ability to make this investment? Across species, maternal condition during the prenatal period and maternal and paternal postnatal investment are associated with reproductively healthy and socially competitive adults (e.g., Clutton-Brock, 1991). Social competitiveness is only achievable, however, when there are "excess" resources above and beyond those needed to ensure the offspring's physical reproductive development (West, Brown, & Enquist, 2001). In comparison to the physical component of reproductive development, social reproductive development may be a lower evolved priority, because without the former the latter is irrelevant. Although physical development is to some extent context sensitive (Bateson et al., 2004), social-reproductive development is particularly sensitive to contextual influences and especially to the number and competitiveness (e.g., SES) of individuals in the local environment; this social context defines what is necessary to be reproductively competitive. Parental investment in children's social reproductive development is predicted to increase as parental resources increase beyond those needed for investment in children's physical reproductive development and health. Because it is costly, however, parents are predicted to increase investment in social reproductive development in accordance with the relative competitiveness of their children's peers in the local community.

The coevolution of parental investment and the extended length of the developmental period appears to have resulted in an evolved sensitivity such that reproductive development may be expressed earlier or later, contingent on the form (e.g., quality of attachment) and quantity (e.g., time, money) of parental investment (Belsky et al., 1991; Chisholm, 1993; Ellis, 2004; Wilson & Daly, 1997). If so, then parental investment in the child's social reproductive development (e.g., high educational expectations) should provide proximate cues that are correlated with increased benefit of delayed reproduction. Although the mechanisms by which these cues may delay reproduction are not well understood, the predicted result is a longer prereproductive segment of the life span. Parents with fewer resources are predicted to invest more heavily in their children's physical reproductive development (e.g., investment in food vs. books), and with fewer opportunities for these children to add to their social reproductive competitiveness they may benefit more by earlier reproductive debut and an adult reproductive strategy that emphasizes the physical component of their reproductive potential (e.g., higher overall fecundity; see also Vigil et al., 2005). In turn, children and parents are predicted to be sensitive to children's social competitiveness vis-à-vis the children's peer group, as this is the most likely representation of the social competition the children will face in adulthood. Peer relations and wider community conditions suggest parental investment should increase with increases

in the level of competition their children will face as adults; that is, the importance of this investment for social reproductive development should vary across communities.

In a community sample of 623 economically and ethnically diverse women, we examined the relations between several family background characteristics, estimates of childhood community SES, and three commonly assessed life-history traits that represent core reproductive milestones (Roff, 1992; Stearns, 1992): ages at menarche, first sexual intercourse, and first childbirth. The parental characteristic variables were chosen on the basis of previous research (e.g., Belsky et al., 1991; Ellis, 2004; Geary, 2002; Vigil et al., 2005; Wilson & Daly, 1997) and included family dependence on government assistance, father involvement, educational encouragement, parent–child conflict, and number of siblings. We first examined the independent relations between family and community background and the life-history variables to confirm previous findings (Ellis, 2004): Higher levels of paternal time, community wealth, and lower levels of parent–child conflict independently predicted delayed expression of life-history traits (e.g., age of first childbirth).

We then tested the original hypothesis that the relation between indicators of parental investment and reproductive delay (age at actual reproduction) is moderated by childhood community wealth. Paternal investment in particular was examined, as Geary (2000) argued that one evolutionary function of human fathers was to facilitate their children's social competitiveness. As a follow-up analysis, we provided an explicit test of the prediction that investment in social status mediates the present-day relation between background parental characteristics and reproductive delay in women. We used educational level and history of government financial assistance as proxies for participants' social status, because these are typically achieved before reproduction and are related to later income (Ceci & Williams, 1997) and mate value (Geary, 1998); we make the reasoned assumption that achieved social status (in adulthood) is related, in part, to the opportunity and ability to accrue social reproductive competencies during childhood (Blau & Duncan, 1967).

Method

Participants

We targeted lower income women to assure a wide range of background characteristics and variation in life-history development. The participants were 623 women (ages 18–56 years, M = 26.9 years, SD = 8.5) from Albuquerque, New Mexico, and surrounding towns (n = 205), and several rural and suburban towns in mid-Missouri (n = 418). The ethnic composition was heterogeneous; 40% non-Hispanic White, 27% African American, 21% Latin American, 4% Asian, 4% Native American, and 4% of mixed race. The average years of education completed was 12.5 (SD = 2.4), and the participants' modal income level was between \$0 and \$5,000 per year (measured categorically; M < \$10,000/year); similarly, over 46% of the participants received some form of government assistance (e.g., welfare, food stamps).

Procedures

Adult women were individually solicited (by Jacob M. Vigil) from various community locations, including recreational parks, libraries, and private residences (door to door) and asked to complete a self-report questionnaire that explored women's relationships. They were assured of their rights as a research participant and were told they would receive a small monetary payment for their assistance. Consenting participants took between 10 and 30 min to complete the questionnaire. They were instructed not to put their name anywhere on the questionnaire and to place it in a large envelope with other questionnaires when finished.

Measures

Included in the questionnaire were items that asked participants to report on three standard life-history traits, that is, ages at menarche, first sexual intercourse, and first childbirth. Previous research has found that retrospective accounts of age at menarche are reliably and validly recalled, even decades later (Must et al., 2002), and it seems likely that women will also accurately recall age at first sex and at the birth of their first child.

The questionnaire also included items on current educational and income level and developmental background, including family-of-origin characteristics (e.g., parental SES), relationship dynamics (e.g., parent–child arguments), and income estimates for the community in which they grew up. Father involvement was measured by the amount of time spent with father (measured on a 5-point scale, from 1 [*never*] to 5 [*always*]). Because only 58% of participants reported living in a two-parent household, only mother's education was examined; this variable was measured in years (M = 12.54, SD = 2.93). Additional individual family background variables included (a) whether or not parents talked about going to college with the participants (71% positive response), (b) a family wealth item that assessed whether (coded 1) or not (coded 0) parents were ever on government financial assistance during participant's childhood, (c) a family conflict item that assessed the degree to which participants argued and fought with their parents during childhood (measured on a 5-point scale), (d) and number of siblings (M = 2.85, SD = 2.03). Childhood community income was measured by asking, "In the community where I grew up, the yearly income of the men was between (circle lowest amount) and (circle highest amount)." Participants' estimates were measured on a 12-point scale from "\$0" to "over \$100,000" (\$0; \$10,000; \$20,000; etc.); the score was the average of the high and low annual income estimates (mean annual income ~\$40,000). The final variable represented the participant's social status and was the sum of years of schooling and whether or not the participant's reported a history of government financial assistance (these items were standardized prior to summation; M = 0, SD = 1).

Results

Background Correlates of Reproductive Development

To accurately assess whether the relation between parental investment and reproductive delay varied across levels of childhood community income, only unstandardized variables were used in these analyses (see Whisman & McClelland, 2005). The key background variables were amount of time spent with father, maternal education (because of less missing data than for father education), family-of-origin dependence on government financial assistance, parental

encouragement of college attendance, level of parent–child conflict, and number of siblings; these or related variables have been shown to covary with life-history development in previous research (Belsky et al., 1991; Ellis, 2004; Wilson & Daly, 1997). Following Whisman and McClelland (2005), four categories of community income were created, ranging from 0 (<$20K/year) to 3 (>$60K/year) in 20K increments. Table 1 shows correlations among these variables and the life-history variables.

Next, all of the background variables were simultaneously regressed on each of the life-history traits, as shown in Table 2. This allowed us to examine the unique effects of parental and community characteristics and their interactions independently. For each equation, the raw regression weight is presented in the first column and the standardized weight in the second. The equations with the raw regression weights are useful because the intercept represents the mean age for the life-history trait, when values for all of the predictors are 0. Ages for these traits can then be estimated by multiplying the raw weight with the variable code and adding this to the intercept value. For the first equation, time with father was the only significant predictor ($p < .05$). On the basis of the associated raw regression weight (i.e., .15), women who reported always spending time with their father were estimated to begin menarche .6 years (.15 × 4) later than women who reported never spending time with their father, that is, at 13.13 years for the former and 12.53 years for the latter. The two other equations indicated that as levels of community income increased, ages at first intercourse and first childbirth were delayed ($ps < .05$). High levels of parent–child conflict were associated with earlier age at first intercourse, whereas more time with father was associated with later age at first childbirth ($ps < .05$).

Community Interactions

Our use of retrospective estimates of community wealth was rather unique and has not been tested for concurrent and predictive validity. Nonetheless, examination of Table 1 shows that this measure was correlated with other items designed to assess participant's financial and family background and correlated with these other variables in ways consistent with expectations; for instance, estimates of community wealth were negatively correlated with parental reliance on government assistance ($r = -.29$) and positively correlated with mother's years of education ($r = .35$). These relations provide preliminary support for the validity of our community wealth measure and the use of this measure in the following analyses.

To test the hypothesis that parents increase their investment in children in wealthier and thus more competitive social environments and focus this investment in part on delaying their children's reproductive debut, we added three interaction terms to each of the three equations shown in Table 2: Community Income × Time With Father, Community Income × Talk of College, and Community Income × Parent–Child Conflict. These interactions were chosen because they represent participants' report of their relationship with their parents. Of the three interactions and among the three equations, only Community Income × Time With Father was significant for age at first childbirth ($b = .48$), $t(182) = 2.33$, $p < .05$.

To facilitate the plotting of regression slopes that depict the linear relation between time with father and age of first childbirth across levels of community income, we reran the equation by using only these two variables and their interaction (Whisman & McClelland, 2005); the results are the same for the full equation and this truncated equation. Following procedures described by Whisman and McClelland, these relations are show in Figure 1. Inspection of the figure shows a clear pattern of increasing slopes relating time with father and age at first childbirth ($b = .61$), $t(245) = 3.43$, $p < .001$, but only the slope for community income (3) differed significantly from 0 ($p < .0001$). To further test the validity of this significant interaction, we randomly split the entire sample and examined the interaction coefficients on age at first childbirth for each half of the sample. A significant Time With

Table 1
Mean Ages and Correlations Among Life-History Traits, and Community and Family Background

Variable	%	*M*	*SD*	Correlations									
				1	2	3	4	5	6	7	8	9	10
1. Age of menarche		12.53	1.78	—									
2. Age of first sex		16.10	2.76	.15**	—								
3. Age at first childbirth		19.46	4.00	.12**	.42**	—							
4. Time with father		2.27	1.40	.04	.17**	.17**	—						
5. Government assistance	33			−.01	−.18**	−.18**	−.31**	—					
6. Mother's education		12.54	2.93	−.03	.11**	.23**	.20**	−.32**	—				
7. Talk of college	71			−.07	.16**	.11**	.27**	−.23**	.31**	—			
8. Parent–child conflict		1.68	1.04	−.01	−.16**	−.04	−.09**	.04	.04	−.08	—		
9. Number of siblings		2.85	2.03	.08	−.06	−.07	−.12**	.16**	−.24**	−.21**	−.03	—	
10. Community wealth		1.35	1.06	−.02	.14*	.20*	.22**	−.29**	.35**	.25**	.09**	−.16**	—

Note. Time with father was rated on a 5-point scale, ranging from 0 (*never*) to 4 (*always*); government assistance is for family of origin and was coded 0 (no assistance) or 1 (assistance); talk of college was coded 0 (no) or 1 (yes); parent–child conflict was rated on a 5-point scale, ranging from 0 (*never*) to 4 (*always*); community income was during childhood and was coded on a 0 (<$20K) to 3 (>$60K) scale in 20K increments.
* $p < .10$. ** $p < .05$.

Table 2
Independent Relations Between Background and Life-History Development

	Life-history traits								
	Age at menarche			Age at first intercourse			Age at first childbirth		
Predictors	*b*	β	*t*	*b*	β	*t*	*b*	β	*t*
Intercept	12.53	.00	22.92**	15.80	.00	18.44**	17.18	.00	9.00**
Community income	−0.01	−.01	< 1.00	0.34	.13	2.22**	0.82	.19	2.46**
Time with father	0.15	.11	2.03**	0.18	.09	1.60	0.42	.15	2.01**
Government assistance	−0.06	−.01	< 1.00	−0.56	−.10	−1.68*	−0.87	−.10	−1.30
Mother's education	−0.01	−.02	< 1.00	0.00	.00	< 1.00	0.14	.08	< 1.00
Talk of college	−0.44	−.11	−1.84*	0.50	.08	1.35	−0.56	−.07	< 1.00
Parent–child conflict	0.04	.02	< 1.00	−0.35	−.13	−2.42**	−0.13	−.03	< 1.00
Number of siblings	0.05	.05	< 1.00	0.04	.03	< 1.00	0.03	.01	< 1.00

Note. *b* is the unstandardized raw regression weight and β the standardized ($M = 0$, $SD = 1$) weight. For the unstandardized equations, the intercept is the estimated age when the predictor variables are set at 0 (see text for estimating the age using values of the predictor variables). Time with father was rated on a 5-point scale, ranging from 0 (*never*) to 4 (*always*); government assistance is for family of origin and was coded 0 (no assistance) or 1 (assistance); talk of college was coded 0 (no) or 1 (yes); parent–child conflict was rated on a 5-point scale, ranging from 0 (*never*) to 4 (*always*); community income was during childhood and was coded on a 0 (<$20K) to 3 (>$60K) scale in 20K increments.
* $p < .10$. ** $p < .05$.

Father × Community Income interaction was found across both halves of the sample (*p*s < .05).

Parental Investment

Finally, we sought to test the prediction that parental investment in their children's ability to compete socially influences the length of the reproductive delay, that is, age of first childbirth. We focused on age at first childbirth, because this trait signifies the transition from the period devoted to the accrual of reproductive potential to the period devoted to the expenditure of this potential on parental responsibilities. Moreover, age at first reproduction is more sensitive to unique environmental effects than other life-history traits that have been assessed (e.g., menarche) and is a strong predictor of lifetime reproduction (i.e., number of

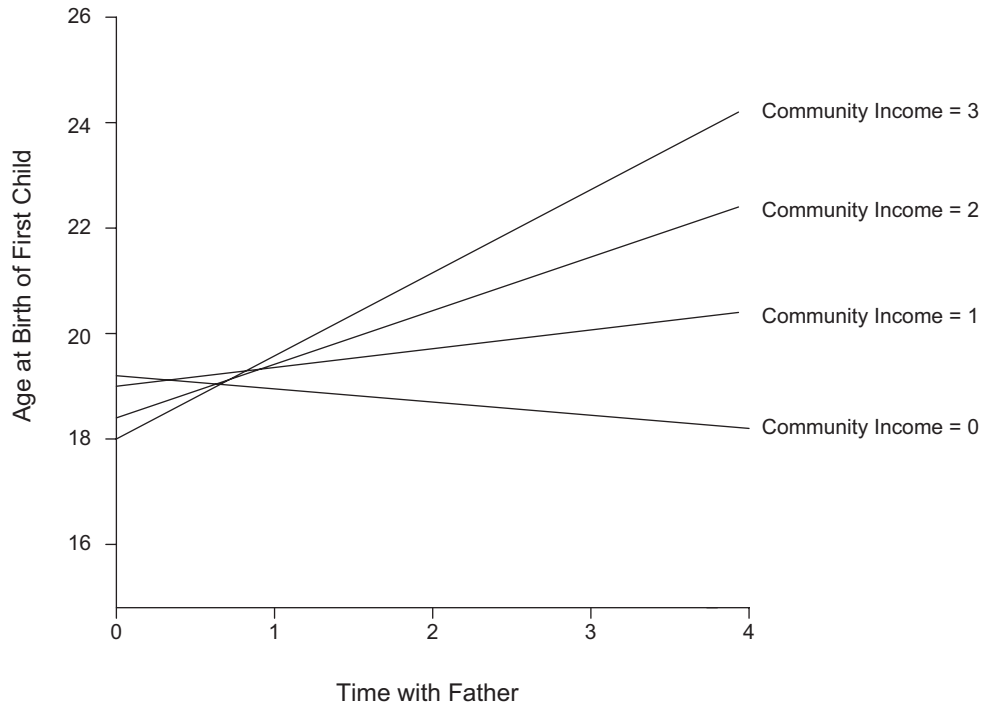

Figure 1. Age of first reproduction and time with father across levels of community income. Time with father was rated on a 5-point scale, ranging from 0 (*never*) to 4 (*always*); community income during childhood was coded on a 0 (<$20K) to 3 (>$60K) scale in 20K increments. The slopes of the lines represent the linear relation between time with father and age of first reproduction across estimated levels of community income during childhood.

children; Kirk et al., 2001). Unfortunately, our data do not allow for a direct test of our hypothesis. We can, however, use participants' adult education and financial history as a measure of their social competitiveness, because these are standard indicators of SES. We make the assumption that achieved social status reflects multiple influences, including ability to benefit from schooling (e.g., intelligence) and parental investment in and encouragement of education (Blau & Duncan, 1967; Kaplan, Lancaster, & Anderson, 1998) and, thus, reflects in part earlier (during childhood) investment in long-term competencies.

We hypothesized that participants' adult social status mediated the relation between the parental and community background (predictor) variables and age at first childbirth (outcome). To test this hypothesis, we needed to demonstrate that the parental and community background variables significantly predicted participants' age at first childbirth and adult social status; these analyses were restricted to the 343 participants who had at least one child. We then needed to demonstrate that adult social status significantly predicted age at first childbirth, and the magnitude of the relation between the background variables and the age at first childbirth variable was significantly reduced after controlling for social status. Regarding the former, neither family conflict nor number of siblings was significantly related to age at childbirth (ps $> .10$).

Using simultaneous regression equations to control for correlations among the predictors, we found that the significant background correlates (ps $< .01$) of age at first childbirth were father involvement ($\beta = .17$), mother's education ($\beta = .23$), educational encouragement ($\beta = .11$, $p = .04$), government assistance (coded 0 for no assistance; $\beta = -.18$), and community income ($\beta = .20$). Among these variables, each was significantly (ps $< .01$) related to adult education level; specifically, the β coefficients were .25 ($SE = .05$) for father involvement, .39 ($SE = .02$) for mother's education, .29 ($SE = .14$) for educational encouragement, $-.41$ ($SE = .14$) for government assistance, and .37 ($SE = .07$) for community income. Likewise, adult education level significantly predicted age at first childbirth ($\beta = .41$, $SE = .14$, $p < .01$). As predicted, and after controlling for adult educational level, the magnitude of the relation between the background variables and age at first childbirth became insignificant (ps $> .05$) for father involvement ($\beta = .09$), educational encouragement ($\beta = .02$), government assistance ($\beta = -.06$), and community income ($\beta = .09$). The magnitude of the relation for mother's education remained significant ($\beta = .11$, $p = .04$); however, as with the other variables, the reduction in magnitude was significant (ps $< .05$; except educational expectation, $p < .10$) according to the Sobel test of mediational effects (Baron & Kenny, 1986). In other words, the results are consistent with the prediction that investment in children's adult SES may serve as a cue that mediates the relation between the parental investment characteristics measured in this study and women's long-term reproductive development.

Discussion

The current article echoes the importance of family background on children's long-term economic and social success found in classic (Blau & Duncan, 1967) and more recent (Feinstein & Bynner, 2004) studies, but it also offers suggestive evidence for a direct effect of parenting quality on core elements of biological development. From a human life-history perspective, the family and wider kin group (Belsky et al., 1991; Burgess & Drais, 1999; Geary & Flinn, 2001), the community (Bronfenbrenner, 1986; Wilson & Daly, 1997), and peers (J. R. Harris, 1995) represent the primary social contexts in which development occurs and are predicted to contribute to variation in the length of the developmental period, within the confines of any heritable constraints and evolved patterns of normal child development (Stearns & Koella, 1986). In keeping with prospective studies (Ellis, 2004; Ellis, McFadyen-Ketchum, Dodge, Pettit, & Bates, 1999), participants in our study who reported higher levels of paternal involvement tended to experience later ages at menarche, first sexual activity, and reproduction. Also in keeping with aspects of previous theory and research, especially that of Belsky et al. (1991), is the finding that family conflict is related to reproductive behavior; specifically, an earlier age at first sexual intercourse for our participants. Our finding that higher reported levels of childhood community income was associated with later age at first sexual activity and later age at first childbirth were found by Wilson and Daly (1997) and support theory and research on the importance of community context for influencing aspects of human development (Bronfenbrenner, 1986; Caspi, Taylor, Moffitt, & Plomin, 2000). The consistency of our basic results and previous findings, combined with general accuracy of recalled age of menarche and the almost certain accuracy of recalled age of first childbirth and age of first sexual intercourse, suggest the retrospective reports used in this study are likely to be reasonably veridical, and, thus, they make our more novel predictions and results worth consideration.

According to the reproductive potential model of the evolution of human ontogeny (Alexander, 1987; Geary, 2002; Vigil et al., 2005), an extension of the prereproductive segment of development (i.e., childhood) coevolved with increasing levels of parental investment, especially paternal investment that focused on social-reproductive competencies (Geary, 2000). One function of this investment and delayed reproduction is to provide children the opportunity to add to their social competitiveness before competing for mates and to increase their ability to invest in their own children during adulthood. However, because prolonged development carries the biological costs of risk of death before reproducing, a potentially shorter reproductive life span, and potential for lower fertility in women, the length of the developmental period should respond to proximate cues to whether the benefits of improving competitiveness by reproductive delay outweigh the costs of delay. These ontogenetic trade-offs were first suggested by Alexander (1987) and Geary (2002) and recently elaborated for predicting reproductive debut by Vigil et al. (2005; see also

Ellis, 2004). Cues to enhanced opportunity to improve social competitiveness should result in delayed reproduction, whereas cues associated with reduced opportunity or ability to improve competitiveness should result in early reproduction.

In this sense, the magnitude of the relation between parental investment, especially paternal investment, and timing of reproductive debut should be moderated by the level of social competition found in the children's local community, as this represents the most likely analogue of social competition that the children will face as adults. In keeping with this prediction and the counterintuitive findings of J. M. Harris and Marmer (1996), we found that age of first reproduction was predicted by an interaction between reported childhood community income and time spent with father. As community income increased, the importance of time spent with father as a predictor of age of first reproduction increased. A corollary feature of our model is that parents may adjust investment according to the social competitiveness of their children's peers, and this investment may mediate the relation between family background and pattern of reproductive development. To test this hypothesis, we used participants' adult social status as a proxy for social competitiveness and assumed that this outcome was related, at least in part, to participants' earlier ability and opportunity to enhance these qualities during childhood. Delayed childbirth and higher levels of parental income, education, and investment were all associated with higher adult social status. After controlling for social status, each relation between the parental background variables and age at first childbirth were significantly reduced in magnitude, in most cases to nonsignificance entirely.

Still, these results are of course only preliminary given the self-report source and retrospective nature of our measures—methods that could have affected our findings in a number of ways, including the potential for a social desirability bias (e.g., Loving & Agnew, 2001) and recall-bias effects (e.g., Widom, Raphael, & DuMont, 2004). Another potential limitation resides in the use of a relatively restricted sample (e.g., low-income women), as this may constrain the generalizability of our results. In addition, our use of data collected concurrently does not allow for a direct test of the causal relations proposed in the model, and thus, future studies would benefit from a prospective examination of children living under diverse cultural and economic contexts. The current findings are nonetheless consistent with our general hypothesis: Parenting and family indirectly influence life-history development through their effect on children's opportunities to enhance the social component of reproductive potential. In our study, this effect was limited to actual reproduction and not other (e.g., physiological) aspects of development and sexual behaviors. Among the three life-history traits examined in the current study, age at childbirth is substantially less heritable than the remaining two (e.g., de Bruin et al., 2001; Kirk et al., 2001) and presumably more open to experiential modification (but see evidence of intergenerational heritability of risk-taking behaviors; Comings, Muhleman, Johnson, & MacMurray, 2002). In any event, our results are only preliminary and should be interpreted with caution, but we hope that they may also point the way for different ways of conceptualizing and empirically studying parental investment and reproductive development and the peer and wider contexts in which these occur.

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Received March 21, 2005
Revision received October 3, 2005
Accepted October 4, 2005 ■