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ORIGINAL ARTICLE

Psychosocial Conventionality, Health Orientation, and Contraceptive Use in Adolescence

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Purpose: **The purpose of this paper is to determine psychosocial and behavioral factors that are associated with variation in contraceptive use among adolescents. Because regular use of contraception may be seen both as a conventional behavior and as a health-protective behavior, analyses assess the association between psychosocial conventionality and health orientation, on the one hand, and variation in contraceptive use, on the other.**

Methods: **Analyses are based on an urban sample of 971 white, African-American, and Hispanic male and female sexually active high school students. Study participants filled out a 38-page questionnaire that included a wide range of measures derived from Problem-Behavior Theory.**

Results: **Correlational analysis and hierarchical regression analysis indicate that more regular contraceptive use is associated with greater psychosocial conventionality and also with greater orientation toward health for both male and female adolescents. These relationships hold when the sociodemographic characteristics of race/ethnicity, socioeconomic status, grade in school, family composition, and pregnancy experience are controlled. The linkages of psychosocial conventionality and health orientation to contraceptive behavior are stronger for African-American than for white and Hispanic adolescents.**

Conclusions: **The present findings establish a more comprehensive and more distal set of influences on regularity of contraceptive use. In its negative relationship to problem behavior and its positive linkage with health behavior, contraceptive behavior may be seen as part of a larger, organized system of behavior in this stage of development (i.e., a more conventional adolescent lifestyle).**

KEY WORDS:
Contraception
Psychosocial conventionality
Health orientation
Adolescence
Problem-Behavior Theory

Nonuse of contraception and ineffective contraceptive practices can have serious immediate and long-term consequences for the health and more general well-being of sexually active adolescents. Social concern about teenage pregnancy, about the personal and economic consequences of early childbearing (1), and about the prevalence of sexually transmitted diseases (STDs) among adolescents (2) underscores the need for a better understanding of the factors that are related to contraceptive behavior in adolescence.

In this paper we examine the influence of psychosocial conventionality and psychosocial orientation to health on regularity of contraceptive use. Conventionality is a key construct of Problem-Behavior Theory (3,4), which is concerned with the tendency to transgress social norms. It is conceptualized as a commitment to and involvement in the standards, values, and expectations of established institutions of adult society (4). Health orientation is conceptualized as a commitment to values and attitudes that emphasize a healthy lifestyle, association with others who encourage and support healthy behavior, and personal involvement in health-enhancing behaviors (5,6).

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Contraceptive use in adolescence may be seen both as a normatively regulated behavior and as a health-related behavior. Irregular use, ineffective use, or nonuse of contraception by sexually active adolescents may be interpreted as a departure from or transgression of the norms of the larger society, for example, norms regarding the appropriate timing of and circumstances for pregnancy, childbearing, and parenting, and norms regarding school dropout, which may accompany early pregnancy and childbearing. The effective use of contraception, on the other hand, may be interpreted as a commitment to conventional norms regarding the timing of childbearing and to the conventionally valued goal of completing high school. Variation in use of contraception ought, therefore, to be predictable from constructs that reflect psychosocial and behavioral conventionality.

The use of contraception may also be seen as protecting against the health risks associated with pregnancy, abortion, childbearing, and, often, STDs. Nonuse of contraception, on the other hand, puts one at risk for these potentially health-compromising outcomes of unprotected sexual intercourse (6). Contraceptive behavior, therefore, may be seen as part of and predictable from a more general orientation to health, including health values and beliefs, health models, and involvement in other health behaviors (7).

Relatively few recent studies of adolescent contraceptive behavior have examined the relation of psychosocial characteristics to contraceptive use, and many of these have highlighted characteristics that are proximal to sexual behavior and contraceptive use (e.g., attitudes toward and beliefs about contraception) (8–12). Findings from a few studies have suggested that more distal personality variables such as higher self-esteem (13) and more egalitarian sex role attitudes (11) are associated with more reliable and effective contraceptive practices among youth.

Investigations of the linkages of other behaviors with contraceptive use have resulted in sometimes contradictory findings. Although some studies report that adolescents' involvement in problem behaviors, such as the use of alcohol and other drugs, is associated with less regular use of contraception (8,14,15), others have failed to find such a relationship (16). Findings on the relationship of health-protective behaviors to contraceptive use are also mixed. Although some research suggests that greater involvement in health behaviors, such as exercise (15) and seatbelt use (17), is linked to more regular use of contraception, other work does not support these findings (18).

The conflicting results about adolescents' contraceptive behavior may be at least partly accounted for by limitations of sampling and measurement that characterize this area of study. Work on adolescent contraceptive behavior has been limited by the use of samples of only males (9,12) or only females (10,11), or by a focus on one racial/ethnic group, usually African-Americans (9,10,12,13). Studies that have involved more sociodemographically diverse samples have assessed condom use only (8,14,15), rather than contraception more generally. Research that has examined the association between psychosocial characteristics and contraceptive behavior has tended to focus on only one or two isolated variables, and studies that have assessed the linkage between health orientation and contraceptive use have investigated health variables that are very proximal to contraceptive use, such as beliefs in the health protective aspects of contraception (8,14), to the exclusion of more general health attitudes and beliefs. As has been emphasized in reviews of research on adolescent contraceptive behavior (19,20), there is a need for more comprehensive, multivariate, theory based studies of the linkage between adolescents' psychosocial and behavioral characteristics and their contraceptive behavior.

The purpose of this paper is to determine the psychosocial and behavioral factors that are associated with variation in contraceptive use among adolescents. Because regular use of contraception may be seen both as a conventional behavior and as a health protective behavior, analyses will assess the association between psychosocial conventionality and health orientation, on the one hand, and variation in contraceptive use, on the other. The extent to which these two explanatory perspectives supplement one another will be examined as well.

Method

Study Design and Procedures

Data for this study were taken from the final wave (1992) of a four-wave longitudinal study of adolescent health and development. That wave was the first one in which comprehensive assessment of sexual behavior and contraceptive use was permitted by the administration of the participating school district. At Wave 1, in 1989, participants were in grades 7, 8, and 9 in six middle schools and four high schools in a large urban school district in the Rocky

Mountain region. Participating schools were selected for the study by school district officials to maximize representation of Hispanic and African-American adolescents from inner-city areas. Active parental and student consent was sought for all 7th, 8th, and 9th graders enrolled in the selected schools; letters describing the study and consent forms were written in both English and Spanish.

Study participants were released from class to take part in large group questionnaire administration sessions proctored by members of the research staff. In the three follow-up waves, questionnaires were also mailed to students no longer enrolled in the school district or otherwise unavailable for in-school testing. Bilingual versions of the questionnaire were provided for students who preferred to work in Spanish. Each participant received a payment of $5.

Participants

At the first wave of data collection (1989), 2,410 students participated in the study. Questionnaires were completed by 67% of the middle school students (grades 7 and 8) and by 49% of the high school students (grade 9) who were invited to take part in the study. In Wave 4 (1992), 1,782 students (74% of the Wave-1 sample) completed questionnaires.

Forty-four percent of the Wave-4 sample is male. Equal proportions of the sample are in the three starting cohorts (7th, 8th, and 9th graders at Wave 1). Members of these cohorts were in grades 10, 11, and 12, or had left school by Wave 4, when the average age of participants in the three respective starting cohorts was 15.7, 16.6, and 17.9 years old. Thirty-four percent of the sample is white, 22% is African-American, 38% is Hispanic, 4% is Asian, and 2% is Native-American. With respect to socioeconomic background, 20% of participants' fathers had not graduated from high school, 17% of participants' fathers were high school graduates, and 62% had some education beyond high school. About one-third of participants' fathers were employed in unskilled jobs, one-third in skilled or clerical jobs, and one-third in managerial or professional jobs. Forty-seven percent of the participants were from intact families; 16% had a stepparent living with them (usually stepfather); 31% lived with a single parent (usually mother); and 5% lived with other relatives or guardians.

Analyses presented in this paper were based on the 971 Wave-4 white, African-American, and Hispanic participants who were nonvirgins, unmarried, sexually active during the past year, and had scores on the criterion measure of regularity of contraceptive use: 151 white males, 156 white females; 97 African-American males, 158 African-American females; 192 Hispanic males, and 217 Hispanic females. Owing to the small numbers of Asian ($N = 66$) and Native-American ($N = 28$) participants, adolescents from these racial/ethnic groups were not included in the analyses.

Possible Implications of Sample Loss

Initial nonparticipation. As noted elsewhere (21), nonparticipants at Wave 1 of the study were characterized by lower levels of academic achievement, greater numbers of disciplinary actions, and more absences from school. Nevertheless, both extremes of the full range of scores on these measures in the total population were found in the sample of study participants, suggesting that initial sample losses do not threaten the validity of the research findings.

Subsequent attrition. The effects of attrition between Waves 1 and 4 on the integrity of the sample were also examined. Compared with the 628 students who were lost to attrition, the 1,782 Wave-4 participants were slightly but significantly younger (13.6 vs. 13.9 years old at Wave 1), more likely to live with both natural parents, higher in socioeconomic status, and more likely to be white, and less likely to be Hispanic. Comparisons of mean scores on 12 measures of psychosocial and behavioral conventionality showed that the Wave-4 participants were more conventional than the subjects lost to attrition, as indicated by significant mean differences in the expected direction on 10 of the 12 measures. The actual size of the mean differences was insubstantial in three out of these 10 instances.

Furthermore, when the intercorrelations of the variables within the two samples were examined, there was no evidence of bias in the relationships among the measures of conventionality. Structural equation analyses were used to test the equality of the covariance structure matrices in the two groups. This test, based on nine representative variables, resulted in a goodness of fit index of .998, indicating a high degree of similarity between the two matrices. Although the associated Chi-square statistic for lack of fit was significant, this Chi-square was small (62.66 with 36 degrees of freedom), considering the sample size and the number of variables involved, and indicates no serious degree of difference in the covariance structures for the Wave-4 participants vs. the nonWave-4 participants. In short, the pattern and

magnitude of relationships among these variables are essentially equivalent in the two groups.

Measurement of Contraceptive Use

Contraceptive use was measured by a three-item scale assessing regularity of any contraceptive use in the past year, regularity of condom use in the past year, and use of contraception at last intercourse. Participants were asked: "When you had sex in the past year, did you make sure that some kind of birth control method or contraceptive was used, either by you or by the other person?"; "When you had sex in the past year, how often was a condom (rubber) used?"; and "The last time you had sex, what type of birth control method or contraceptive was used?" Response options for the first two items were: "almost always," "most of the time," "about half of the time," "some of the time," "hardly ever," and "never." The open-ended responses to the third item were coded as nonuse (e.g., "none," "nothing") or use (e.g., "condom," "Norplant," "pill"). Scale items include content similar to that used in prior studies (8,9,12,14,15,17,18).

Scores on the contraceptive use scale could range from 4–18. Mean scores on the measure were 14.7 for males and 13.6 for females, and the respective standard deviations were 4.42 and 4.61. The distribution of scale scores was negatively skewed with the mode at 18 for both genders.

Psychometric properties of the three-item scale of contraceptive use were good. Alpha reliability was .83, and the mean inter-item correlation was .62. Bivariate correlations between the criterion measure and a 6-item scale of positive attitudes toward contraception were .29 for males and .27 for females ($p \leq .001$); correlations with perceived peer use of contraception were .42 and .40 for males and females, respectively ($p \leq .001$); and correlations with self-reported pregnancy experience were −.10 for males ($p \leq .05$) and −.26 for females ($p \leq .001$). These correlational data provide support for the validity of the three-item criterion measure of contraceptive use.

It is worth noting that there was little variation in the contraceptive methods used by the adolescents in this sample. The great majority of the respondents reported that their usual method of birth control is condoms (44%) or a combination of condoms and another method (26%), such as oral contraceptives, spermicides, or diaphragm. Of the remaining 30%, 10% reported that they usually do not use contraception, 8% reported using oral contraceptives only, and small percentages reported using other methods, for example, withdrawal (1%), Norplant (1%), sponge (0.2%), spermicides (0.4%), or rhythm (0.1%).

Measurement of Psychosocial and Behavioral Conventionality

The questionnaire included a wide range of measures of psychosocial and behavioral conventionality/unconventionality. A comprehensive description of these variables, their theoretical significance, their measurement, and the rationale for using each of the measures as an indicator of conventionality is presented elsewhere (3,4,21).

The 13 conventionality/unconventionality variables used in the present study include measures of personality factors, perceived environment factors, and behaviors. Greater personality conventionality is indicated by higher value placed on achievement relative to independence, by higher expectations for academic achievement, and by higher intolerance of deviance. Perceived environment conventionality is indicated by more compatibility between parents and friends about such things as what is important in life and what one should get out of school, by greater influence of parents relative to friends, by higher parental disapproval of adolescent problem behavior, and by relatively fewer friends who model problem behavior. Behavioral conventionality is indicated by lower levels of involvement in problem behaviors, such as marijuana use, and higher involvement in conventional behavior, such as school achievement.

Independence-Achievement Value Discrepancy is a derived index that reflects the extent to which value on academic achievement (a four-item scale, *alpha* = .78) is greater than value on independence (a four-item scale, *alpha* = .72). *Expectation for Achievement* is a four-item scale assessing expectation for success in the area of academic achievement (*alpha* = .88). *Attitudinal Intolerance of Deviance* is a 10-item scale that measures the rated "wrongness" of various normative transgressions, including theft, physical aggression, and lying (*alpha* = .90).

Parent-Friends Compatibility is a three-item scale of perceived agreement between parents and friends regarding what is important in life, the kind of person the respondent should become, and what the respondent should be getting out of being in school (*alpha* = .77). *Parent-Friends Influence* is a three-item scale that assesses the relative influence of parents and friends on the respondent's outlook on life and on his or her choices and behavior (*alpha* = .68). *Parental Approval–Disapproval of Problem Behavior*, a

two-item scale, assesses perceived parental attitudes toward adolescent use of alcohol and marijuana (*alpha* = .63). *Friends as Models for Problem Behavior* is a four-item scale measuring the respondent's perception of the prevalence of models for nonnormative or illegal behavior. It includes friends who smoke cigarettes, who use alcohol, who have had sexual intercourse, or who use marijuana (e.g., "How many of your friends drink alcohol fairly regularly?"; response options range from "none" to "all of them") (*alpha* = .69).

Deviant Behavior, a 10-item scale, assesses frequency of engaging in various delinquent-type behaviors during the past 6 months, including physical aggression, property destruction, theft, and lying (*alpha* = .82). *Problem Drinking* is a three-component scale assessing frequency of drunkenness during the past 6 months, frequency of high-volume drinking (five or more drinks per occasion) during the past 6 months, and negative consequences of drinking (including frequency of trouble with parents, with friends, with dates, and with the police) (*alpha* = .84). *Marijuana Behavior Involvement* is a four-item scale measuring extent of involvement in marijuana use, including ever use, ever getting high or stoned, current use, and perceived availability of the drug (*alpha* = .74). *School Performance* is measured by self-report of respondent's usual grades in school (from "mostly A's" to "mostly D's and F's"). *Family Activities* is a single item assessing the number of hours each week the respondent spends doing things with his or her family. *Church Attendance* is a single item that assesses how often the respondent has attended religious services during the past 6 months.

For analytic purposes, composite summative indexes were derived to measure personality conventionality, perceived environment conventionality, and behavior conventionality. The composite measures were computed by adding the standardized scores of the three measures of personality conventionality, the four measures of perceived environment conventionality, and the six measures of behavior conventionality, respectively.

Measurement of Health Orientation

The annual questionnaire also included a comprehensive assessment of health attitudes, values, and beliefs, models for health behavior, and health behaviors. The 11 health measures used in the present study include measures of personality characteristics, perceived environment factors, and behavior. All reflect personal orientation toward health. Personality health orientation is indicated by higher value on health, by a greater internal locus of control with regard to health, and by a stronger belief that behaviors such as poor nutritional practices can have a negative impact on health. Perceived environment health orientation is indicated by more parental and peer models for health behaviors, such as seatbelt use. Behavioral health orientation is indicated by higher levels of involvement in health behaviors, such as regular exercise.

Value on Health is a 10-item scale assessing the personal importance of being healthy and feeling physically fit (*alpha* = .88). *Internal Health Locus of Control* is a four-item measure of beliefs that good health is contingent on personal behavior (*alpha* = .63). *Perceived Health Effects* is a six-item scale of the rated seriousness of the effect on the health of young people of behavioral practices, such as not getting enough exercise, eating a lot of junk food, and being overweight (*alpha* = .77).

Maternal Model for Health Behavior is a four-item scale assessing the respondent's perceptions of mother's attention to her own diet, exercise, sleep, and safety (*alpha* = .68). *Paternal Model for Health Behavior* is a four-item scale assessing the respondent's perceptions of father's attention to his own diet, exercise, sleep, and safety (*alpha* = .71). *Friend Model for Health Behavior* is a four-item scale assessing the respondent's perceptions of best friend's attention to his or her own diet, exercise, sleep, and safety (*alpha* = .63).

Exercise, a four-item scale, assesses the number of hours per week spent taking part in organized sports, working out as part of a personal exercise program, playing pickup games (e.g., touch football), and practicing different physical activities (e.g., dance routines, shooting baskets) (*alpha* = .70). *Attention to a Healthy Diet* is a nine-item scale measuring the amount of attention paid to eating habits that limit intake of sodium and fats, drinking enough milk, eating fresh fruits and vegetables, eating healthy snacks, etc. (*alpha* = .88). *Sleep* is a two-item scale based on usual number of hours of sleep each night (from less than 6 hours to more than 10 hours per night) and usual bedtime minus waketime, an alternate method of estimating hours of sleep derived from reports of usual sleeping habits (*alpha* = .81). *Seatbelt Use* is a four-item scale assessing how much of the time a seatbelt is used when riding in or driving a car (*alpha* = .93). *Dental Care*, a three-item scale, assesses frequency of toothbrushing, flossing, and use of anticavity rinses (*alpha* = .57).

Intercorrelations of the psychosocial health measures show that they are all positively related (average $r = .24$; $p \leq .01$), and they are consistently associated with variation in health behavior as well (5). These findings support the notion of a coherent psychosocial orientation to health among adolescents.

For analytic purposes, as was the case with the conventionality measures, composite summative indexes were derived to measure personality health orientation, perceived environment health orientation, and involvement in health behavior. The composite measures were computed by adding the standardized scores of the three measures of personality health orientation, the three measures of perceived environment health orientation, and the five measures of health behavior, respectively.

Analyses controlled the following sociodemographic characteristics: gender, race/ethnicity, grade in school, family composition (intact family vs. nonintact family, i.e., families that include both biologic parents vs. families missing at least one biologic parent), pregnancy experience, and family socioeconomic status, a Hollingshead-type indicator based on father's educational attainment, mother's educational attainment, and father's occupational status. Grade in school, rather than chronologic age, was used as a control because of our interest in the contemporary heterosocial situation that grade membership represents.

Results

Presentation of findings is organized into three parts. First, we examine the bivariate relations of the separate measures of psychosocial conventionality and of health orientation to regularity of contraceptive use. Second, we assess the multivariate linkages of psychosocial conventionality and of health orientation to variation in contraceptive use. Finally, we assess whether these two explanatory domains supplement one another to provide a more comprehensive account of variation in adolescent contraceptive use.

I. Conventionality, Health Orientation, and Regularity of Contraceptive Use: Bivariate Analyses

An important focus of this paper is the identification of psychosocial and behavioral characteristics associated with regularity of contraceptive use among sexually active adolescents. Partial correlations of regularity of contraceptive use with measures of psychosocial and behavioral conventionality and health orientation were computed, adjusting for the effects of race/ethnicity, socioeconomic status, grade in school, family composition, and pregnancy experience. Results are presented by gender in Table 1. Correlations of regularity of contraceptive use with the demographic control variables are also presented in Table 1.

The data in Table 1 indicate that greater regularity of contraceptive use was associated with greater conventionality and greater orientation toward health. This was the case for both male and female adolescents.

With respect to conventionality, greater regularity of contraceptive use was significantly correlated with higher value on academic achievement than on independence; higher expectations for achievement; greater compatibility between parents and friends (males only); fewer friends as models for problem behavior; less involvement in delinquent behavior, problem drinking, and marijuana use; better school performance; and more frequent attendance at religious services (males only).

With respect to health orientation, greater regularity of contraceptive use was associated with greater internal health locus of control (males only), higher paternal modeling of health behavior, higher maternal modeling of health behavior, greater friend modeling of health behavior, more frequent involvement in exercise, greater attention to healthy diet, more regular use of seatbelts, and better dental hygiene.

With respect to the demographic control measures, greater regularity of contraceptive use was significantly correlated with being white, being non-Hispanic, having higher socioeconomic status, living in an intact family (females only), being in a lower grade in school (males only), and never having been pregnant or, for boys, responsible for a pregnancy. These significant relations support the importance of controlling demographic background in the other correlations.

Because the bivariate correlations of regularity of contraceptive use with a measure of frequency of sexual intercourse and with a measure of number of years since first intercourse were significant for males and females ($p \leq .10$ for the frequency of sexual intercourse measure for females; data not tabled), parallel partial correlation analyses were run that also adjusted for the effects of these two measures. The pattern and magnitude of the partial correlations were essentially the same as when the

Table 1. Correlations of Contraceptive Behavior Scale with Control Measures, Measures of Conventionality, and Health Orientation Measures, by Gender[a]

	Males (N = 440)	Females (N = 531)
Demographic control measures		
White/nonwhite[b]	.13**	.21***
Hispanic/nonHispanic[b]	−.23***	−.24***
Socioeconomic status[c]	.22***	.18***
Family composition[b]	.05	.13**
Grade in school[c]	−.13**	−.01
Pregnancy experience[b]	−.10*	−.26***
Conventionality measures[d]		
Personality		
Independence–achievement value discrepancy	−.14**	−.18***
Expectation for achievement	.16***	.14***
Intolerance of deviance	.07	.02
Perceived environment		
Parent–friends compatibility	.10*	.07
Parent–friends influence	−.05	−.01
Parental disapproval–approval of problem behavior	−.05	.01
Friends as models for problem behavior	−.20***	−.12**
Behavior		
Deviant behavior	−.11*	−.16***
Problem drinking	−.17***	−.10*
Marijuana involvement	−.19***	−.14***
School performance	.16***	.14***
Family activities	.03	.05
Church attendance	.14**	.08
Health orientation measures[d]		
Personality		
Value on health	.05	.04
Internal health locus of control	.09*	.07
Perceived health effects	.05	.04
Perceived environment		
Paternal model for health behavior	.20***	.13**
Maternal model for health behavior	.15**	.21***
Friend model for health behavior	.16***	.19***
Behavior		
Exercise	.18***	.13**
Attention to a healthy diet	.13**	.16***
Seatbelt use	.23***	.23***
Sleep	.05	.02
Dental care	.15**	.16***

[a] In order to minimize sample loss in these analyses, missing values on conventionality and health orientation measures were replaced by mean scores derived for gender-by-ethnic subsamples.

[b] Correlations with these dichotomous demographic control measures are point–biserial correlations.

[c] Correlations with these demographic control measures are Pearson correlations.

[d] Correlations with conventionality measures and health orientation measures are partial correlations controlling race/ethnicity, socioeconomic status, family composition, grade in school, and pregnancy experience.

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$.

adjustment for the effects of these sex related variables were not made. In light of these data, and because sample sizes would decrease considerably owing to missing data if these two control measures were included as controls (109 males and 168 females would be lost from the analyses), neither was included in the analyses presented in this paper.

The data indicate that greater psychosocial conventionality and greater orientation to health are both linked to regularity of contraceptive use for male and female adolescents. Although the correlations were modest in magnitude, the overall pattern is coherent and consistent. These relationships, moreover, obtain when the effects of the demographic background characteristics have been removed.

The analyses were repeated for white, African-American, and Hispanic youth separately, adjusting for the effects of gender, socioeconomic status, grade in school, family composition, and pregnancy experience. In general, the findings reported in Table 1 were replicated within the three racial/ethnic groups; more regular contraceptive use was associated with greater conventionality and with greater health orientation in all three groups (not tabled; data available from authors upon request).

II. Conventionality, Health Orientation, and Regularity of Contraceptive Use: Multivariate Analyses

The multivariate relationship between the conventionality measures and regularity of contraceptive use and the multivariate relationship between the health orientation measures and regularity of contraceptive use were assessed by hierarchical multiple regression analyses. In these analyses, two consecutive blocks of predictors were entered into the regression model: first, the sociodemographic variables were entered as controls; and second, the three summary index measures of conventionality or the three summary index measures of health orientation were entered. The index measures permit an examination of the role of the three explanatory systems (personality, perceived environment, and behavior) in accounting for regularity of contraceptive use. Two separate regressions were run this way, one adding the conventionality measures at Step 2, and one adding the health orientation measures at Step 2. Results are presented separately for males and females in Table 2.

Table 2. Hierarchical Multiple Regressions of Conventionality Indexes and Health Orientation Indexes[a] with Regularity of Contraceptive Use, by Gender

	Males (N = 440)			Females (N = 531)		
Part I: Conventionality Indexes	beta[b]	R^2	R^2 Change	beta[b]	R^2	R^2 Change
Variables entered						
Step 1: controls		.10***	—		.15***	—
White/nonwhite	.02			.06		
Hispanic/nonHispanic	−.15*			−.20***		
Socioeconomic status	.13**			.02		
Family composition	.03			.11**		
Grade in school	−.15***			−.02		
Pregnancy experience	−.03			−.24***		
Step 2: conventionality indexes		.15***	.05***		.18***	.04***
Personality conventionality	.03			.07		
Perceived environment conventionality	.05			−.03		
Behavior conventionality	.19**			.17***		

	Males (N = 440)			Females (N = 531)		
Part II: Health Orientation Indexes	beta[b]	R^2	R^2 Change	beta[b]	R^2	R^2 Change
Variables entered						
Step 1: controls		.10***	—		.15***	—
White/nonwhite	−.04			.00		
Hispanic/nonHispanic	−.21***			−.25***		
Socioeconomic status	.11*			−.02		
Family composition	.05			.09*		
Grade in school	−.11**			.03		
Pregnancy experience	−.06			−.23***		
Step 2: health orientation indexes		.17***	.07***		.21***	.07***
Personality health orientation	−.05			−.03		
Perceived environment health orientation	.13**			.15**		
Health behavior	.20***			.17***		

[a] In order to minimize sample loss in these analyses, missing values on conventionality and health orientation measures were replaced by mean scores derived for gender-by-ethnic subsamples.
[b] Beta at final step.
* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$.

Conventionality and Regularity of Contraceptive Use

As shown in Table 2, the full set of controls and conventionality measures accounted for a small but significant proportion of the variance in regularity of contraceptive use for both genders—15% for males, 18% for females. For both male and female adolescents, sociodemographic characteristics are significantly associated with regularity of contraceptive use, accounting for 10% and 15% of the variance in contraceptive behavior for males and females, respectively. More important, the set of conventionality measures made a significant increment to the R^2 when entered after the set of sociodemographic control measures, indicating that greater psychosocial and behavioral conventionality is associated with greater regularity of contraceptive use, independent of the effects of demographic characteristics. The amount of additional variance contributed by the conventionality measures was 5% for males and 4% for females. For males and females, the beta coefficient for behavioral conventionality was significant. The index of behavioral conventionality includes measures of deviant behavior, problem drinking, marijuana use, school performance, family activities, and church attendance (Table 1).

When additional analyses were run, entering only one of the three summary index measures of conventionality at Step 2 of the hierarchical regression, each of the three explanatory systems made a significant increment to the R^2 when entered after the control measures (not tabled; table available from authors upon request). This was the case for both genders; for females, the increment to the R^2 was not significant

($p \leq .08$) when the index of perceived environment conventionality was entered after the control measures. These findings suggest that personality conventionality, perceived environment conventionality, and behavior conventionality are all associated with regularity of contraceptive use, and that the lack of significant betas for all three indexes, when simultaneously entered in Step 2 of the hierarchical regression, reflects their intercorrelations.

Multivariate analyses run for the three separate racial/ethnic groups replicated these findings for white, African-American, and Hispanic adolescents. For all three racial/ethnic groups, the demographic controls plus the conventionality measures accounted for a significant amount of variance in regularity of contraceptive use, and the set of conventionality measures significantly improved the R^2 value when entered after the controls in all three racial/ethnic groups. The relationship between conventionality and contraceptive use is stronger among African-American adolescents than among white and Hispanic adolescents; the improvement in R^2 was roughly four times as great for African-American adolescents as for white and Hispanic youth. For African-American adolescents, the conventionality measures accounted for an additional 13% of the variance in contraceptive behavior (R^2 change to .21 from .08), compared with 3% for white adolescents (R^2 change to .12 from .10) and 3% for Hispanic youth (R^2 change to .12 from .09) (not tabled; table available from authors upon request). The beta coefficient for behavior conventionality was significant for African-American and Hispanic adolescents but not for white adolescents; neither personality nor perceived environment yielded a significant beta.

In summary, measures that represent an underlying construct of conventionality have a significant additive effect on regularity of contraceptive use for both genders and the three racial/ethnic groups.

Health Orientation and Regularity of Contraceptive Use

The data in Part II of Table 2 demonstrate a similar multivariate linkage between health orientation and regularity of contraceptive use for adolescents of both genders. As was the case for the relation between conventionality and regularity of contraceptive use, the outcomes for females and males were generally comparable. For both genders, the combined set of controls and health orientation measures accounted for a significant proportion of the variance in regularity of contraceptive use, and the set of health orientation measures significantly improved the R^2 when entered after the set of sociodemographic controls. The health orientation measures accounted for an additional 7% of the variance for males and for females. For both genders, the beta coefficients for both perceived environment health orientation and health behavior were significant.

When additional analyses were run, entering only one of the three summary index measures of health orientation at Step 2 of the hierarchical regression, the index measures of perceived environment health orientation and health behavior each added a significant increment to the R^2 for males and females (not tabled; table available from authors upon request). Although the measure of personality health orientation also increased the amount of variance accounted for, findings for both genders were not statistically significant ($p \leq .10$). It appears, then, that personality health orientation, as measured in this study, is less strongly associated with regularity of contraceptive use than are perceived environment health orientation and health behavior.

When the multivariate analyses were repeated for whites, African-Americans, and Hispanics separately, the controls plus the health orientation measures accounted for a significant amount of variance in regularity of contraceptive use for all three racial/ethnic groups. In addition, the set of health measures significantly improved the R^2 value when entered after the controls for all three groups. As was the case with the conventionality measures, this association was stronger for African-American adolescents than for white and Hispanic adolescents. For the African-American adolescents, the size of the improvement to the R^2 value was at least one-half again as great as for the white and Hispanic youth. For African-American adolescents, the health orientation measures accounted for an additional 12% of the variance in contraceptive behavior (R^2 change to .20 from .08), compared with 8% for white adolescents (R^2 change to .17 from .10) and 6% for Hispanic youth (R^2 change to .15 from .09) (not tabled; table available from authors upon request). The beta coefficient for health behavior was significant in the three groups, and the beta coefficient for perceived environment health orientation was significant for white and African-American youth but not for Hispanic adolescents.

As was the case in the analyses using the conventionality variables, measures that represent health orientation were shown to have a significant additive

Table 3. Hierarchical Multiple Regressions of Combined Relationship of Conventionality and Health Orientation[a] with Regularity of Contraceptive Use, by Gender

	Males (N = 440)			Females (N = 531)		
	beta[b]	R^2	R^2 Change	beta[b]	R^2	R^2 Change
Variables entered						
Step 1: controls		.10***	—		.15***	—
White/nonwhite	−.01			.02		
Hispanic/nonHispanic	−.18**			−.24***		
Socioeconomic status	.11*			−.03		
Family composition	.03			.08*		
Grade in school	−.13**			.01		
Pregnancy experience	−.04			−.23***		
Step 2: conventionality indexes		.15***	.05***		.18***	.04***
Personality conventionality	−.01			.04		
Perceived environment conventionality	.01			−.05		
Behavior conventionality	.15**			.10*		
Step 3: health orientation indexes		.19***	.03***		.22***	.04***
Personality health orientation	−.05			−.03		
Perceived environment health orientation	.11*			.13**		
Health behavior	.16**			.14**		

[a] In order to minimize sample loss in these analyses, missing values on conventionality and health orientation measures were replaced by mean scores derived for gender-by-ethnic subsamples.
[b] beta at final step.
* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

effect on regularity of contraceptive use for male and female adolescents and for white, African-American, and Hispanic youth.

III. The Combined Influence of Conventionality and Health Orientation on Regularity of Contraceptive Use

Additional hierarchical multiple regressions were run to assess the extent to which constructs that represent conventionality and constructs that represent health orientation supplement or substitute for one another in accounting for variation in adolescent contraceptive behavior. The conventionality index measures were entered at Step 2 (after the controls), and the health orientation index measures were entered at Step 3. Analyses were done separately for males and females. Results are presented in Table 3.

For both genders, the measures of health do supplement the measures of conventionality in accounting for regularity of contraceptive use in adolescence. Three main points can be made about the findings presented in Table 3. First, the complete set of controls, conventionality indexes, and health orientation indexes accounted for a significant amount of variance in contraceptive use—19% for males and 22% for females. Second, adding the measures of health orientation at Step 3 significantly improved the amount of variance that had been accounted for after the controls and the conventionality measures had already entered the regression equation. The amount of improvement in variance accounted for was 3% for males and 4% for females. Together, the conventionality and health orientation measures doubled the amount of variance accounted for by the sociodemographic factors, accounting for an additional 8% of the variance in regularity of contraceptive use. Third, at the final step of the regression analysis, significant predictors of contraceptive behavior include both demographic and psychosocial measures. For males, significant betas indicate that more regular contraceptive use is associated with nonHispanic ethnic background, higher socioeconomic status, earlier grade in school, greater involvement in conventional behavior and lower involvement in problem behaviors, more social models for health behavior, and greater personal involvement in health behavior. For females, significant betas indicate that greater regularity of contraceptive use is associated with nonHispanic ethnic background, intact family, no pregnancy experience, greater involvement in conventional behavior and lower involvement in problem behaviors, higher social models for health behavior, and greater personal involvement in health behavior.

When these analyses were repeated for the three

racial/ethnic subsamples, the cumulatively combined sets of demographic controls, conventionality measures, and health orientation measures again accounted for a significant amount of variance in contraceptive use—18% for whites, 26% for African-Americans, 16% for Hispanics (compared with 10%, 8%, and 9%, respectively, for the controls alone). For all three racial/ethnic groups, the set of health orientation measures significantly increased the amount of variance accounted for after the set of conventionality measures had been entered. The additional variance accounted for was 5% for both whites and African-Americans, and 4% for Hispanics.

Discussion

Greater psychosocial and behavioral conventionality and greater orientation toward health are both associated with more regular contraceptive use among sexually active male and female adolescents. The patterning and magnitude of the linkages of conventionality and health orientation to contraceptive behavior are comparable for males and females, and these relationships hold when the sociodemographic characteristics of race/ethnicity, socioeconomic status, grade in school, family composition, and pregnancy experience are controlled.

This sample of sexually active adolescents was previously shown to be more unconventional than their virgin peers (21). The present findings suggest, then, that variation in psychosocial conventionality is influential even among adolescents who are more involved in problem behavior. Within this sample of nonvirgins, the demonstrated association between conventionality and more regular contraceptive use is reflected by personality attributes, such as higher value on academic achievement than on independence, and higher expectation for achievement; by characteristics of the perceived social environment, such as having fewer friends as models for problem behavior; and by lower personal involvement in problem behaviors, such as problem drinking and marijuana use; and higher levels of involvement in conventional behaviors, such as school achievement. The linkage between health orientation and contraceptive behavior is also consistent across psychosocial and behavioral domains; more regular contraceptive use is related to a more internal health locus of control, to more modeling of health behaviors by parents and friends, and to greater personal involvement in health behaviors, such as exercise, healthy dietary practices, and seatbelt use. In its negative relationship to problem behavior and its positive linkage with health behavior, contraceptive behavior may be seen as part of a larger, organized system of behavior in this stage of development, i.e., a more conventional adolescent lifestyle.

The present findings extend beyond the linkages that others have shown between more proximal psychosocial characteristics (attitudes, beliefs, and models that directly implicate contraception) and contraceptive behavior (9,14,18,19). Analyses of our data not reported here showed that even after such proximal variables have been taken into account, conventionality and health orientation still accounted for significant proportions of the variance in regularity of contraceptive use for both genders. Although the establishment of proximal or immediate relationships is useful, it has been considered insufficient (22). There is a clear need to expand the explanatory network beyond these more obvious linkages. The present findings establish a more comprehensive and more distal set of influences on regularity of contraceptive use.

Although significant, the amount of variance in regularity of contraceptive use that was attributable to either conventionality or to health orientation was generally quite modest. This level of correlation is not unexpected given the fact, just noted, that the conventionality and health orientation measures were entered after the control measures, are distal, and do not directly implicate contraceptive behavior. In addition, because contraceptive use occurs in the context of a dyadic relationship, variation in use may also be influenced by the sexual partner and depend on his or her characteristics as well.

Psychosocial conventionality and health orientation were shown to make independent contributions to the explanation of variation in regularity of contraceptive use. Conventionality should explain variation in contraceptive use insofar as regular use of contraception may be seen as reflecting a commitment to conventional social norms and expectations regarding the timing of pregnancy and parenting and the completion of one's high school education. Health orientation should be associated with variation in contraceptive use because regular contraceptive use helps protect against the potentially health-compromising consequences of unprotected intercourse, including health risks associated with pregnancy, childbearing, and STDs.

Not only are conventionality and health orienta-

tion linked to regularity of contraceptive use, but there are also conceptual and empirical linkages between these two explanatory constructs. As proposed elsewhere (6), health enhancing behaviors, like conventional behaviors, are approved of and fostered by conventional adult society and encouraged by major social institutions, such as the family and the schools. This proposed conceptual linkage is supported by findings that greater conventionality is associated with greater involvement in various health maintaining behaviors, even when health orientation has been controlled (5). In short, the association between conventionality and health orientation, on the one hand, and contraceptive use, on the other, may derive from regularity of use representing both a conventional behavior and a health behavior, as well as from the linkage between psychosocial conventionality and health behavior.

The relation of conventionality and of health orientation to contraceptive use was found to be stronger for African-American adolescents than for Hispanic and white adolescents. This outcome may have to do with social context influences and associated differences in subgroup norms about sex, pregnancy, and childbearing, and differences in sexual socialization. Furstenberg et al. (23), for example, presented findings supporting the argument that racial differences in the prevalence and timing of premarital sexual intercourse were linked to group differences in attitudes and perceptions. They emphasized the need for more adequate consideration of the social context as a potentially important determinant of sexual behavior in adolescence. Social environmental factors associated with intercourse may also be associated with contraceptive behavior. That suggests the need for further research on such factors (e.g., differential social norms about the timing of parenthood) to help explain group differences in psychosocial characteristics associated with contraceptive behavior.

Interventions aimed at promoting more regular contraceptive use in adolescent populations might benefit from engaging the more distal characteristics identified in this study, for example, values, beliefs, and attitudes that encourage a commitment to health. Since health behaviors were also linked to contraceptive use, intervention efforts might address the larger domain of health related behaviors and emphasize health promoting lifestyles (6).

The present findings are limited in several ways. First, the initial sample represented only 60% of the students who were invited to participate in the study, and only 74% of the Wave-1 sample took part in Wave 4 of the data collection. The Wave-1 sample does not appear to have been greatly distorted by the level of participation in Wave 1, nor does the Wave-4 sample appear to have been seriously distorted by attrition between Waves 1 and 4, but sample loss remains a limitation. A second limitation has to do with the criterion measure of regularity of contraceptive use, which did not allow assessment of other factors affecting regularity of contraceptive use, including access to or availability of contraceptives and contraceptive services. Controlling for access to contraception could further clarify the relation of regularity of use to psychosocial conventionality and health orientation. The criterion measure also did not take into account whether contraceptive use was a behavior intended primarily to prevent pregnancy or to guard against the transmission of disease. The purpose of the behavior may affect the relation of regularity of contraceptive use to conventionality and health orientation. A third limitation of the study is the exclusive reliance on self-report data, making it impossible to reject the possible influence of some common method factor on the findings.

Despite these limitations, the findings are consistent and coherent, they replicate for both genders and across racial/ethnic groups, and they contribute to a more comprehensive understanding of variation in contraceptive behavior, an arena of exceptional significance for the course of adolescent development.

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