

Neighborhood Context and the Transition to Sexual Activity among Young Black Women*

Karin L. Brewster

Department of Sociology and Center for the Study of Population
Florida State University
Tallahassee, FL 32306-4063

Previous studies report that neighborhood characteristics influence pregnancy and childbearing risk among African-American adolescent women. These studies, however, leave unidentified the effects of many neighborhood properties on the proximate determinants of nonmarital fertility. In this study I examine the effects of neighborhood characteristics on the risk of nonmarital first intercourse and on contraceptive use among black female adolescents. The results suggest that neighborhood socioeconomic status, female employment and marital dissolution rates, and peers' departure from mainstream lifecourse trajectories influence young black women's sexual and contraceptive behavior. The effects of female employment and socioeconomic status are greater for teens in urban neighborhoods than for teens living elsewhere.

This study tests a multilevel model of neighborhood effects on the sexual and contraceptive behavior of African-American adolescent women. Recent work suggests that neighborhood social and economic characteristics influence the risk of nonmarital intercourse risk and the use of contraceptives among white teens (Brewster, Billy, and Grady 1993), and help to explain race differences in adolescent sexual activity (Brewster 1994). Indeed, a growing body of work shows that neighborhood context has important implications for a number of behaviors among teens of both races, including coital frequency, nonmarital pregnancy risk, childbearing, and school leaving (Billy, Brewster, and Grady 1994; Brooks-Gunn et al. 1993; Crane 1991; Hogan and Kitagawa 1985). Most prior multilevel work addressing black teens, however, tests a limited number of neighborhood characteristics; no investigator has made a comprehensive examination of neighborhood effects on the antecedents of adolescent childbearing among black women. In the present study, I extend the adolescent fertility literature by exploring the impact of a wide range of neighborhood characteristics on the risk of nonmarital intercourse and on the use of contraceptives at sexual initiation among black adolescent women.¹

* This research has been supported in part by a National Research Service Award, T32 HD07186, to the Carolina Population Center at the University of North Carolina-Chapel Hill from the Center for Population Research, National Institute for Child Health and Human Development. I am grateful to John Billy, Mark Hayward, Charles Hirschman, and Ronald Rindfuss for their comments on earlier drafts, and to Cathy Cross for her help with the factor analysis. A previous version of this paper was presented at the 1991 meeting of the Population Association of America, held in Washington, DC.

CONCEPTUAL MODEL

The contextual model tested here is informed by recent work framing early childbearing and its proximate behavioral determinants as components of an "alternative life course strategy" that has developed in response to the social, economic, and cultural constraints facing minority teens in poverty-stricken communities (Burton 1990; Geronimus 1987; Hamburg 1986). Underlying this formulation of adolescent fertility is the recognition that the nature of the life course, and the prescriptive timetables that underlie life course trajectories, vary across social contexts. Teens in depressed communities may have markedly different expectations for their education, work, and family lives than do teens living in more economically and socially advantaged areas. For young women who daily face economic uncertainties, and who live in neighborhoods characterized by high rates of female-headed households, joblessness, and curtailed educational careers, sexual activity and pregnancy are attainable markers of adult status (Anderson 1989; Geronimus 1987; Ladner 1977) that proffer a sense of achievement and heightened self-esteem (Williams 1991). Teens living in more advantaged communities are likely to have more frequent contact with adults who exemplify the behaviors and values associated with conventional pathways to adulthood, and to enjoy greater access to the economic and social resources necessary for educational and occupational attainment. These young women would seem likely to view early parenthood not as a marker of adult status but as an obstacle to attaining desired adult roles and statuses.

Implicit in this conceptualization of the life course and of adolescent behavior is the assumption that neighborhood characteristics engender a social context which influences the individual perceptions, attitudes, and values that ultimately guide behavior (Brewster et al. 1993). Figure 1 diagrams the mechanisms through which neighborhood characteristics influence individual behavior. Neighborhood context is posited to have two defining components, the prevailing normative environment and the local opportunity structure. The local opportunity structure comprises the availability of legitimate means to the attainment of desired adult statuses, thereby suggesting to teens the potential opportunity costs attending the possible consequences of unprotected intercourse. The neighborhood's normative environment is defined by two types of social norms: those which directly address the acceptability of teenage sexual activity, and those concerning the timing of childbearing in relation to school completion, employment, and marriage. The opportunity structure and the normative context are posited to affect sexual and contraceptive behavior indirectly, through their influence on the young woman's beliefs about the likely course of her adult life and therefore on her motivation or lack of motivation to avoid the possible consequences of unprotected intercourse.

This study examines the effects of the six neighborhood properties listed in the top left-hand panel of Figure 1. Neighborhood socioeconomic status indexes the quality of public services, such as schools, training programs, and recreational activities, that are likely to influence teens' perceptions of the types of opportunities open to them. The neighborhood's economic character also may influence teens' beliefs about the value of adherence to conventional or mainstream prescriptions regarding work and education. Wilson (1987, 1991) suggests, for example, that teens' exposure to adults who exemplify the potential rewards attached to high school or college completion and regular employment varies with neighborhood socioeconomic status.

Adults' labor market and family experiences also may delineate the potential opportunity costs attached to unprotected intercourse and the local norms delimiting the accepted pathways to adult status. High rates of female labor force participation, particularly in high-wage jobs, not only raise the opportunity costs attending the consequences of unprotected sexual activity but also may encourage a positive orientation

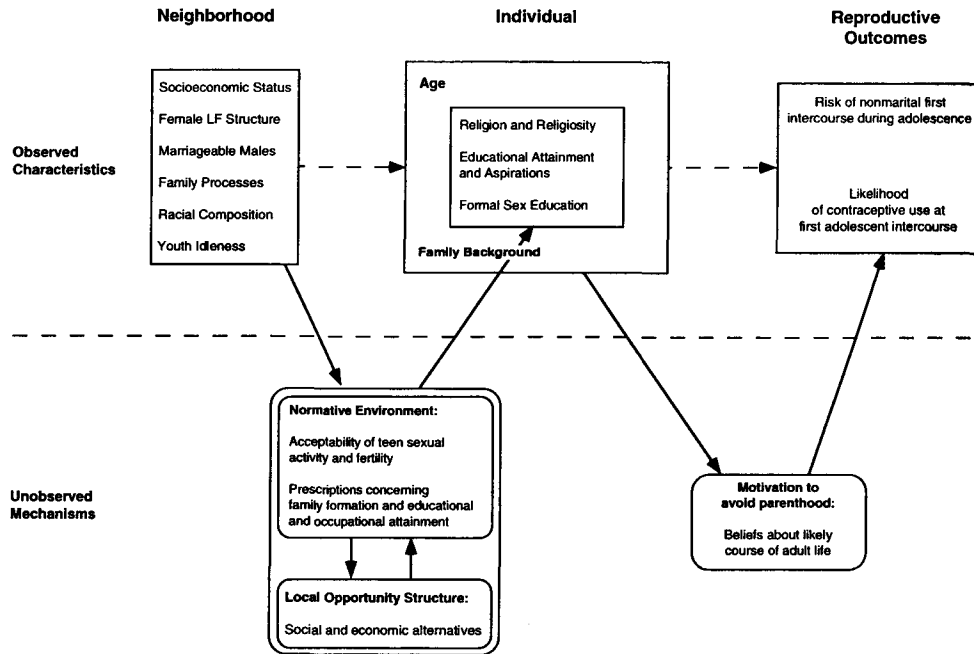


Figure 1. Conceptual Model of Neighborhood Effects on Adolescent Women's Sexual and Contraceptive Behavior

toward employment (Freshnock and Cutright 1979; Wilson 1987). Where marital dissolution and female headship rates are high, teens may conclude that deviation from family sequencing norms generally entails few negative consequences. The availability of “marriageable” men, a product of the high rates of incarceration, mortality, and unemployment for black males in the primary marriage years (Staples 1985; Wilson 1987), also may influence sexual decisions. Young black women, faced with limited prospects for marriage, may view nonmarital parenthood as a viable alternative to remaining single and childless (Burton 1990), thus increasing the likelihood of unprotected intercourse.

Just as local adults' experiences are likely to enter into the calculus of costs and benefits that teens associate with early parenthood, the behaviors of other neighborhood teens may come into play. It is well documented that the peer group can exert considerable pressure on teens to engage in behaviors they might not adopt otherwise. Ethnographic and anecdotal evidence suggests that in communities where opportunities for social and economic advancement are limited, teens of both sexes often experience considerable pressure to “prove” their adulthood by nonconventional means, including sexual activity and parenthood (Anderson 1989; Dash 1989; MacLeod 1987).

Neighborhood racial composition may index isolation from job opportunities and social networks that encourage self-efficacy and commitment to mainstream behavior patterns (Brooks-Gunn et al. 1993; Wilson 1987, 1991). Racial composition also may index the pool of acceptable sexual partners (Brewster et al. 1993). Both arguments suggest that among black teens, intercourse risk will increase as the proportion of the neighborhood's population that is black increases.

I treat these aspects of the neighborhood context as exogenous influences that operate indirectly through the more proximate individual-level determinants of fertility behavior. Individual attributes and family background are posited to operate in much the same way as

contextual factors: through their impact on the individual's beliefs about the likely course of her adult life, and accordingly on her motivation to avoid the possible consequences of unprotected intercourse (Moore, Simms, and Betsey 1986). Because individual-level variables represent more proximate influences on behavior, they may mediate or condition exogenous community influences (Entwisle, Casterline, and Sayed 1989; Pullum, Billy, and Brewster 1987).

METHODS

Data and Sample

The data supporting this research derive from two sources. The individual-level data are taken from Cycle III of the National Survey of Family Growth (NSFG-III), conducted in 1982 (Bachrach, Mosher, and Shimizu 1985). The analyses are based on information obtained from the 698 African-American respondents age 20 and younger who had reached menarche and who, if nonvirgin, reported having first intercourse after menarche and their twelfth birthday.² Information describing the neighborhoods in which these young women live, operationalized here as census tracts, derives from an aggregate-level database designed specifically for use with the NSFG-III (Billy et al. 1989). The sample members are distributed across 283 census tracts, or their equivalents in nontraced counties. More detailed information on the sample is available in Brewster (1994).

Statistical Models

To capture the dynamic nature of the transition to first intercourse and to minimize bias introduced by right-censoring, I rely on a multivariate hazards approach. I employ a discrete-time specification of intercourse risk, with time defined in one-year intervals. The model is expressed as

$$h(t_i) | x(t_i) = \exp [X(t_i) + \alpha t_i] \quad (1)$$

where $h(t_i)$ represents the risk of experiencing an event at age i , given that the individual has not experienced the event at an earlier age; x is a vector of parameters corresponding to the covariates, $X(t_i)$, including a constant; and α represents the effect of being in a given age interval, i .

I estimate this model for three outcomes: the overall risk of experiencing first nonmarital intercourse during adolescence, the risk of experiencing a contracepted first intercourse, and the risk of experiencing a noncontracepted first intercourse. In each of the two contraceptive state-specific models, intercourse in the alternate state is treated as an unobserved competing risk; therefore the coefficients in these two models can be compared to determine the influence of the covariates on contraceptive use at first intercourse (Brewster et al. 1993; Forste and Heaton 1988).

To support the analysis, I constructed an event history file from the individual-level records. Each respondent contributed to the file one record for each year of exposure to the risk of nonmarital first intercourse; total years at risk were determined by her age at interview, her age at first intercourse if she was sexually active, and her age at first marriage if she had ever been married. I used this information in conjunction with items concerning first contraceptive use to construct failure indicators that represent the timing of nonmarital first intercourse and the timing of first intercourse in a contracepted or noncontracepted state. The final analysis file comprises 3,253 observations including 444 of first intercourse (166 with some use of contraception and 278 with none).

Independent Variables

The aggregate-level database contains multiple indicators of four of the neighborhood properties tested here: socioeconomic status, female labor force conditions, availability of partners, and family processes. High interitem correlations precluded specifying a model that comprised multiple measures of these neighborhood characteristics. Because there were no theoretical grounds for choosing among the available indicators of these four neighborhood properties, I used factor analysis and a series of preliminary models to identify the most appropriate measures.³ The selected measures and the indicators of racial composition and youth idleness are defined in Table 1. Table 1 also defines the individual-level covariates, and provides descriptive statistics for both sets of variables.

RESULTS

Main Effects

In keeping with the causal nature of the conceptual model, the analysis examines the total effects of neighborhood characteristics and observes neighborhood effects net of controls for individual attributes and family background.⁴ I present the results in Table 2. Column 1 identifies the total neighborhood effects on the risk of adolescent nonmarital intercourse. Columns 2 and 3 present the contraceptive state-specific versions of this model, representing respectively the risk of having a contracepted or a noncontracepted first intercourse relative to the risk of remaining a virgin. Because these are competing risk models, one can compare the state-specific coefficients to determine the influence of the covariates on contraceptive use at first intercourse. Cross-model t-tests provide a formal means of comparison; t-statistics for the total effects model are presented in Column 4.

The results in Column 1 suggest that three aspects of the local social context—neighborhood socioeconomic status, youth idleness, and the rate of female full-time employment—influence the transition to first intercourse among black adolescent women. The effect of the proportion of adults in professional and managerial occupations is consistent with the expected impact of socioeconomic status: as the proportion of adults in white-collar occupations increases, the risk of nonmarital first intercourse during the adolescent years decreases. Likewise, the positive effect on intercourse risk of the proportion of adolescents who are school and labor force dropouts is consistent with the inclusion of youth idleness as an indicator of prevailing peer group norms: young women are more likely to engage in nonmarital intercourse when they live in neighborhoods where teen behaviors in general tend to depart from conventional life course trajectories.

Full-time female employment has an unexpected positive association with the risk of intercourse. Additional analyses suggest that its effect is considerably stronger when the negative influence of neighborhood SES is controlled. In addition, although other measures of female labor force participation, including the female employment and unemployment rates and an indicator of female-typed job opportunities, exercise significant baseline effects in the expected direction, none does so when neighborhood socioeconomic status is held constant. These results suggest that full-time employment may be capturing variation in adults' ability to supervise adolescent behavior rather than labor market effects. Alternatively, adults' labor market experiences may suggest to minority teens that the possible consequences of sexual activity will not stymie occupational aspirations or exact significant costs in terms of later earnings. This perception is likely correct: an adolescent birth leads to a long-term reduction in wages for white women, but it has little impact on the potential wage rates of black women (Lundberg and Plotnick 1990).

The t-statistics in Column 4 show that marital dissolution is associated with

Table 1. Contextual and Individual Covariates, and Descriptive Statistics:
African-American Adolescent Females, 1982

Variables	Mean	Standard Deviation
Contextual Covariates		
Socioeconomic status:		
Proportion of population age 15 and over employed in white-collar occupations	.44	.15
Female labor force participation:		
Proportion of female labor force participants employed full-time	.73	.08
Women's family-formation experiences:		
Proportion of female population age 15 and over separated or divorced	.15	.06
"Marriageable males":		
Ratio of single males ages 18-24 to single females ages 15-19	1.08	.41
Racial composition:		
Proportion of population that is African-American	.61	.30
Youth idleness:		
Proportion of population ages 16 to 19 who are school dropouts and not in civilian labor force or Armed Services	.08	.07
Individual Covariates		
Age at first intercourse ^a	15.14	1.64
Not living with both parents at age 14	.49	.50
Educational status at interview at or above expected grade level for age ^b	.72	.45
Mother's educational attainment		
Fewer than 12 years	.41	.49
12 years	.38	.49
More than 12 years (reference category)	—	—
Religious affiliation		
Catholic	.09	.28
Protestant fundamentalist	.67	.47
Other mainstream (reference category)	—	—
None	.06	.24
Birth control instruction before first intercourse ^c	.32	.47
N		698
Number of Census Tracts and Tract Equivalents		283

^a In the multivariate analysis, age is measured by a set of dummy variables representing ages 12 to 19, with age 19 as the reference category.

^b The NSFG-III provides information only on years of school completed at interview, thus truncating attainment for those still in school and introducing the possibility of endogeneity for those having a nonmarital birth before the interview. The binary indicator used here, constructed following Dawson (1986), is based on median years completed for each age group.

^c Time-varying indicator is based on age at first intercourse and age at first formal instruction in birth control.

contraceptive use at first intercourse. Although this covariate does not affect the overall risk of first intercourse, a comparison of the state-specific models shows that it strongly differentiates contraceptive users from nonusers. The positive effect of this factor in the

Table 2. Hazards Coefficients for Models of the Transition to Nonmarital Intercourse: African-American Adolescent Females, 1982

	1	2	3	4	5	6	7	8
	First Intercourse	Contracepted	Non-Contracepted	t-statistic 2 vs. 3	First Intercourse	Contracepted	Non-Contracepted	t-statistic 6 vs. 7
Intercept	-1.55*	-1.13	-3.09**	.28	-1.73**	-1.82	-2.96**	.88
Year of Age								
12	-2.60***	-3.37***	-1.92***	-1.71	-2.93***	-3.85***	-2.39***	-1.67
13	-1.68***	-2.42***	-1.11*	-1.82	-2.00***	-2.53***	-1.57**	-1.29
14	-1.03**	-1.58**	-.54	-.51	-1.33**	-1.66**	-.98	-.97
15	-.60	-1.08	-.16	-1.34	-.87*	-1.14*	-.55	-.84
16	-.32	-.74	.11	-1.24	-.49	-.76	-.18	-.84
17	-.16	-.19	-.09	-.29	-.15	.17	-.27	.61
18	.06	.28	.19	.11	.11	.44	.09	.42
Neighborhood Characteristics								
Percent white-collar	-.72*	-.64	-.86*	.29	-.39	-.44	-.45	.09
Full-time female labor force	1.24*	.42	1.94	1.25	-1.37	.62	1.87*	-1.03
Marital dissolution	.89	-2.19	2.79*	-2.51**	-.51	-2.59	.81	-1.71
Teen idleness	1.96*	2.01	1.88	.08	1.55	1.64	1.45	.11
Proportion black	-.29	-.46	-.20	-.58	-.15	-.50	-.04	-1.02
Sex ratio	-.01	.09	-.16	1.13	-.01	.07	-.09	-.74
Individual Characteristics								
Mother's education								
Less than high school					.40***	.25	.46**	-.95
College					-.20	-.13	-.26	.44
Nonintact family					.47***	.44**	.50***	-.32
Average or better education					-.21*	.46*	-.49***	3.83***
Religion								
Catholic					.29	.25	.34	-.20
Protestant fundamentalist					.06	.03	.08	-.18
No affiliation					.72***	.01	.95***	1.81
Birth control instruction					-.06	-.13	.03	-.68
Log-Likelihood	-1465.54	-683.65	-1056.76		-1430.11	-675.90	-1017.34	
Person-Years	3,156	3,156		3,156	3,156	3,156	3,156	

* p ≤ .05; ** p ≤ .01; *** p ≤ .001.

noncontracepted model relative to its negative, albeit nonsignificant, effect in the contracepted model suggests that the likelihood of contraceptive use at first intercourse decreases as the divorce rate increases.

The coefficient estimates in Columns 5 through 7 identify net neighborhood effects, controlling for individual attributes and family background. Comparison of these coefficients with those in Columns 1 through 3 reveals that only one neighborhood variable, full-time female employment, has significant effects on either outcome in the full multilevel specification. This attenuation of the neighborhood coefficients is consistent with the assumption of indirect effects, as is the stability of the individual-level coefficients across model specifications.⁵ Despite the paucity of significant net contextual effects, however, log-likelihood tests show that the multilevel specification provides a better fit to the data than does the individual-level specification.

Interaction Effects

Crane (1991) presents evidence suggesting that the impact of neighborhood socioeconomic status on dropping out and on childbearing is considerably greater for teens living in the largest cities than for teens in smaller cities or outside urban areas altogether. To determine whether the effects of other aspects of the neighborhood context are conditioned by urban location, I tested the interaction of each contextual covariate with a binary variable indicating whether the neighborhood lies within the boundaries of a census-defined urbanized area. Multiplicative terms representing the posited interactions were entered into the full multilevel model one at a time, to reduce the potential for multicollinearity, along with a main effect term for urban location; I determined the significance of the interactions using likelihood-ratio tests for the comparison of nested models (Allison 1984).

The results suggest that the effect on coital risk of the rate of full-time employment among neighborhood women is conditioned by residence in an urban area ($\chi^2 = 9.232$, 2 df, $p < .01$). Decomposition of the interaction equation reveals that the effect of this aspect of the neighborhood environment is markedly higher for young women living in an urbanized area ($b = 3.364$) than for their peers in nonurbanized areas ($b = 0.619$). The interaction between neighborhood SES and urban residence falls just short of conventional levels of statistical significance ($\chi^2 = 5.582$, 2 df, $p < .10$); it is worth noting, however, because the estimated coefficients in the interaction equation suggest results similar to those reported by Crane (1991). For young women living within the boundaries of an urbanized area, neighborhood socioeconomic status has a negative impact on intercourse risk ($b = -1.266$); for their counterparts living in nonurban areas, however, the effect of socioeconomic status is positive and considerably weaker ($b = 0.127$).

Finally, I assess the cross-level interactions of selected neighborhood characteristics with the individual's age and family socioeconomic status. Because age brings greater cognitive maturity (Cvetkovich and Grote 1983) as well as additional years of secondary schooling, older teens may be better able to assess the opportunity costs of teenage motherhood on the basis of local social and economic conditions. Therefore the neighborhood's socioeconomic status and local employment conditions may exercise a greater influence on older adolescents' sexual behavior. Family socioeconomic status is a key gauge of the social and economic resources to which teens have access; thus it may condition the effects of the neighborhood environment, particularly the impact of neighborhood socioeconomic status. For teens who can rely on familial resources, the neighborhood is unlikely to represent an important resource stock; for teens from less

advantaged backgrounds, however, the neighborhood may provide resources that would be unavailable otherwise.

To test these expectations, I reran the full multilevel model with multiplicative terms representing the interactions of age with neighborhood socioeconomic status and female labor force participation, and of mother's education and living arrangements with neighborhood socioeconomic status. Again I evaluated the change in model fit using likelihood-ratio tests; in this case, however, the results provided no evidence to support any of the posited interactions.

SUMMARY AND DISCUSSION

Both ethnographic and anecdotal evidence have long suggested the importance of structural constraints in shaping the behaviors of black teens living in inner-city neighborhoods, particularly their propensity to engage in sexual activity early in adolescence and their disproportionately high rates of nonmarital childbearing. A growing number of quantitative studies confirm the association of the neighborhood environment with fertility-related behaviors among black teens (Billy et al. 1994; Brewster 1994; Brooks-Gunn et al. 1993; Crane, 1991; Hogan, Astone, and Kitagawa 1985; Hogan and Kitagawa, 1985). This investigation extends previous work by exploring the effects of an array of specific neighborhood characteristics on two aspects of fertility: nonmarital intercourse risk during adolescence and contraceptive use at sexual initiation.

The results provide further evidence of the importance of the neighborhood context in shaping the fertility-related behaviors of African-American adolescent women. Neighborhood socioeconomic status, adult women's labor force behavior, and the drift of neighborhood youths from conventional life course trajectories all play roles in determining the timing of first intercourse; the marital and family-building experiences of neighborhood women evidence a significant association with contraceptive use. Not all of the community characteristics posited to influence sexual and contraceptive behavior produced statistically significant results in the multivariate analyses; even so, the findings accord well with the argument that the neighborhood context is important in shaping the motivation to avoid the possible consequences of nonmarital sexual activity.

The analyses uncovered no evidence that neighborhood effects are conditioned by individual age or socioeconomic background. The results do suggest, however, that the effects on intercourse risk of economic resources and adult women's employment are somewhat more pronounced among young women living in urban neighborhoods than among their nonurban peers. Although the operationalization of urban residence used here is less precise than that used by Crane (1991), these findings are consistent with his observation that neighborhood effects on teen behavior are substantially greater among teens living in large urban ghettos.

The place-differentiated effects of socioeconomic status and full-time female employment, together with the effects of youth drift and marital dissolution, present a picture of contextual influences on the transition to sexual activity which agrees in many ways with Wilson's (1987, 1991) discussions of concentration effects and social isolation. Wilson argues that residence in inner-city neighborhoods characterized by poverty, racial segregation, and a concentration of persons disattached from mainstream social institutions leads to lowered expectations about the likelihood of achieving societally approved goals, and ultimately to a lowered sense of collective efficacy. Such settings would appear to offer little motivation to avoid early motherhood and perhaps, because other routes to adult status are unavailable, even to provide positive inducement to early childbearing—a picture that is largely upheld by the findings presented here. Young black women living in economically

advantaged and socially integrated neighborhoods are significantly more likely than their peers in poor, anomic communities to delay the initiation of intercourse and to use contraceptives at first intercourse.

These results support the contention that the nature of the social context is reflected in the calculus of costs and benefits that black teens associate with nonmarital parenthood, and consequently in their sexual and contraceptive behaviors. Prior studies have drawn similar conclusions, despite differences in measurement, model specification, and outcome variables. It is encouraging that neighborhood indicators exhibit roughly comparable effects across studies. Nevertheless, our understanding of contextual effects on adolescent behavior is far from complete. The attitudinal links between contextual characteristics and individual behavior, and the effects of neighborhood context on other aspects of adolescent fertility, are among the issues that remain to be addressed.

NOTES

¹ Because this study aims to examine the effects of a wide range of neighborhood properties, the analysis does not include formal race comparisons. As noted in prior work with the data set used here (Billy and Moore 1992; Brewster 1994; Brewster, Billy, and Grady 1993; Grady, Klepinger, and Billy 1993), blacks and whites live not only in different places but in different types of places. Because of the lack of distributional overlap for most neighborhood properties in these data, it is difficult to distinguish race differences in the distribution of a variable from race differences in the effects of that variable. Therefore valid cross-race comparisons can be conducted for only a limited number of contextual characteristics (Brewster 1994).

² The age restriction reduces the likelihood that estimated effects are biased upward by selection processes because teens, particularly those under age 18, typically do not choose their communities of residence. In addition, because adolescents tend to have lower mobility rates than adult women (Long 1988), the age restriction mitigates the effects of my inability to control directly for migration by increasing the likelihood that the individual's address at interview represents the context influencing her sexual decisions. Even so, the lack of information on migration in the NSFG-III necessitates two assumptions: 1) that the effects of the current context are instantaneous, and 2) that the influence of the current context overrides the influence of prior contexts.

³ A detailed description of the variable selection process and the results of the factor analysis are available from the author on request.

⁴ One approach to multilevel analysis is to estimate only the net effects of contextual variables, controlling for the effects of relevant micro-level predictors (Crane 1991; Hauser 1970, 1974; Mosher and McNally 1991). Yet if structural variables operate indirectly, through the individual-level determinants of the dependent variable, this strategy will underestimate the importance of context and will prevent us from understanding how context impinges on individual behavior. Many researchers therefore advocate estimating the "total" as well as the net contextual effects (e.g., Billy et al. 1989; Blalock 1984; Entwisle et al. 1989; Hirschman and Guest 1990).

⁵ Results for the individual-level model are available from the author on request.

REFERENCES

- Allison, P.D. 1984. *Event History Analysis: Regression for Longitudinal Event Data*. Beverly Hills: Sage.
- Anderson, E. 1989. "Sex Codes and Family Life among Poor Inner City Youth." *Annals of the American Academy of Political and Social Science* 501:59-78.
- Bachrach, C.A., W. Mosher, and K. Shimizu. 1985. "The National Survey of Family Growth, Cycle III: Sample Design, Weighting, and Variance Estimation." *Vital and Health Statistics, Series 2, No. 98*. DHHS Publication (PHS) 85-1372. Washington, DC: US Government Printing Office.

- Billy, J.O.G., W. Grady, M. Hayward, T. Pullum, K. Brewster, D. E. Moore, D. Klepinger, and B. Rader. 1989. "Effects of Contextual Factors on Fertility Regulation and Fertility." Final report to the National Institute of Child Health and Human Development.
- Billy, J.O.G., K.L. Brewster, and W.R. Grady. 1994. "Contextual Effects on the Sexual Behavior of Adolescent Women." *Journal of Marriage and the Family* 56:387-404.
- Billy, J.O.G. and D.E. Moore. 1992. "A Multilevel Analysis of Marital and Nonmarital Fertility in the United States." *Social Forces* 70:977-1011.
- Blalock, H.M. 1984. "Contextual Effects Models: Theoretical and Methodological Issues." *Annual Review of Sociology* 10:353-72.
- Brewster, K.L. 1994. "Race Differences in Sexual Activity among Adolescent Women: The Role of Neighborhood Characteristics." *American Sociological Review* 59: 408-24.
- Brewster, K.L., J.O.G. Billy, and W.R. Grady. 1993. "Social Context and Adolescent Behavior: The Impact of Community on the Transition to Sexual Activity." *Social Forces* 71:713-40.
- Brooks-Gunn, J., G.J. Duncan, P.K. Klebanov, and N. Sealand. 1993. "Do Neighborhoods Influence Child and Adolescent Development?" *American Journal of Sociology* 99:353-95.
- Burton, L.M. 1990. "Teenage Childbearing as an Alternative Lifecourse Strategy in Multigeneration Black Families." *Human Nature* 1:123-43.
- Crane, J. 1991. "The Epidemic Theory of Ghettos and Neighborhood Effects on Dropping Out and Teenage Childbearing." *American Journal of Sociology* 96:1226-59.
- Cvetkovich, G. and B. Grote. 1983. "Adolescent Development and Teenage Fertility." Pp. 109-23 in *Adolescents, Sex, and Contraception*, edited by D. Byrne and W. Fisher. Hillsdale, NJ: Erlbaum.
- Dash, L. 1989. *When Children Have Children: The Urban Crisis of Teenage Childbearing*. New York: Morrow.
- Dawson, D.A. 1986. "The Effects of Sex Education 'on Adolescent Behavior." *Family Planning Perspectives* 18:162-70.
- Entwisle, B., J.B. Casterline, and H.A.-A. Sayed. 1989. "Villages as Contexts for Contraceptive Behavior in Rural Egypt." *American Sociological Review* 54:1019-34.
- Forste, R.T. and T.B. Heaton. 1988. "Initiation of Sexual Activity among Female Adolescents." *Youth and Society* 19:250-68.
- Freshnock, L. and P. Cutright. 1979. "Models of Illegitimacy: United States, 1969." *Demography* 16:37-47.
- Geronimus, A.T. 1987. "On Teenage Childbearing and Neonatal Mortality in the United States." *Population and Development Review* 13:245-79.
- Grady, W.R., D. Klepinger, and J.O.G. Billy. 1993. "The Influence of Community Characteristics on the Practice of Effective Contraception." *Family Planning Perspectives* 25:4-11.
- Hamburg, B.A. 1986. "Subsets of Adolescent Mothers: Developmental, Biomedical, and Psychosocial Issues." Pp. 115-45 in *School-Age Pregnancy and Parenthood*, edited by J. Lancaster and B. Hamburg. New York: Aldine.
- Hauser, R.M. 1970. "Context and Consex: A Cautionary Tale." *American Journal of Sociology* 75:645-64.
- . 1974. "Contextual Analysis Revisited." *Sociological Methods and Research* 2:365-74.
- Hirschman, C. and P. Guest. 1990. "Multilevel Models of Fertility Determination in Four Southeast Asian Countries: 1970 and 1980." *Demography* 27:369-96.
- Hogan, D.P., N.M. Astone, and E.M. Kitagawa. 1985. "Social and Environmental Factors Influencing Contraceptive Use among Black Adolescents." *Family Planning Perspectives* 17:165-69.
- Hogan, D.P. and E.M. Kitagawa. 1985. "The Impact of Social Status, Family Structure, and Neighborhood on the Fertility of Black Adolescents." *American Journal of Sociology* 90:825-52.
- Ladner, J. 1977. *Tomorrow's Tomorrow: The Black Woman*. New York: Doubleday.
- Long, L. 1988. *Migration and Residential Mobility in the United States*. New York: Russell Sage Foundation.
- Lundberg, S. and R.D. Plotnick. 1990. "Teenage Childbearing and Adult Wages." Discussion Paper 90-24, University of Washington, Institute for Economic Research.
- MacLeod, J. 1987. *Ain't No Makin' It: Lowered Aspirations in a Low-Income Neighborhood*. Boulder: Westview.

- Moore, K.A., M.C. Simms, and C.L. Betsey. 1986. *Choice and Circumstance: Racial Differences in Adolescent Sexuality and Fertility*. New Brunswick, NJ: Transaction Books.
- Mosher, W.D. and J.W. McNally. 1991. "Contraceptive Use at First Premarital Intercourse: United States, 1965-1988." *Family Planning Perspectives* 23:108-16.
- Pullum, T.W., J.O.G. Billy, and K.L. Brewster. 1987. "An Assessment of Procedures to Detect Contextual Influences on Fertility and Contraception." Presented at the annual meetings of the Population Association of America, Chicago.
- Staples, R. 1985. "Changes in Black Family Structure: The Conflict between Family Ideology and Structural Conditions." *Journal of Marriage and the Family* 40:733-42.
- Williams, C.W. 1991. *Black Teenage Mothers: Pregnancy and Child Rearing from Their Perspective*. Lexington, MA: Heath.
- Wilson, W.J. 1987. *The Truly Disadvantaged: The Inner City, the Underclass, and Public Policy*. Chicago: University of Chicago Press.
- _____. 1991. "Studying Inner-City Social Dislocations: The Challenge of Public Agenda Research." *American Sociological Review* 56:1-14.