A Conceptual Framework for the Analysis of Risk and Problem Behaviors: The Case of Adolescent Sexual Behavior

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A framework for the analysis of adolescent problem behaviors was explicated that draws on five major theories of human behavior. The framework emphasizes intentions to perform behaviors and factors that influence intentions as well as moderate the impact of intentions on behavior. The framework was applied to the analysis of adolescent sexual risk behavior in a population of 668 middle school youths in inner-city New York. Adolescents completed self-administered questionnaires in small group settings, assessing their past sexual activity, intentions to engage in sexual intercourse, expectancies about the advantages and disadvantages of engaging in sexual intercourse, normative pressures to engage in sex, the image implications of engaging in sex, emotional and affective reactions to engaging in sex, and self-efficacy with respect to engaging in sexual intercourse. The framework yielded high levels of predictability of intentions to have sex, with variables from each category proving to be of predictive value. The findings have important implications for social work researchers interested in the prevention of adolescent problem behavior.

KEY WORDS: *adolescent risk behavior; inner city; middle school youths*

Conceptual frameworks for understanding adolescent problem behaviors have received considerable attention in the study of health-related behaviors (for example, Jessor & Jessor, 1977; Willoughby, Chalmers, & Busseri, 2004). Most of these frameworks emphasize the covariation of diverse problem behaviors and the common causes that underlie them. Although adolescent problem behaviors tend to be correlated, the magnitude of the correlation is typically rather modest, averaging about .35. The evidence to date is that variations in problem behavior are much more heavily the result of unique causes as opposed to common causes (for example, Guilamo-Ramos, Litardo, & Jaccard, 2005; Willoughby et al., 2004). Accordingly, social work research and the broader field of prevention science would benefit from the description of a conceptual framework focused on unique determinants of a problem behavior that can organize diverse explanatory concepts that have a track record of explanatory power for specific problem behaviors, be applied to any given problem behavior and any given population, and be integrated with theories of more distal variables that include the types of common causes and other distal constructs of interest to social scientists. This article describes such a framework as applied to the analysis of sexual activity in early adolescence for inner-city youths.

The focus on sexual activity during early adolescence is particularly important given that sexual activity first emerges for many during middle school. In analyses we conducted with Latino youths in the National Longitudinal Study of Adolescent Health, a nationally representative survey of some 20,000 adolescents in grades 7 to 12, 11% of seventh and 23% of eighth graders reported having had sexual intercourse. In longitudinal analyses, 16% of the seventh graders and 34% of the eighth graders (more than one in three) reported having sexual intercourse at least once during the previous 12 months. Terry and Manlove (2000) found that although the proportion of unmarried girls ages 15 to 19 who have had sexual intercourse decreased between 1988 and 1995, the proportion of unmarried girls who have had sexual intercourse at age 14 and younger increased appreciably during the same time period. Early

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sexual activity has been linked to a greater number of sexual partners over time and an increased risk of both teenage pregnancy (Kirby, 2001) and sexually transmitted infections (STIs) (Miller, Cain, Rogers, Gribble, & Turner, 1999). Most of the major national data sets used to study adolescent sexual behavior ignore young adolescents. The most widely quoted survey that addresses adolescent sexual behavior, the Youth Risk Behavior Survey, collects data only from high school-age youths. Thus, the focus of the present research is particularly timely.

A CONCEPTUAL FRAMEWORK FOR THE ANALYSIS OF PROXIMAL DETERMINANTS

In 1991, officials at the National Institute of Mental Health (NIMH) realized that five major theories of human behavior were being used to examine health-related behaviors: (1) social learning theory (Bandura, 1975, 1986), (2) the theory of reasoned action (Ajzen & Fishbein, 1981; Fishbein & Ajzen, 1975), (3) self-regulation theories (Kanfer, 1975), (4) the theory of subjective culture (Triandis, 1972), and (5) various versions of the health belief model (Janz & Becker, 1984; Rosenstock, Strecher, & Becker, 1988). With the goal of integrating the fundamental constructs of each approach into a single framework, NIMH invited Bandura, Becker, Fishbein, Kanfer, and Triandis to participate in a week-long meeting (Fishbein et al., 2001). Although the theorists could agree neither on specific conceptualizations nor on causal priorities, a general framework emerged of consensually agreed-on important variable classes (Jaccard, Dodge, & Dittus, 2002).

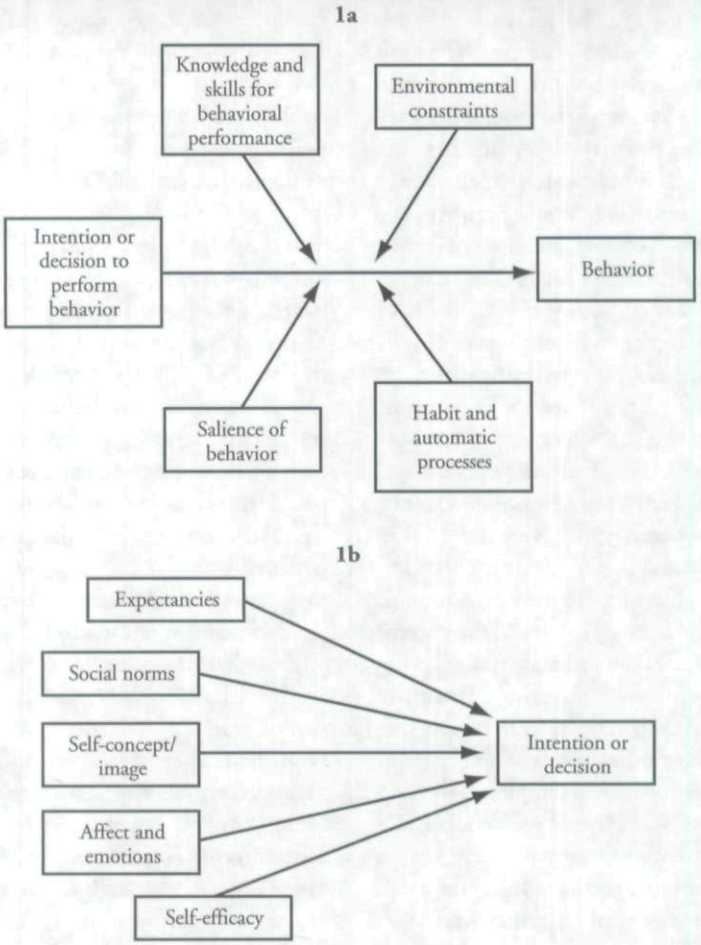
The core variables of the framework are organized into two sequences. The first sequence is illustrated in Figure 1a and focuses on the proximal determinants of behavior. According to this sequence, there are five immediate determinants of behavior. First, an individual must intend to enact the behavior. Unless the individual is willing to perform the behavior, it is unlikely that she or he will do so. There is a large empirical literature that supports the idea that a person's intention to perform a behavior is a strong predictor of future behavior (for example, Ajzen & Fishbein, 1981; Buhi & Goodson, 2007; Randall & Wolff, 1994). Meta-analyses also indicate that changing behavioral intentions yields significant changes in behavior (Webb & Sheeran, 2006). Despite this, it is not always the case that an individual's intention to perform a behavior translates into behavior. Sometimes people do not do what they intend to do. The other components in Figure 1a are intended to account for this.

According to Figure 1a, for a person's intention to translate into behavior, the individual must have the necessary knowledge and ability to perform the behavior. Even if someone has decided to perform a behavior, if the individual lacks the requisite skills to do so, it is highly unlikely that behavioral performance will occur. Second, there must be no environmental constraints present. To the extent that there are environmental facilitators as opposed to inhibitors present, intentions will be that much more likely to translate into behavior. Third, the behavior must be salient to the individual. If a particular behavior is not deemed important, then it is unlikely that an individual will remember to enact it. This class of variables represents "cues to action" as described in the health belief model. Finally, habitual and automatic processes are likely to affect behavioral performance. For example, by force of habit, a person who has quit smoking may light up a cigarette in social settings.

The five variables in Figure 1a work together to influence behavior. In general, although a positive behavioral intention increases the likelihood of behavioral performance, other factors facilitate or impinge on behavioral enactment. Behavior is most likely to transpire when the five variables interact to support behavioral performance. The second sequence in the framework is illustrated in Figure 1b and depicts the factors that influence behavioral intention. There are five constructs that are the primary determinants of one's decision to perform a behavior. The focus of the present research is primarily on the constructs in Figure 1b, so we discuss each in turn.

Expectancies. Expectancies refer to the individual's perceived advantages and disadvantages of performing the behavior, that is, what positive or negative consequences they expect will follow from behavioral performance. As a general rule, individuals will be more likely to decide to perform a behavior if they perceive it as leading to positive consequences and not leading to negative consequences. Individuals will be less likely to decide to perform a behavior if they perceive it as leading to negative consequences and not to positive ones. The construct of expectancies has been a central explanatory concept in many analyses of risk behavior, including sexual risk taking (Guilamo-Ramos et al., 2007; Jaccard et al., 2002; Ott, Millstein, Ofner, & Halpern-Felsher, 2006).

Figure 1: Determinants of Behavior and Behavioral Intentions for Adolescent Sexual Behavior



Social Norms. A second class of variables relevant to the study of behavioral intentions is social norms. Two types of norms contribute to social pressures to perform a behavior: injunctive norms and descriptive norms (Cialdini, 2003). Injunctive norms reflect perceptions of behavioral approval or disapproval of different referents, such as one's mother, father, or boyfriend or girlfriend. For a given behavior, there are multiple referents who may be salient to the individual, and these referents can have conflicting opinions. The overall normative pressure to perform the behavior is some function of these differing opinions.

Descriptive norms refer to perceptions of how many of one's peers are performing the behavior. Rather than focusing on approval or disapproval, descriptive norms focus on perceived behavioral base rates (for example, most of my friends are having sexual intercourse). There are different base rates for different referent groups. For example, the perceived base rate for one's circle of friends might differ from the perceived base rate for peers in one's grade at school. The overall base rate factor is represented by a combination of these multiple base rates. The psychological literature on base rates is complex: Sometimes higher perceived base rates lead to increases in behavioral intent, and sometimes lower base rates do (see Blanton & Christie, 2003, for a review). Numerous studies have implicated the potential importance of perceived behavioral base

rates, and they have been only slightly to moderately correlated with measures of injunctive norms (Santelli et al., 2004).

Self-Efficacy. A third class of variables relevant to behavioral decisions is self-efficacy, or the extent to which individuals feel they can be successful at performing the behavior if they decide to try (Bandura, 1986). The primary determinants of a global judgment of self-efficacy are perceptions of the obstacles that impede behavioral performance and one's judged ability to overcome those obstacles. In general, people will be less likely to decide to perform a behavior if they do not think they have the ability or means to do so. Applications of self-efficacy constructs are abundant in the literature on adolescent sexual risk taking (Albarracín, Johnson, Fishbein, & Muellerleile, 2001).

Self-Concept. Adolescents tend to be concerned about the images they project to others. Adolescence also is a time when youths are actively involved in identity formation. Adolescents want to carve out and transition to an adult identity they can embrace and that is positively viewed by others. In the present analysis, image-based considerations are framed using theories of social prototypes (Thornton, Gibbons, & Gerrard, 2002). Social prototypes refer to images that individuals have of the kind of person who performs the behavior in question (for example, the image of a person who engages in sexual intercourse). Of interest is how positive this image is perceived to be. In general, the more positive the image, the more likely the adolescent will perform the behavior.

Another core facet of self-concept is self-esteem, namely, how positively or negatively one views oneself. The impact of image positivity of the prototype should be qualified by the adolescent's self-esteem. The lower the self-esteem of adolescents, the more they will be motivated to enhance their image by performing a behavior that projects a positive image. Thus, one expects a dynamic interaction between self-esteem and the perceived positiveness of the image projected by the behavior: As self-esteem decreases, the impact of image positivity on decisions should increase.

Affect and Emotions. The role that emotions have on adolescent decision making has become increasingly recognized in recent years (Slovic, 2001; Steinberg, 2003). Whereas many of the previous variables are cognitive based, this class of variables emphasizes the affective aspects of behavioral decisions. Emotions are typically distinct from mood states and more stable affective conditions, such as depression. Emotions tend to be more intense and more short-lived. Theories of emotion emphasize two core facets, the degree of arousal and the affective direction of that arousal, positive or negative (Mano, 1991). In general, individuals who have a strong positive emotional response to performing a behavior will be more likely to do so relative to those individuals who have a strong negative emotional response (Triandis, 1972).

In sum, how do adolescents decide to perform a behavior? According to Figure 1b, they do one or more of the following five things: (1) They think about the advantages and disadvantages of enacting the behavior; (2) they consider the normative pressures to perform the behavior, including whether important others approve or disapprove of their actions, as well what their peers are doing; (3) they take into account their ability to perform the behavior and the obstacles that may impede behavioral performance; (4) they consider the social images they will project if they perform the behavior; and (5) they consider how the behavior "feels" to them emotionally and affectively. Not all of these factors are considered for all decisions. Some decisions are driven solely by emotions, others solely by what important others think the adolescent should do, or various combinations of one or more of the factors. Neither are adolescents viewed as deliberately and thoughtfully considering the above factors each time they are faced with a choice. Rather, somewhat crude, psychological summaries of these constructs reside in memory and can be activated instantly and without conscious thought, to guide behavior.

The present study introduces and applies a framework for analyzing adolescent risk behavior, focusing on the constructs in Figure 1b. The framework represents the synthesis of five major theories of human behavior. The theory provides a useful blueprint for the analysis of proximal variables for analyzing adolescent risk behaviors. Although other broad-based explanatory frameworks have been suggested (for example, Thelen's dynamic systems theory [Thelen & Smith, 1994], Bronfenbrenner's [1989] ecological systems theory, Gottlieb's [1991] probabilistic epigenesis model, and Jessor and Jessor's [1977] problem behavior theory), the present one is different in that it focuses exclusively on proximal determinants (as opposed to distal determinants, such as genetics, media, religion, family dynamics) and elaborates the proximal influences in more detail

than the broader frameworks. The broader theories are important in that they identify distal influences on behavior, but the effects of these distal variables should work through the more proximal determinants listed here. The present research explores the implications of the framework for the prediction of intentions to engage in sexual behavior in a diverse population of middle school students in a poor, urban, inner-city setting.

Although there is considerable research on each of the individual variable categories comprising the outlined framework with respect to adolescent sexual behavior (see Buhi & Goodson, 2007, for a review), we know of no multivariate analyses that have simultaneously incorporated all concepts in Figure 1b in a single, comprehensive analysis. The present article is the first study to empirically and multivariately test the framework. It is clear that a focus on the variables in Figure 1b should produce important explanatory insights into variations in adolescent sexual risk behavior.

Theoretical Predictions

On the basis of extant research, straightforward predictions about each of the variable categories can be offered, namely that more positive and fewer negative expectancies will be associated with increased intentions to engage in sex, higher levels of perceived disapproval and lower levels of perceived base rates will be associated with lowered intentions to engage in sex, lower levels of efficacy for behavioral performance will be associated with lowered intentions to engage in sex, more positive images associated with the type of person who engages in sex will be associated with increased intentions to engage in sex (especially for adolescents with low self-esteem), and more positive and fewer negative emotional reactions will be associated with increased intentions to have sex.

Within Category Instantiations. Within each of the variable categories, there are multiple variables that can show differential relevance to behavioral intentions. For example, for the concept of expectancies, adolescents generally perceive multiple advantages and disadvantages of performing a behavior. Of interest is identifying what the most common advantages and disadvantages are that adolescents associate with a behavior and identifying which of those advantages and disadvantages are most highly associated with behavioral intentions. As another example, for social norms and within the subcategory of injunctive norms, adolescents can perceive different referents as approving or disapproving of them engaging in sex. Of interest is identifying who the referents are whose opinions adolescents think about when considering the behavior and which of these referents are most influential for the adolescent. The present research used qualitative methods to isolate the content of the subvariables within each of the variable categories (for example, which advantages and disadvantages adolescents think about) and then used quantitative methods to explore the predictive utility of the different subvariables. Although it is possible to develop complex hypotheses for each category, space constraints force us to focus on expectancies only.

Probably the most publicized consequences associated with early sexual intercourse focus on unintended pregnancies and HIV/AIDS. Almost all educational programs address these negative outcomes, and these topics are those that are most frequently discussed by parents with their adolescent children (Guilamo-Ramos et al., 2007; Jaccard et al., 2002). Although adolescents probably take into account the negatives of engaging in risk behavior, they also see positives in performing the behavior; these "attractors" are undoubtedly "pulling" adolescents toward behavioral performance (Guilamo-Ramos et al., 2007; Ott et al., 2006). These attractors include the anticipated physical pleasure of sex, the positive impact it might have on one's relationship with a boyfriend or girlfriend, feeling more mature, and feeling more attractive, to name a few. Yet such perceived advantages are rarely put into proper perspective for the adolescent by parents or educational interventions. We predict that because most adolescents are well aware of the threats of pregnancy and AIDS, that it is some subset of the perceived positive consequences of engaging in sex that will dominate the prediction of intentions to engage in sex.

Distal Variable Analysis. The core predictors in Figure 1 are presumed to be the primary determinants of one's decision or willingness to perform a behavior and, in turn, behavior itself. More distal constructs, such as maturation, school environment, demographic variables, family variables, and biological variables also influence behavior, but they are assumed to do so indirectly through their influence on these proximal variables. To illustrate, there might be grade differences in sexual activity, with older

adolescents engaging in more sexual activity than younger adolescents. The question is why does this grade difference occur? It could occur because of grade differences in expectancies, norms, self-concept, self-efficacy, emotional reactions to the thought of having sex, the salience of sex, the environmental obstacles or facilitators to engaging in sex, the skill set necessary for engaging in sex, and habitual and automatic processes. Mediational analyses of the components of Figure 1 can provide more detailed insights. At present, there is no strong theory that would lead someone to give conceptual precedence to one variable category over another category as a mediator of grade differences in sexual activity. The present research isolated potential mediators for future research.

METHOD

Respondents

Respondents were 668 adolescents recruited from grades 6, 7, and 8 from six middle schools in the South Bronx in New York City. The Bronx is New York City's poorest borough. The median household income is significantly below the state average, with an estimated 20% of the total population having an income below the federal poverty level (U.S. Census Bureau, 2000). For families with children, the percentage below the federal poverty level increases to approximately 40% (U.S. Census Bureau, 2000). The student population of the communities we sampled is about 75% Latino and 25% African American. A school roster was obtained from each school, and 798 randomly selected students and mothers of students were contacted and invited to participate in the study. Of these families, we collected data on 668 (84%). A refusal bias survey was given to a subsample of those who did not participate ($N = 92$). Analyses showed that those who refused to participate or for whom we could not collect formal data were demographically similar to those who participated in the study on such variables as ethnicity, receipt of public assistance, employment status, and maternal educational level.

Measures

Measures in the main study were collected using self-administered questionnaires. Although standardized instruments are available to measure the constructs in Figure 1b, many of these measures have not been developed specifically for the study of early adolescent sexual behavior in urban Latino and African American youths. The content of the measures was based on a pilot study of 83 adolescents representative of those in the main study. The pilot study adolescents were interviewed with open-ended questions. For example, adolescents were asked what they saw as the advantages and disadvantages of engaging in sexual intercourse at this time in their lives, and the answers they gave were content analyzed. The most frequently mentioned advantages and disadvantages were used to construct the closed-format questionnaires for the main study. In essence, the qualitative work defined the instantiations of the general constructs in Figure 1b. In addition, focus groups with adolescents were conducted to shape the language used in the questionnaire.

To encourage truthful responding in the quantitative survey, we assured adolescents that their responses were confidential by explaining to them our system of privacy protection that ensured confidentiality and anonymity of responses. Respondents were given practice items to eliminate warm-up effects and to ensure scale understanding. Adolescents completed their instruments in small group settings in the presence of a trained project staff member who oversaw the data collection effort. The rooms were arranged so that adolescents did not interact with each other and influence each other's responses. Gender variant versions of the survey were developed. The survey was forward and backward translated into Spanish using methods described in Marín and Van Oss Marín (1991). The surveys were pilot tested for readability and comprehension. Participants identified their language preference for completing the survey. In our description of measures, we used phrasing for the female version of the instrument. When asking questions about sexual intercourse, we made it clear that we meant vaginal sexual intercourse.

Behavioral Intentions. Behavioral intentions to engage in sexual intercourse were assessed on the basis of responses to three statements: (1) I think I am ready to have sexual intercourse, (2) I would have sexual intercourse now if I had a boy who would do it with me, and (3) I plan on having sexual intercourse in the next six months, each using a five-point agree–disagree scale. The items had a coefficient alpha of 0.85.

Expectancies. Adolescents responded to statements linking sexual intercourse to each of 21 consequences using a five-point agree–disagree scale. A stem appeared for each question, for example,

"If I had sexual intercourse at this time in my life," which was followed by sample items such as (a) I would feel more "grown up," (b) I would be more popular with the boys, (c) it would be morally wrong, and (d) it would satisfy my curiosity about sex. More details about the expectancy contents are in the Results.

Social Norms. To assess descriptive norms (that is, base rates), respondents were asked how many same-sex close friends they had and then to estimate how many of them had engaged in sexual intercourse. From these answers, the proportion of close friends who had sex was computed. Respondents also estimated the number of same-sex adolescents in their grade who had engaged in sexual intercourse, reporting an actual frequency. The two items were correlated (.20, $p < .05$).

Injunctive norms asked respondents to rate how much specific referents would approve or disapprove of them having sexual intercourse at this time in their life, using a five-point agree–disagree scale. The referents were mother, father, friends, best friend, boyfriend or girlfriend, and a relative other than one's parents. If a referent was not relevant, for example, father, boyfriend or girlfriend, the respondent was instructed to skip the item.

Self-Concept. The prototype of an adolescent who engages in sexual intercourse was assessed by asking respondents to indicate their agreement or disagreement (on a five-point scale) with statements about "girls" (or "boys" in the case of male respondents) who have sexual intercourse. The stem was, "Girls who have sexual intercourse are," and was followed by (a) confused about what is right and wrong, (b) popular with other girls, (c) popular with the boys, (d) more "adult" than other girls, and (e) irresponsible. An overall evaluation of the prototype was obtained by asking respondents to respond to the following item on a five-point scale ranging from 1 = positive to 5 = negative: "Overall, my impression of girls who have sexual intercourse is...."

Self-esteem was measured using a five-item short version of the classic Rosenberg (1965) scale. These items had an alpha of 0.83 and were correlated (.84) with the long-form in pilot work.

Self-Efficacy. Self-efficacy was measured with three items: (1) It would be easy for me to have sexual intercourse if I wanted to, (2) It would be easy for me to find a willing partner if I wanted to have sexual intercourse, and (3) If a boy was pressuring me to have sexual intercourse, it would be easy for me to say no, using a five-point agree-disagree scale. The first two items were correlated (.61), but the last item was only weakly correlated (about -.12) with them.

Affect and Emotion. Four emotional reactions were assessed, each using a five-point agree–disagree scale. Three items stated, "When I think about having sexual intercourse, I feel (1) scared, (2) nervous, and (3) happy." The fourth item stated, "The thought of having sexual intercourse is disgusting." The first two items were correlated (.73), but were only moderately correlated with the other items (absolute correlation of about .35).

Sexual Behavior. Adolescents were provided with a definition of vaginal sexual intercourse and then were asked if they had ever engaged in it. Responses were scored dichotomously reflecting whether the adolescent had engaged in sexual intercourse. Because of the early age of the adolescents, it was not possible to ask questions about forced sex. In addition, we were unable to ask adolescents about the age of their sexual partners. Although research indicates that coercive sex and the partnering of young adolescent girls with older males is a problem in early adolescence, school administrators were uncomfortable with this line of questioning. Thus, these measures of sexual behavior were not included in the present study.

RESULTS

Preliminary Analyses

Descriptive Statistics. We interviewed 528 Latino dyads and 140 African American dyads. The mean age of the adolescents was 13, and about half were boys. Ten percent of the Latino adolescents and 16% of the African American adolescents had engaged in sexual intercourse. Means and standard deviations for key variables are presented in Table 1. Because of the large number of measures, we present only a selection of representative measures from each category. We tested for outliers in all analyses and found none. There were small amounts of missing data amounting to no more than a few cases on any given variable. For those individuals with missing data, values were imputed using an expectation-maximization (EM) approach (Cohen, Cohen, West, & Aiken, 2003; Little & Rubin, 1986) The EM approach is an iterative approach that estimates values for missing data in two steps: (1) an expectation step that finds the distribution for the missing

Table 1: Statistics for Main Variables Related to Adolescent Sexual Behavior

Item	*M*	*SD*	Skewness	Kurtosis
BI: I think I am ready to have sexual intercourse	1.94	1.30	1.11	−0.07
BI: Would have intercourse if had partner who would do it	1.90	1.26	1.19	0.22
BI: Plan on having intercourse in the next six months	1.74	1.16	1.43	1.02
Ex: I would feel more "grown up"	2.17	1.24	0.72	−0.51
Ex: I would be more popular with the boys	2.23	1.30	0.67	−0.67
Ex: It would be morally wrong	3.72	1.46	−0.71	−0.91
Ex: It would interfere with school	3.71	1.49	−0.74	−0.91
Ex: It would satisfy my curiosity about sex	2.77	1.41	0.12	−1.17
SN: Number of close same-sex friends	1.82	2.04	0.33	7.49
SN: Number of friends who had engaged in sex	2.49	2.58	4.15	6.02
SN: Number of same-sex adolescents who had sex	2.41	4.95	5.18	3.88
SN: Your mother would approve or disapprove	1.54	1.04	1.90	2.67
SN: Your friends would approve or disapprove	2.43	1.40	0.46	−1.09
SN: Your best friend would approve or disapprove	2.10	1.36	0.89	−0.53
SN: Your boyfriend/girlfriend would approve or disapprove	2.44	1.39	0.43	−1.10
SN: The relative you feel closest to would approve or disapprove	1.78	1.16	1.31	0.64
SC: Confused about what is right and wrong	3.51	1.38	−0.57	−0.84
SC: Popular with other girls	2.98	1.43	−0.10	−1.27
SC: Popular with the boys	3.48	1.35	−0.55	−0.81
SC: More "adult" than other girls	2.60	1.45	0.33	−1.23
SC: Irresponsible	3.35	1.38	−0.29	−1.04
SC: I have a lot of good qualities	4.27	1.01	−1.46	1.72
SC: I have a lot to be proud of	4.50	.933	−2.14	4.16
SC: I like myself just the way I am	4.39	1.05	−1.82	2.57
SC: I feel loved and wanted	4.38	0.99	−1.67	2.27
SE: It would be easy to have intercourse if I wanted to	2.29	1.41	0.64	−0.94
SE: It would be easy for me to find a willing partner	2.34	1.44	0.60	−1.00
SE: It would be easy for me to say no	3.80	1.48	−0.82	−0.82
Em: I feel scared	3.34	1.45	−0.33	−1.18
Em: I feel nervous	3.39	1.43	−0.43	−1.07
Em: I feel happy	2.10	1.26	0.78	−0.53
Em: Sexual intercourse is disgusting	3.05	1.50	0.003	−1.36
SB: Ever had sexual intercourse	0.11	0.32	2.46	4.07

Notes: BI = behavioral intention; Ex = expectancy; SN = social norm; SC = self-concept; SE = self-efficacy; Em = emotion; SB = sexual behavior.

data based on the known values for the observed variables and the current estimate of the parameters and (2) a maximization step that substitutes the missing data with the expected value. Because of the nonnormality (see Table 1), we analyzed the data using bootstrapping rather than traditional maximum likelihood.

Behavioral Intention and Current Sexual Activity. Although our primary interest is on intentions to engage in sexual intercourse in the future given the young age of our target population, we conducted preliminary analyses that explored the link between intentions and current sexual activity. This involved regressing whether the adolescent had engaged in sexual intercourse onto a continuous latent variable with the three indicators reflecting behavioral intent. Because the measure of behavior was binary, we used Mplus to implement a logit regression model with numerical integration. The model fit the data well as reflected by the Bayesian information criterion, and the estimated logistic coefficient was 1.59 ($p < .01$), with an exponent of 4.90 (95% CI = 3.22 to 6.23). The latent behavioral intention was scaled on a 1 to 5 agree-disagree metric. For every one unit that the intention increased, the odds of engaging in sexual intercourse were predicted to increase by

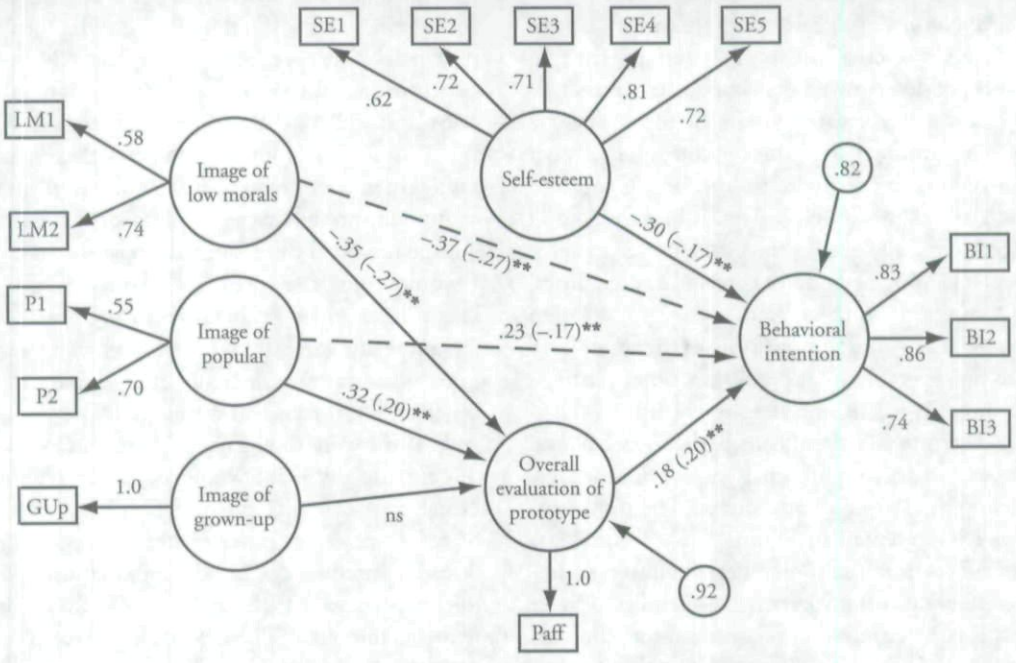
a multiplicative factor of 4.90. To provide a more intuitive sense of the effect size, we used one of the observed intention items ("I plan on having sexual intercourse in the next six months") and calculated the proportion of individuals who had engaged in sexual intercourse at a score of 1 = strongly disagree, 3 = neither agree nor disagree, and 5 = strongly agree. The proportions of sexually active adolescents were .03, .17, and .50 in the three groups, respectively. These data suggest a link between behavioral intentions and behavior.

Analytic Strategy. Because of the large number of variables involved, we used a limited information estimation approach to first analyze the structure of relationships within a given variable category. These analyses then informed integrated analyses across the model components. Within a model component, the first step was to examine the correlation matrix between variables to identify any obvious redundancies where variables were correlated at .70 or higher. In such cases, the variables were treated as multiple indicators of a single latent variable, given that it made conceptual sense to do so. Next, a structural model of the relationship between the variables within the component and intentions to engage in sexual intercourse was evaluated using structural equation modeling (SEM). The form of the structural model was dictated by Figure 1 as well as previous research on the constructs. After discussing the individual analyses, we consider the integrated analyses.

Model Components

Self-Concept. The correlations among the five prototype attributes suggested three clusters of attributes: (1) the two items focused on projecting an image of being more popular (r = .68), (2) the two items about projecting an image of lacking a moral base ("is confused about right and wrong" and "is irresponsible" [r = .67]), and (3) a single item about projecting an image of being grown up. On the basis of this, the model in Figure 2 was tested, absent the dashed paths, in which adolescent intentions to engage in sexual intercourse were predicted from the self-esteem of the adolescent and the overall rating of how positive the image is of an adolescent who engages in sexual intercourse. The three attribute clusters were modeled as determinants of the overall

Figure 2: Self-Concept and Behavioral Intention for Adolescent Sexual Behavior



Exogenous variables are correlated although curved arrows are not shown. Measurement error variances were estimated but are not shown. For structural model, standardized path coefficients are in parentheses. For measurement model and error variances, coefficients are standardized.
**$p < .01$. ns = $p > .05$.

favorability of the prototype. Although the model yielded reasonably good fit to the data, more focused diagnostics suggested that the effects of the separate attribute clusters on behavioral intention were not completely mediated by the overall judged favorability of the prototype. The model was therefore re-estimated to include the dashed paths. The coefficients in Figure 2 reflect this model. In this and all other analyses, we characterize a good-fitting model as one in which the standardized root mean square residual is less than .05, the root mean square error of approximation is less than .08, the p value for the test of close fit is greater than .10, and where inspection of the modification indices and standardized residuals suggested no signs of ill-fit.

Examination of the path coefficients indicated that higher levels of self-esteem are associated with lower intentions to engage in sexual intercourse, more positive images of adolescents who engage in sexual intercourse are associated with stronger intentions to engage in sexual intercourse, and both the projection of a "popular" image and the projection of a "moral uncertainty and irresponsibility" image have direct and indirect effects on intentions.

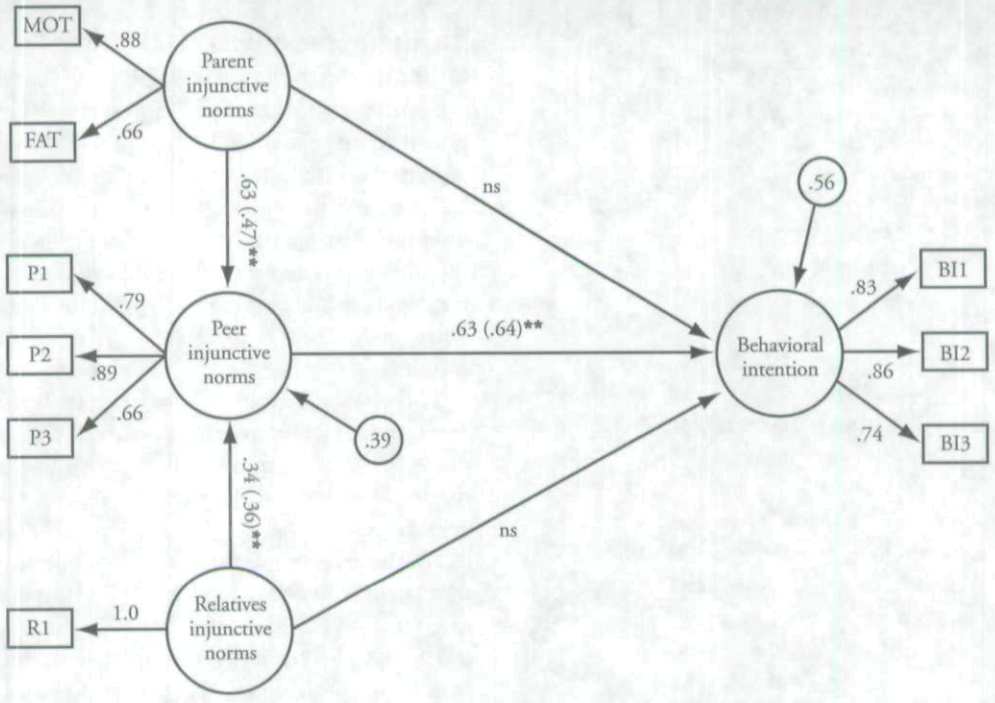
We predicted an interaction effect between self-esteem and the overall evaluation of the type of person who engages in sexual intercourse, but analyses yielded no evidence for such an interaction.

Social Norms. The correlations for the descriptive norms and injunctive norms suggested that the two measures of descriptive norms be treated as indicators of distinct constructs and that the injunctive norms be grouped into three clusters: (1) a peer cluster, consisting of the items measuring approval or disapproval by one's close friends, best friend, and boyfriend or girlfriend (average $r = .68$); (2) a parent cluster, consisting of items for approval or disapproval by the mother and the father ($r = .82$); and (3) an "other relatives" cluster, consisting of the single item regarding approval or disapproval by other relatives. In all models we fit, the descriptive norms failed to yield statistically significant paths to behavioral intention, so to simplify analyses, we focused on modeling just the injunctive norms. The model we pursued is presented in Figure 3. The model has direct effects from the three referent clusters to behavioral intention. However, it also includes indirect effects for the parent and relative clusters through the peer clusters. This reflects the fact that parents and other family members can shape the kinds of friends with whom adolescents associate (Mounts, 2002). The model yielded a good fit to the data. Examination of the path coefficients indicates peer injunctive norms have a significant path to intentions and the parent and relative injunctive norms have indirect effects on intentions.

Expectancies. In general, the correlations among the 21 expectancies were not large. They ranged from .01 to .82, with a median of .16. Only four pairs of expectancies showed correlations greater than .60, with the highest correlation (.82) between the expectancy about STDs and the expectancy about HIV/AIDS. Although we could pursue factor analyses of the expectancies, such a strategy emphasizes the common variance of expectancies at the expense of ignoring the substantial amounts of unique variance that could be more informative. By collapsing expectancies that are modestly correlated into more abstract categories, as factor analysis does, the predictive utility of the expectancies is lessened and the categories lose precise meaning. The decision was therefore made to work with the expectancies separately.

The zero order correlation of each expectancy with the mean of the three intention items is presented in Table 2. Also identified are the four expectancies that yielded a statistically significant partial correlation with behavioral intention when all other expectancies were statistically held constant. In this analysis, for the only case in which two expectancies were correlated greater than .62 (the STD expectancy and the HIV expectancy, which were correlated .82), one of the items was excluded from the analysis. The four expectancies these analyses highlight in terms of explaining nontrivial amounts of unique variance were as follows: (1) If I were to engage in sexual intercourse at this time in my life, I would enjoy the sex; (2) if I were to engage in sexual intercourse at this time in my life, I would feel more attractive; (3) if I were to engage in sexual intercourse at this time in my life, I would show my boyfriend–girlfriend how much I love him/her; and (4) if I were to engage in sexual intercourse at this time in my life, I would get a bad reputation. Notable in this list and in Table 3 is the lack of relevance of expectancies related to pregnancy and disease consequences and the fact that three of the four expectancies focus on perceived advantages of sexual intercourse. These analyses were subjected to split-half cross-validation, and the same variables emerged as the key predictors of intention in both subsamples.

Figure 3: Social Norms and Behavioral Intention for Adolescent Sexual Behavior



Exogenous variables are correlated although curved arrows are not shown. Measurement error variances were estimated, but are not shown. For structural model, standardized path coefficients are in parentheses. For measurement model and error variances, coefficients are standardized.
**$p < .01$. ns = $p > .05$.

We conducted a latent variable multiple regression analysis regressing the latent intention measure (with three indicators) onto the four expectancies, each represented by a single indicator. The fit of the model was good. The regression coefficients for each of the four expectancies were statistically significant ($p < .01$). The unstandardized coefficients were .31, .15, .13, and −.21, and the standardized coefficients were .40, .17, .15, and −.28, in order of the expectancies described earlier. The estimated latent variable multiple correlation was .70.

Self-Efficacy. Inspection of the correlations between the three self-efficacy measures revealed only modest correlations between them (about .30). The latent behavioral intention variable was regressed onto the three self-efficacy items, separately (it would be easy for me to have sexual intercourse if I wanted to; it would be easy for me to find a willing partner if I wanted to have sexual intercourse; if a boy was pressuring me to have sexual intercourse, it would be easy for me to say no). The model fit was good. The regression coefficients for each of the three self-efficacy items were statistically significant ($p < .01$). The unstandardized coefficients were .29, .18, and −.23, and the standardized coefficients were .38, .23, and −.31, in order of the items described above. The estimated latent variable multiple correlation was .66. The results suggest that adolescents have higher intentions to engage in sexual intercourse if they think it would be easy to have sex and to find a willing partner and if they think it would be difficult to say "no" when pressured by a partner.

Affect and Emotions. For the four emotion items (nervous, scared, happy, and disgusted), the responses for feeling nervous and feeling scared were correlated (.73), so these were used as indicators of a common latent variable. A model was fit that regressed the latent behavioral intention onto the latent "anxious" factor (with two indicators) and the two separate constructs of "happiness" and "disgust," each being represented by a single indicator. The model fit was good. The regression coefficients for each of the three affect variables were statistically significant ($p < .03$). The unstandardized coefficients were −.12,

Table 2: Correlations of Expectancies with Behavioral Intention for Adolescent Sexual Behavior (N = 668)

Expectancy	r
I think I would enjoy the sex.[a]	.55
It is better to wait until I am married to have sexual intercourse.	–.53
I would feel closer to the boy with whom I had sexual intercourse.	.47
I would feel more attractive.[a]	.41
I would feel more "grown up."	.40
I would feel guilty.	–.40
I might get a bad reputation.[a]	–.39
I would be more popular with the boys.	.39
It would interfere with school.	–.36
It would satisfy my curiosity about sex.	.33
It would be morally wrong.	–.32
My boyfriend might lose respect for me.	–.31
It would be embarrassing for me if I got pregnant.	–.30
It would prove to my boyfriend how much I love him.[a]	.28
I wouldn't feel left out.	.25
I would regret not waiting until I was married.	–.23
I might get HIV/AIDS.	–.22
I might get a sexually transmitted disease.	–.21
My mother would be embarrassed if I got pregnant.	–.18
It would create money problems for my family if I got pregnant.	–.16
I might get pregnant.	–.15

[a]Was statistically significant when partialling out all other expectancies.

.52, and –.07 for anxious, happiness, and disgust, respectively. The standardized coefficients were –.15, .60, and –.09, respectively. The estimated latent variable multiple correlation was .72. The results suggest that adolescents have higher intentions to engage in sexual intercourse if, when they think about having sex, it makes them feel happy and they are not scared, nervous, or disgusted by it.

An Integrated Model

On the basis of the preceding analyses, we conducted a latent variable multiple regression analysis in which we regressed the latent behavioral intention construct onto all latent or single-item variables that had a statistically significant direct path to behavioral intention. Past sexual behavior was excluded from the final integrated model because of a statistically nonsignificant relationship with behavioral intention when included as a covariate with the mediators specified in our conceptual framework.

There were 15 exogenous variables, with a median average absolute intercorrelation of .23 (25th quantile = 0.14 and 75th quantile = 0.34). The overall model fit was good. The latent variable multiple correlation was .85 ($p < .01$, 95% CI = 0.81 to 0.88). The predictor variables that yielded statistically significant path coefficients to the latent behavioral intention are presented in Table 3. All three self-efficacy variables yielded significant path coefficients, as did three of the four expectancies (I would enjoy the sex, I would feel more attractive, I would get a bad reputation). One of the emotions (happiness) received a statistically significant path coefficient, as did the injunctive norms from one's peers. Finally, self-esteem yielded a statistically significant path coefficient. The above analysis was repeated using split-half cross-validation procedures, and the same results were found in both split-half samples.

Developmental Trends in Sexual Activity

Research has observed age differences in sexual activity during early adolescence, but there have

Table 3: Latent Variable Regression Analysis for Integrated Model

Variable	B	b	95% CI	p
Ex: I would enjoy the sex	0.29	0.09	–.008 to .183	.060[a]
Ex: I would feel more attractive	0.07	0.10	.027 to .187	.009
Ex: I would get a bad reputation	–0.09	–0.12	–.193 to –.054	<.001
SE: Easy to have sexual intercourse	0.09	0.12	.040 to .207	.002
SE: Easy to find willing partner	0.10	0.09	.028 to .169	.002
SE: Easy to say no if pressured	–0.07	–0.09	–.159 to –.032	.006
Self-esteem	–0.07	–0.08	–.146 to –.019	.011
Injunctive norm (Peers)	0.25	0.26	.155 to .368	.001
Em: Happiness	0.29	0.33	.245 to .418	<.001

Notes: Ex = expectancy, SE = self-efficacy; EM = emotion, B = unstandardized regression coefficient, b = standardized regression coefficient, 95% CI = 95% confidence interval for standardized coefficient as estimated by bootstrap, p = bootstrap estimate of p value.
[a]The path was statically significant for the traditional maximum likelihood analysis but only marginally so in the bootstrap analysis.

been few formal attempts to document empirically the bases of these differences (for example, Jaccard et al., 2002). To document such differences in our sample, we conducted a logistic regression wherein we regressed whether the adolescent reported having sexual intercourse onto grade level in school (sixth versus seventh versus eighth). Grade was represented by two dummy variables. The analyses revealed that the rates of sexual intercourse were not statistically significantly different for sixth and seventh graders (6.2% compared with 8.1%), but there was a statistically significant increase in sexual behavior for eighth graders (20.1%) compared with sixth and seventh graders. The crucial question is why do these developmental differences occur?

To gain perspectives on this, we first conducted analyses to determine whether the grade differences in sexual behavior were reflected in behavioral intentions. This was indeed the case. The mean difference in intentions for eighth graders as compared with sixth and seventh graders combined was .52 ($p < .01$). Intentions, in turn, were strongly associated with behavior ($p < .01$ – see earlier analyses). More fine-grained analyses showed that grade had an independent effect on sexual behavior when behavioral intentions were statistically held constant, suggesting that intentions were only a partial mediator of the effects of grade on behavior. This suggests that variables in Figure 1a, other than behavioral intention, may have come into play to affect behavior and that grade level of student is related to these variables. One possibility is that eighth graders have greater access to willing sexual partners than do sixth graders (an environmental constraint–facilitator). Another possibility is that sixth, seventh, and eighth graders have the same level of refusal skills, but the refusal strategies are more effective for deterring sixth- and seventh-grade potential sex partners as opposed to eighth-grade partners. Future research is needed to explore these possibilities.

There are two general mechanisms by which grade differences can manifest themselves. First, there may be differences in the strength of a given path coefficient as a function of grade. This represents a moderated effect. Second, grade may affect a model component (for example, expectancies) directly, thereby representing a mediated effect (where the model component is the mediator).

Moderator Analyses. We tested for moderating effects of grade on the path coefficients using the multiple group strategy discussed in Jöreskog and Sörbom (1996). The analysis focused on two groups, sixth and seventh graders combined and eighth graders. We tested the integrated model from the previous section in each group, but set across-group equality constraints for paths from a latent variable to its indicator or indicators. This ensured metric equivalence across groups. These equality constraints yielded a nonsignificant change in the overall model chi square for fit. We then tested each structural path for group equivalence by constraining the path to be equal across groups and compared the overall chi square for this model with an unconstrained model that did not include the across-group constraint. Only one comparison revealed a statistically significant group difference. The path coefficient for the injunctive norm latent variable was stronger for eighth graders (unstandardized coefficient = .50, $p < .01$) than it was for sixth and seventh graders (unstandardized coefficient = .13, $p < .05$). The chi square for the test of coefficient difference was 17.6 ($df = 1, p < .01$). We also used a bootstrapping strategy for model comparisons discussed by Arbuckle and Wothke (1999) and reached a similar conclusion. Thus, eighth graders, relative to sixth and seventh graders, tended to be more influenced by injunctive norms. As shown in the next subsection, the norms of the peers of eighth graders were more approving of sexual intercourse than were the norms of sixth and seventh graders, so this increased influence of injunctive norms is meaningful for understanding the grade differences in sexual activity.

Mediator Analyses. The second mechanism by which a grade difference in intentions to have sexual intercourse can manifest itself is by affecting the key mediators identified in Figure 1b. The mediational role of the model components was tested by determining whether the path coefficient from the grade dummy variable to each of the mediators was statistically significant, with particular attention to those mediators identified as central in the integrative analyses discussed earlier. Significant path coefficients were observed for all of the key mediators in those analyses, except for self-esteem and the efficacy item, "If a boy/girl was pressuring me to have sexual intercourse, it would be easy for me to say no." Eighth graders as compared with sixth and seventh graders were more likely to believe they would enjoy the sex if they engaged in sexual intercourse, more likely to see engaging in sexual intercourse as increasing their attractiveness, less likely to believe that having sex would give them a

bad reputation, more likely to think they could find a willing partner, more likely to see their peers as approving of sexual intercourse, and more likely to feel "happy" at the thought of having sexual intercourse. We tested whether any of the core mediators served as "complete mediators" in the sense that if they were statistically held constant the grade differences in intention to have sex would become small and statistically nonsignificant. This was the case only for the three expectancy variables when considered as a collective.

In sum, the preceding analyses provide perspectives on the mechanisms that are producing grade differences in sexual activity, in terms of both moderating and mediating influences.

Other Distal Variables. We examined grade differences in sexual activity. Comparable analyses could be conducted as a function of other distal variables, such as gender, ethnicity, virgin status, and marital status of the mother of the adolescent. Past research has shown effects of such variables on adolescent sexual activity, and it is possible to explore the mechanisms producing these differences using the mediators identified by the model proposed here.

DISCUSSION

The present study introduced and applied a conceptual framework for the analysis of health-related behaviors on the basis of proximal determinants. The framework is powerful in that it represents the integration of five major theories of human behavior and uses variable categories that are content-free and applicable to a wide range of adolescent or adult behaviors. Our study applied the framework to the analysis of sexual risk behavior in early adolescence for an inner-city population of Latino and African American youths. We explicated strategies for conceptualizing and measuring each of the major variable categories and applied the framework to good effect in a study population for whom it is notoriously difficult to explain significant amounts of variance in risk behavior. Variables from each of the major categories proved to be useful in predicting and understanding risk intentions.

Developmental Analysis

As noted, the synthesized framework represents a blueprint of mediators through which the effects of distal variables, such as those considered by Jessor and Jessor (1977) as well as other frameworks can be traced. In the present case, we focused on developmental changes in sexual activity. It is one thing to observe developmental differences in sexual behavior. It is quite another to understand the mechanisms that produce these differences. Our framework and analyses provide clues about where theorists should focus their future efforts in clarifying the underlying mechanisms. For example, we found that injunctive norms of peers, positive emotions associated with sex, self-efficacy, and expectancies about the anticipated physical pleasure of sex; feelings of increased attractiveness; and getting a bad reputation all were potential mediators of developmental differences and hence are worthy of further investigation in a developmental context. It is important to note that these mediators were identified in the context of a multivariate analyses that controlled for a range of potential confounds. A recent review of published research applying the predictors articulated by the NIMH theorists to the study of adolescent sexual behavior concluded that much of the literature is atheoretical in nature and focused on univariate analysis (Buhi & Goodson, 2007). To the best of our knowledge, the present article is the first multivariate analysis of the factors that are considered proximal to adolescents' decisions to engage in sexual risk behavior, and thus it makes an important contribution to the extant literature.

In addition to traditional mediation analysis, we observed evidence for moderated mediation in the context of the grade differences. Moderated mediation is when the strength of the mediational effect of a mediator on an outcome changes from one group to another. We observed such a phenomenon with injunctive norms when we found that peer-associated injunctive norms yielded a stronger path coefficient for the prediction of intentions to have sexual intercourse for eighth graders as opposed to sixth and seventh graders. Future research needs to explore this in more depth.

Intervention Design Implications

There were several striking results in the present study that potentially have implications for social work researchers interested in designing interventions for adolescent sexual risk behavior. The first result was the rather sizable change in levels of sexual behavior between seventh and eighth grade (from about 7% to 20%). In our study, one out of every 5 eighth-grade adolescents had engaged in sexual intercourse. In a typical class of 40 students

in the schools in which these adolescents attend, eight would be sexually active. This underscores the importance of early intervention, especially during grades 6 and 7, before adolescents become sexually active.

A second striking finding was the relative absence of pregnancy and disease considerations as predictors of adolescent intentions to engage in sexual intercourse. Expectancies about such factors tended to correlate (about .20) with intentions to have sexual intercourse, and none contributed unique explained variance to the criterion relative to other variables in the framework. The overall pattern of results suggested that adolescents are more tuned in to the social implications and consequences of having sex as well as to the physical and affective pleasures of doing so. This suggests that for an intervention to be effective, these social and physical dimensions need to be addressed. Most parents tend to talk with their children about the threat of HIV/AIDS and pregnancy (Guilamo-Ramos et al., 2007; Jaccard et al., 2002). Our data suggest that these talks need to be broader. Adolescents associate positive outcomes with having sexual intercourse, and these "positives" need to be addressed and put into proper perspective for the adolescent.

Affective and Emotional Reactions

In our qualitative pilot studies, our interviews revealed three types of emotions that dominated adolescent thoughts about sexual intercourse. First, a group of adolescents expressed anxiety about it (scared and nervous). These adolescents had not yet engaged in sexual intercourse but were clearly contemplating it and were anxious about what it would be like. Second, another group of adolescents was "disgusted" by the thought of sex. The third group of adolescents expressed positive affect and emotions (that is, happiness) associated with sex. This group tended to be sexually active. The quantitative study affirmed the importance of positive affect and emotions in influencing adolescent sexual behavior. This result underscores an important challenge for prevention efforts. On the one hand, there is a need to counteract the motivating forces of positive emotions and physical pleasure surrounding sexual behavior for middle school youths. On the other hand, there is a need to ensure that youths transition to adult lives that are characterized by positive and healthy sexual relations. Addressing the affective and physical bases of sex in programs aimed at middle school youths must respect these dual concerns, a difficult task. A common complaint about models of adolescent decision making is that they assume adolescents are "rational" decision makers who carefully weigh the "costs" and "benefits" of their actions. The argument is that decisions do not always reflect rational information-based strategies, but instead are governed by emotions and impulsive tendencies (Steinberg, 2003). A strength of our framework is that it accommodates both perspectives.

Norms

Our framework explicitly recognizes the potential importance of two types of normative influence, descriptive norms and injunctive norms. Few studies have measured both constructs, and those that have tended to find that they are only weakly to moderately correlated (Santelli et al., 2004). In the present study, only injunctive norms proved to be a robust predictor of behavioral intentions, and these norms were associated with peers. We found support for the possible impact of parental injunctive norms on adolescent risk intentions, but the evidence was most consistent with the idea that parents have their biggest impact by influencing the kinds of friends and peers with whom their children associate. Care must be taken when interpreting peer associations of this type because peer influence is confounded with friendship selection effects. A growing body of literature on social norm interventions emphasizes educating adolescents about base rates of risk behavior (Linkenbach & Perkins, 2003). The focus is on descriptive norms, and the idea is that adolescents overestimate the number of adolescents who engage in risk behavior. When made aware of true base rates, changes in behavior occur to conform to the lower actual norms. Our research suggests that social norm campaigns may not always work, given the limited role of descriptive norms in our populations.

Self-Concept

Although we observed several interesting relationships between image-based variables and intentions to engage in sexual intercourse, only self-esteem was predictive of behavioral intentions in the broader multivariate context that held constant other variables (confounds). In general, higher levels of self-esteem were associated with lower intentions to engage in sexual intercourse. In some ways, image-based considerations came into play as was evident

in two of the expectancies that proved to be predictive of sexual behavior, namely (1) the possibility of getting a bad reputation from engaging in sex and (2) feeling more attractive as a result of engaging in sex. We would not conclude from our study that image-based considerations are irrelevant. Rather, there are different ways of conceptualizing and operationalizing image-based variables, and in this particular instance, the reflection of these constructs in expectancies proved to be of most utility.

Research on self-esteem and adolescent risk behavior has yielded inconsistent results, with self-esteem sometimes being predictive of risk behavior and other times not. The fact that self-esteem was predictive of intentions when embedded in a larger nomological network increases our confidence of its relevance for the study population we targeted.

Self-Efficacy

A great deal of research has been conducted on self-efficacy constructs, but in the area of adolescent sexual behavior, most of this research has focused on contraceptive self-efficacy as opposed to sexual behavior per se. Three types of self-efficacy were highlighted in our research: (1) perceptions of how easy it is to find a willing partner; (2) perceptions of how easy it would be to have sexual intercourse; and (3) perceptions of one's ability to say "no" if pressured to have sexual intercourse. Not surprising, people who thought it would be difficult to find a willing partner and who thought it would be difficult to have sexual intercourse were less likely to intend to try to have sex. It was interesting that adolescents who felt they had the ability to say no to pressure to have sexual intercourse were less likely to intend to have sex, and those who thought they lacked this ability were more likely to intend to have sex. Perhaps those who have been exposed to sexual situations and are disposed to engage in sex in those situations are better able to appreciate how difficult it is to resist the pressures and urges in those situations. Future research is needed to explore the mechanisms that may underlie this intriguing self-efficacy correlation.

Caveats

The present research must be interpreted within its methodological limitations. The indices of risk behavior relied on self-reports and may be subject to measurement error. As previously noted, we were not permitted to inquire about students' experiences with forced sex. As a result, it is possible that our measure of sexual behavior includes adolescents who did not engage in consensual sex. The presence of measurement error, if not modeled correctly, can bias parameter estimates, thereby requiring caution. Our analyses were correlational and do not permit unambiguous causal attributions. Specification errors can bias parameter estimates, and this also must be taken into account. In addition, we assessed adolescent affect with self-report measures that were fairly simplistic. Some research indicates that neurochemical measures are superior to self-report measures of emotion (Dahl, 2004). However, this assessment tool was not feasible for the present study. Despite these caveats, we believe the present research provides a useful framework for social work researchers studying adolescent risk behavior and can provide considerable insights into preventive interventions. SWR

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