

Parental Monitoring: Association With Adolescents' Risk Behaviors

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ABSTRACT. *Context.* Contemporary threats to adolescents' health are primarily the consequence of risk behaviors and their related adverse outcomes. Identifying factors associated with adolescents' risk behaviors is critical for developing effective prevention strategies. A number of risk factors have been identified, including familial environment; however, few studies have examined the impact of parental monitoring.

Objective. To examine the influence of less perceived parental monitoring on a spectrum of adolescent health-compromising behaviors and outcomes.

Design. Survey.

Setting. A family medicine clinic.

Participants. To assess eligibility, recruiters screened a sample of 1130 teens residing in low-income neighborhoods. Adolescents were eligible if they were black females, between the ages of 14 and 18 years, sexually active in the previous 6 months, and provided written informed consent. Most teens ($n = 609$) were eligible, with 522 (85.7%) agreeing to participate.

Main Outcome Measures. Variables in 6 domains were assessed, including: sexually transmitted diseases, sexual behaviors, marijuana use, alcohol use, antisocial behavior, and violence.

Results. In logistic regression analyses, controlling for observed covariates, adolescents perceiving less parental monitoring were more likely to test positive for a sexually transmitted disease (odds ratio [OR]: 1.7), report not using a condom at last sexual intercourse (OR: 1.7), have multiple sexual partners in the past 6 months (OR: 2.0), have risky sex partners (OR: 1.5), have a new sex partner in the past 30 days (OR: 3.0), and not use any contraception during the last sexual intercourse episode (OR: 1.9). Furthermore, adolescents perceiving less parental monitoring were more likely to have a history of marijuana use and use marijuana more often in the past 30 days (OR: 2.3 and OR: 2.5, respectively); a history of

alcohol use and greater alcohol consumption in the past 30 days (OR: 1.4 and OR: 1.9, respectively); have a history of arrest (OR: 2.1); and there was a trend toward having engaged in fights in the past 6 months (OR: 1.4).

Conclusions. The findings demonstrate a consistent pattern of health risk behaviors and adverse biological outcomes associated with less perceived parental monitoring. Additional research needs to focus on developing theoretical models that help explain the influence of familial environment on adolescent health and develop and evaluate interventions to promote the health of adolescents. *Pediatrics* 2001;107:1363-1368; *black adolescents, parental monitoring, sexual behaviors, sexually transmitted diseases, substance use, antisocial behavior.*

ABBREVIATIONS STD, sexually transmitted disease; HIV, human immunodeficiency virus OR, odds ratio

Adolescence is a developmental period characterized by rapid physical, psychological, social/cultural, and cognitive changes. Although many adolescents navigate the sometimes turbulent course from childhood to adulthood to become productive and healthy adults, there is growing concern that far too many others may not achieve their full potential. Adolescence, unfortunately, is also a period fraught with many threats to the health and well-being of adolescents in which many suffer substantial impairment and disability.¹

There has been a marked change in the causes of morbidity among adolescents.² Many adolescents today, and perhaps increasing numbers in the years to come, are at risk for adverse health outcomes stemming from their behavior. Contemporary threats to adolescent health are primarily the consequence of risk behaviors and related outcomes, such as substance use, violence, risky sexual behavior, teenage pregnancy, and sexually transmitted diseases (STDs), to name but a few.^{3,4} Although a myriad of diverse factors associated with adolescents' risk behaviors have been identified,⁵ there is emerging interest in understanding the impact of familial environment on adolescents' adoption and maintenance of health-compromising and protective behaviors.⁶

Familial environment is not a unitary dimension. Rather, it is a multidimensional construct comprised of heterogeneous psychological and social factors. Factors, such as family connectedness,^{7,8} parent-child communication,^{9,10} parental modeling,^{6,11} parenting style,¹² and parent's socioeconomic status,¹³ have been identified as influencing adolescents'

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health behavior. One other family factor that may have a significant influence on adolescents' health risk behavior is parental monitoring.

There is no uniform definition of parental monitoring. However, there seems to be consensus that 2 important aspects of parental monitoring are adolescents' perceptions of their parents' knowledge about whom they are with and where they are spending their time when they are not at home or attending school.^{10,14-16} Less perceived parental monitoring has been associated with greater participation in antisocial activities,^{17,18} more sexual risk-taking,^{16,19,20} and more frequent substance use.^{15,21,22,23}

Although the findings from these investigations are informative, the results may be limited by reliance entirely on adolescents' self-report of risk behaviors. To date, published studies have not included objective biological markers to assess risk behaviors or their adverse impact (ie, STDs). Furthermore, most studies have focused on a single risk domain (ie, drug use) rather than examining the association of parental monitoring across a spectrum of adolescent health risk behaviors. Moreover, few studies of parental monitoring have focused specifically on adolescents from low socioeconomic status neighborhoods. Although the influences of low socioeconomic status may not vary by race, black adolescents in the United States continue to be disproportionately likely to experience low socioeconomic status.²⁴ Thus, black adolescents constitute a population particularly likely to be impacted by the influences of low socioeconomic status. Furthermore, epidemiologic findings clearly indicate that black adolescent females experience disproportionately high risk for and rates of pregnancy,^{25,26} STDs,²⁷⁻³¹ and human immunodeficiency virus (HIV).³²⁻³⁴

The current study examined the association between adolescents' perceived levels of parental monitoring and a spectrum of health risk behaviors; specifically, high-risk sexual behaviors, STD acquisition, antisocial behavior, violence, marijuana use, and alcohol use among black adolescent females.

METHODS

Study Sample

From December 1996 through April 1999 project recruiters screened 1130 female teens in adolescent medicine clinics, health department clinics, and school health classes to assess eligibility for participating in an HIV/STD prevention trial. To purposefully sample adolescents from lower socioeconomic status families, recruitment sites were restricted to low-income neighborhoods that were also characterized by high rates of unemployment, substance abuse, violence, and STDs. Of those screened, 609 adolescents were eligible to participate in the study. Of those adolescents not eligible to participate ($n = 521$), the majority (98%) were not sexually active. The current study consists of 522 eligible adolescents (85.7%) who were enrolled and completed baseline assessments. The majority of eligible teens who did not participate in the study were unavailable because of conflicts with their employment schedules. Adolescents were eligible to participate in the trial if they were black females, between the ages of 14 and 18 years at the time of enrollment, sexually active in the previous 6 months, and provided written informed consent. The study protocol was approved by the Institutional Review Board Committee on Human Research before implementation.

Data Collection

Data collection was conducted at the University of Alabama Family Medicine Clinic and consisted of 3 components: a self-administered survey, a structured personal interview, and collection of vaginal swab specimens. The self-administered survey was conducted in a group setting with monitors assisting adolescents with limited literacy and helping to ensure confidentiality of responses. Subsequently, adolescents completed a face-to-face interview that assessed sexual risk behaviors. The interview was administered by trained black female interviewers in private examination rooms. On completing their interview, adolescents were asked to provide 2 vaginal specimens for STD testing. Adolescents were reimbursed \$20 for their participation.

Laboratory Methods

Adolescents provided 2 vaginal swab specimens that were evaluated for *Neisseria gonorrhoeae*, *Chlamydia trachomatis*, and *Trichomonas vaginalis*.³⁵ The first swab was placed in a specimen transport tube (Abbott LCx Probe System for *N gonorrhoeae* and *C trachomatis* assays, Abbott Laboratories, Abbott Park, IL) and tested for chlamydia and gonorrhea DNA by ligase chain reaction.^{36,37} The second swab was used to inoculate culture medium for *T vaginalis* (InPouch TV test, BioMed Diagnostics Inc, Santa Clara, CA). This culture was incubated at 37°C and examined daily by light microscopy (magnification 100×) for 5 days for the presence of motile trichomonads.³⁸ All STD assays were conducted at the University of Alabama, Birmingham, Division of Infectious Diseases STD Research Laboratory.

Independent Variables

The survey assessed a range of sociodemographic factors, including family structure, religiosity, parental employment, and parental monitoring.

Parental monitoring, the main predictor variable, was assessed by 2 questions that asked adolescents whether their parents knew where they were and who they were with when not at school and away from home. Adolescents responded to each item using a 5-point Likert scale ranging from 1 (never) to 5 (almost always). Adolescents were categorized into 2 groups: those responding almost always (5) to each of the 2 items, were classified as exposed to more parental monitoring; the remainder were categorized as having less parental monitoring.

Outcome Variables

The study assessed outcome variables across 6 risk domains: STDs, sexual behavior, marijuana use, alcohol use, antisocial behavior, and violence. STDs were confirmed by laboratory assay. Sexual behaviors assessed included having multiple sex partners in the past 6 months, having a risky sex partner (a male sex partner who has concurrent female partners), condom use at last intercourse, having a new sex partner in the previous 30 days, and contraceptive use during the last 5 sexual episodes. Adolescents' drug and alcohol use was assessed by asking whether they had ever used marijuana or alcohol, and whether they had used these substances in the previous 30 days. Antisocial behavior was assessed by asking adolescents whether they had ever been arrested. Violence was assessed by asking adolescents whether they had been in a fight in the previous 6 months.

Data Analysis

The data analyses were comprised of several sequential steps. First, we compared adolescents reporting less frequent parental monitoring with adolescents reporting more frequent parental monitoring with respect to behavioral and biological outcomes. Subsequently, to identify potential covariates, we examined the association between parental monitoring and sociodemographic characteristics and familial factors. Outcomes and covariates associated with parental monitoring in the univariate analyses ($P < .10$) were included in logistic regression analyses. Regression analyses, controlling for observed covariates, examined the effects of less frequent parental monitoring on behavioral and biological outcomes.³⁹

RESULTS

Of the 522 adolescents participating in the study, approximately 62.5% were categorized as having less parental monitoring. Furthermore, 70% of adolescents reported that their mother was the family member who primarily provided monitoring; 1.3% of adolescents cited their father as the primary family member who provided monitoring.

In the univariate analyses, less parental monitoring was associated with several behavioral and biological outcomes (Table 1). Additionally, several covariates were identified. Covariates included having parents who were employed, residing in a single-parent family, and a lower level of religiosity. These variables were entered into all subsequent logistic regression analyses to control for their effect on hypothesized outcomes.

In logistic regression analyses, adjusting for observed covariates, less parental monitoring was associated with a spectrum of behavioral risk factors and STDs (Table 1). Adolescents with less parental monitoring were significantly more likely than those perceiving more parental monitoring to report that they did not use condoms during their most recent act of sexual intercourse or to report that they did not use any kind of contraception during their last 5 intercourse occasions. Less perceived parental monitoring was marginally associated with reporting multiple sex partners in the past 6 months and having a sex partner who is believed to have concurrent sex partners. Past and recent use of marijuana was associated with less perceived parental monitoring, as was recent use of alcohol. Adolescents who perceived less parental monitoring were also more likely to report that they had been arrested. Of importance, adolescents reporting less parental monitoring were 1.7 times more likely to have a laboratory-confirmed STD.

DISCUSSION

The findings corroborate and extend previous research documenting an increased prevalence of health risk behaviors among adolescents with less parental monitoring. In addition to confirming previous research, the present study is also unique in that it observed an association between less perceived parental monitoring and laboratory-confirmed STDs. Moreover, although the observed magnitude of associations between less perceived parental monitoring and outcomes within each risk domain is substantial, it is the consistent pattern of associations across domains that suggests a broad impact of perceived parental monitoring on adolescents' risk behaviors.

The finding of a higher prevalence of STDs among adolescents with less parental monitoring has important implications for risk of HIV infection. Although STDs are, in themselves, a serious outcome, STDs may also amplify adolescents' risk for HIV acquisition. Substantial empirical evidence exists demonstrating that STDs, ulcerative or inflammatory, increase HIV transmission dynamics.^{40,41} Thus, strategies designed to enhance parental monitoring may decrease adolescents' risk for STDs and, as a consequence, may also decrease their risk for HIV.

Public Health Implications

The study findings may have significant public health implications. Foremost, the focus on adolescent health risk behaviors has traditionally been on their personal factors or their biological characteristics. Although this approach has considerable value, it often gives little attention to the fact that personal behaviors take place in a social context that can magnify or diminish their impact. One influential social context is the family environment. Our findings sug-

TABLE 1. Crude and Adjusted Analyses Measuring the Association Between Perceived Parental Monitoring and Adolescents' Health Risk Behaviors and STDs

	Perceived Monitoring		Univariate Analysis		P Value	Multivariate Analysis		P Value
	Less %	More %	PR	(95% CI)		OR*	(95% CI)	
STDs								
Positive STD test	32.8	22.4	1.5	(1.1-2.0)	.01	1.7	(1.1-2.7)	.01
Sexual behaviors								
No condom use at last intercourse	35.8	23.3	1.5	(1.1-2.1)	.006	1.7	(1.1-2.8)	.01
Multiple sex partners	12.5	6.7	1.9	(1.0-3.5)	.04	2.0	(1.0-4.0)	.05
Had risky (nonmonogamous) sex partners	35.4	25.2	1.4	(1.0-1.9)	.05	1.5	(1.0-2.4)	.06
Had a new sex partner (past 30 d)	8.0	3.1	2.5	(1.1-6.3)	.03	3.0	(1.2-7.7)	.02
No contraceptive use (last 5 sexual episodes)	90.4	83.8	1	(1.0-1.2)	.04	1.9	(1.0-3.5)	.05
Marijuana use								
History of marijuana use	46.8	29.6	1.6	(1.2-2.0)	.0002	2.3	(1.5-3.4)	.0001
More frequent marijuana use (past 30 d)	26.6	12.1	2.3	(1.0-4.7)	.03	2.5	(1.0-6.2)	.04
Alcohol use								
History of alcohol use	47.5	38.8	1.2	(1.0-1.5)	.06	1.4	(1.0-2.1)	.06
Consumed alcohol (past 30 d)	26.8	16.8	1.6	(1.1-2.3)	.01	1.9	(1.2-3.1)	.01
Antisocial behavior								
History of arrest	14.7	9.2	1.6	(1.0-2.7)	.07	2.1	(1.1-3.9)	.03
Violence								
Engaged in fights (past 6 mo)	40.7	32.5	1.3	(1.0-1.6)	.07	1.4	(0.9-2.1)	.09

PR indicates prevalence ratio (more frequent parental monitoring is the referent for calculating the PR), CI, confidence interval.

* Adjusted by parent's employment status, religiosity, and whether adolescent resided in a single or 2-parent family

gest that prevention research needs to address the impact of familial influences, specifically parental monitoring, as 1 point of intervention to reduce adolescents' risk behaviors.^{7,8,16,42} Because adolescents' perceptions are critical, 1 aspect of enhancing parental monitoring is increasing adolescents' awareness that their parents know where and whom they are with when not at home or in school. Thus, family interventions designed to enhance parent-child communication and foster a closer relationship and better understanding between parents and their children⁹ may also enhance adolescents' perceptions of parental monitoring and, as a consequence, reduce their risk behaviors.

Family interventions should also provide parents with guidance in how to balance adolescents' developmental challenge of establishing autonomy and their parental obligation to protect adolescents from harm. Parents may achieve this balance by imparting their values to their adolescents, keeping in mind that the goal of parental monitoring is to promote eventual self-regulatory behavior by the adolescent.⁴³ One particularly challenging aspect of these family interventions may be involving the fathers of adolescents. Our findings indicated that few fathers are perceived as the primary provider of parental monitoring. Additional research should investigate strategies for increasing the monitoring role of fathers.

The findings also suggest that other forms of monitoring may benefit adolescents. Changes in workforce composition over the past few decades have left many youth unsupervised over long periods.⁴⁴ For instance, the percentage of youth residing in single-parent households increased by >10% between 1985 and 1991.⁴⁵ These changes create opportunities for youth to become involved in risky activities.^{44,46} In particular, youth residing in risky social environments (ie, areas with a high prevalence of violence and drug use) may be more vulnerable to health-compromising group affiliations and peer norms.⁴⁷ Youth-serving organizations, churches, community agencies, and schools can provide programs that promote prosocial attitudes and activities, enhance adolescents' self-esteem, provide positive role modeling, and provide supervision for adolescents.⁴⁸⁻⁵¹ This strategy, rather than substituting for parental monitoring, provides additional resources and venues to strengthen and extend parental monitoring.

Clinical Practice Implications

Pediatricians and adolescent medicine specialists have an integral role to play in adolescent health promotion.^{52,53} These physicians can play a prominent role in adolescents' preventive education by providing risk reduction counseling using techniques that have been evaluated in clinical and other settings and by providing referrals to specialized counseling.^{54,55} As part of counseling sessions with adolescents' parents,⁵⁶ physicians can emphasize the importance of parental monitoring, as well as other

important familial attributes (eg, parent-child communication) that have been associated with adolescent health-promoting behaviors. Although this level of physician involvement represents a significant investment of time, this investment may be highly beneficial. As Klein⁵⁷ pointed out, practice guidelines, such as *Bright Futures: Guidelines for Health Supervision of Infants, Children, and Adolescents*⁵⁸ and *Guidelines for Adolescent Preventive Services (GAPS)*,⁵⁹ recommend periodic parental counseling by primary care clinicians. Thus, to facilitate adoption and broad delivery of these preventive services, adequate systems for financing and provider reimbursement are essential.⁶⁰

Limitations

This study has several methodologic limitations. Foremost, this study uses a cross-sectional research design. Future studies will need to use longitudinal research designs to determine the stability of the observed associations over time. Also, this sample was limited to economically disadvantaged, sexually active, black female adolescents. Thus, the findings may not be generalized to other racial/ethnic groups, males, or adolescents from different socioeconomic strata. Additional research will be needed with diverse adolescent populations to corroborate and extend the findings.

CONCLUSION

The findings demonstrate a pattern of health risk behaviors and adverse biological outcomes associated with less parental monitoring. Although patterns of health risk behaviors adversely affect adolescents' health during adolescence, these behaviors may become long-lasting, difficult to modify, and extend into adulthood. Furthermore, the outcomes associated with adolescent risk behaviors have not only serious consequences for the youth, but also may negatively affect their family and society in general. Additional research needs to focus on developing theoretical models that help explain the influence of family contextual factors on adolescent health⁶¹ and develop and evaluate multilevel interventions designed to promote the health of adolescents.^{62,63}

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EXTREME TELECOMMUTERS

It is 9 am, the start of another busy day, as Paolo Conconi logs on to read his e-mails. But instead of a business suit, he sports a bathing suit. And although his work is in Europe and China, his office is a table by the pool of his villa in Bali, Indonesia. As he goes through his mail, he sips his favorite Italian coffee. An attendant lights his cigarette.

Mr. Conconi has a lifestyle known to insiders as “extreme telecommuting”—work wholly unfettered by physical location. Pushing the promises of technology to the limit, this rare breed of telecommuters live countries—even continents—apart from their companies’ home offices, indulging in a way of life others only dream about . . . In the United States last year, an estimated 24 million people regularly or occasionally telecommuted, according to the International Telework Association and Council, a Washington, DC, nonprofit group that promotes telecommuting. That is up 21% from the year before. In Europe, estimates have the figure at about 10 million for the past 2 years.

Voigt K. *Wall Street Journal*. January 31, 2001

Noted by JFL, MD