

Self-Schemas and Possible Selves as Predictors and Outcomes of Risky Behaviors in Adolescents

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- ▶ **Background:** Although there is extensive evidence that the self-concept changes in many important ways during the adolescent years and that these changes influence behavioral choices, the majority of studies completed to date have been based on a static model in which the self-concept is viewed solely as an antecedent of the risky behaviors.
- ▶ **Objectives:** To investigate the pattern of relationships between three components of the self-concept—the popular, the conventional, and the deviant selves—and risky behaviors in a sample of middle adolescents during their transition from junior high to high school.
- ▶ **Methods:** A sample of 160 adolescents completed questionnaires measuring the content of their self-schemas and possible selves and involvement in four risky behaviors (tobacco and alcohol use, sexual intercourse, poor school performance) during the winter of eighth and ninth grades.
- ▶ **Results:** Popular self-schema score in the eighth grade positively predicted ninth grade risky behaviors. Risky behavior involvement in the eighth grade predicted ninth-grade deviant self-schema and possible self-scores.
- ▶ **Conclusions:** These findings suggest that the self-concept may not only play a role in the early stages of engagement in the risky behaviors but may also be one means through which the behaviors become structuralized into potentially enduring aspects of the self.
- ▶ **Key Words:** schemas • adolescents • risky behaviors

data from Johnston, O'Malley, & Bachman, 1994 cited in Sells & Blum, 1996). For many, these behaviors are exploratory, remaining within a range of intensity that has no apparent negative consequences for health (Maggs, Almeida, & Galambos, 1995; Shedler & Block, 1990). Yet for a subset of youth, adolescence is more than a period of risk-taking experimentation. Rather, it is a time of consolidation when risky behaviors begin to solidify into more enduring patterns of health. For these youth, the risky behaviors have multiple short- and long-term consequences that impact virtually every aspect of life (DiClemente, Hansen, & Ponton, 1996).

Research on risky behaviors in adolescents has tended to focus most heavily on antecedents that predict engagement in the activities (Maggs et al., 1995). To date, fewer studies have focused on the processes that contribute to stability and change in the risky behaviors over time. This trend in the research is particularly evident in studies that focus on the role of the self-concept in adolescent risky behaviors. Although there is extensive evidence that the self-concept changes in many important ways during the adolescent years and that these changes influence behavioral choices (Harter & Monsour, 1992; Orenstein, 1994; Rosenberg, 1986), the majority of studies completed to date have been based on a static model in which the self-concept is viewed solely as an antecedent of the risky behaviors. Consequently, little is currently known about the evolving relationship between the self-concept and risky behaviors and the role that this relationship plays in stability and change in adolescent risky behaviors. The purpose of this study is to investigate the pattern of relationships between three components of the self-concept—

Adolescence is widely viewed as a pivotal era in the formation of health behavior patterns and lifestyles. During this second decade of life, experimentation with health-compromising substances such as alcohol and tobacco and other risky behaviors such as precocious sexual activity are common. Studies have shown that by the senior year in high school, a majority of American adolescents have used tobacco and alcohol, and as many as 50% have tried marijuana (Shope, Copeland, & Dielman, 1994;

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the popular, the conventional, and the deviant selves—and risky behaviors in a sample of middle adolescents during their transition from junior high to high school.

Related Literature

The importance of the self-concept in understanding risky behaviors during adolescence has been widely recognized both in the theoretical and empirical literature. At least three models of the relationship between the self-concept and risky behaviors have been addressed.

By far the most extensively researched model focuses on the self-concept as an antecedent of adolescent risky behaviors. One large group of studies based on this model defines the self-concept as a single, unidimensional structure referred to as self-esteem. Self-esteem refers to the person's overall feelings of self-satisfaction (Harter, 1988b; Rosenberg, 1965, 1986). In these studies, self-esteem is conceptualized as a stable personality characteristic that directly influences engagement in risky behaviors. Studies that examined the effects of self-esteem on a variety of risky behaviors including tobacco, alcohol, and drug use and precocious sexual activity found no or only small associations between self-esteem and risky behaviors (Dielman, Campanelli, Shope, & Butchart, 1987; Maton & Zimmerman, 1992; Simmon, Sussman, Dent, Burton, & Flay, 1995; Webster, Hunter, & Keats, 1994).

A second group of studies focuses on the self-concept as a mediator between biological, social, and cultural antecedents and risky behaviors. In this work, the emphasis has shifted from the overall evaluation of oneself (i.e., self-esteem) to the specific contents of the conceptions that comprise the self-concept. The self-concept is defined as a multidimensional structure that is comprised of a collection of knowledge structures or conceptions of the self in specific content domains. Oyserman, Gant, & Ager (1995) found that both ethnic background and gender shape the contents of current and future-oriented self-conceptions in middle school adolescents and that these differences affect persistence and success in school. Irwin and Milstein (1986) argue that individual differences in biological maturation shape the contents of the emerging self-conceptions in adolescents, which in turn, impact risk perception, peer group selection, and engagement in risky behaviors.

A final but much less common approach focuses on the self-concept as a consequence of engagement in risky behaviors. Jessor (1991) conceptualizes an inadequate self-concept as one of the health-compromising outcomes stemming from the risk-taking lifestyle. In this model, biological, psychological, and sociocultural factors directly affect engagement in risky behaviors, and the engagement in the risky behaviors, in turn, shapes emerging conceptions of the self and, ultimately, contributes to the stabilization of the risky behaviors. In contrast to studies that seek to explain involvement in a single, isolated risky behavior, Jessor's model focuses on a collection of risky behaviors. Based on studies that have shown that risky behaviors are highly intercorrelated in adolescent and young adult populations (Donovan & Jessor, 1985; Donovan, Jessor, & Costa, 1988), Jessor's model focuses on a "syndrome or organized constellation of behaviors" (1984, p. 76). Fur-

thermore, this model goes beyond the antecedents of the risky behaviors to consider their consequences and the role that the consequences play in persistence of the behaviors over time.

The view that the self-concept is shaped by the engagement in risky behaviors and subsequently serves to motivate and organize future involvements is consistent with the widely held view that conceptions of the self arise, at least in part, from observations and evaluations of one's behaviors (Bandura, 1986; Bem, 1967; Cantor & Kihlstrom, 1987; Markus, 1977). Studies have shown that in noncoercive situations, people come to see themselves in ways that are consistent with their behaviors even when the new conceptions are contradictory to their existing self-view. (See Bandura, 1987; Bem, 1967, for reviews.) In addition to shaping one's own conceptions of the self, behaviors also serve to engender reactions and expectations from the social environment that further contribute to the stabilization of related self-conceptions and behavioral patterns (Caspi, Bem, & Elder, 1989; Caspi, Elder, & Bem, 1987).

The process of coming to know one's self through the observations of one's behaviors may be particularly salient during adolescence when the primary developmental task is the construction of an adult identity (Erikson, 1968). Observations of behaviors made both by the self and important others lead to the formation of generalizations about the self that provide the adolescent with a sense of knowing "what I am like," "who I am" and "where I fit in" relative to others (Higgins, Loeb, & Ruble, 1995; Orenstein, 1994). Although the self-concept has been alternatively conceptualized as both a predictor and outcome of adolescent risky behaviors, to date no studies have combined the models to explore the nature of the relationship between these variables over time. In this study, Markus' self-schema model was used as the theoretical framework to investigate the pattern of relationships between the self-concept and risky behaviors in adolescents.

Theoretical Framework

According to Markus, the self-concept is a complex, multidimensional system that is comprised of a collection of memory structures about the self referred to as self-schemas and possible selves (Markus & Wurf, 1987). Self-schemas are highly elaborated organizations of knowledge about the self in specific content domains that are stored in long-term memory. They are constructed through experience in the domain and reflect categorizations and appraisals made both by the self and others. To date, studies have documented self-schemas in a variety of domains including body weight (Markus, Hamill, & Sentis, 1987; Stein, 1997), exercise (Kendzierski, 1988), sex roles (Markus, Crane, Bernstein, & Siladi, 1982), independence (Markus, 1977), and academic performance (Garcia & Pintrich, 1994; Stein, 1994).

Self-schemas not only include declarative knowledge about who the self "is" but also procedural knowledge—action-based memories in the form of motoric skills, habits, rules, and strategies for making judgments, drawing inferences, and accomplishing goals relevant to the domain

(Cantor & Kihlstrom, 1987). Studies have shown that self-schemas influence the processing of information about the self and others (Markus, Smith, & Moreland, 1985). People are more likely to direct their attention to information that is consistent with an established self-schema, process consistent information more quickly, and recall more schema-consistent versus schema-irrelevant information (Markus, 1977). In addition, studies have shown that self-schemas influence emotional and behavioral responses in the domain. For example, Stein (1997) found that adolescent females with a "fat" self-schema had lower self-esteem and higher levels of depression and engaged in more dieting behaviors than those with a "thin" self-schema. Kendzierski (1988) found that young adults with an "exerciser" self-schema reported more strategies to help themselves exercise regularly and actually exercised more frequently than those with no self-schema articulated in the domain.

Self-schemas reflect conceptions of the self in the present (Markus, 1977). Possible selves are the future-oriented components of the self-concept. They are highly specific and well-elaborated conceptions of the self "I expect to be, wish to be, and fear being" in the future (Markus & Nurius, 1986). The motivational and regulatory functions associated with the possible selves also have important implications for the risky behavioral decisions of adolescents. Ruvolo and Markus (1992) showed that in a college-aged sample, effort and persistence on a tedious cognitive task were influenced by the possible selves activated in memory. Students who imagined themselves as successful in the future outperformed those who imagined negative outcomes. Hooker (1992) found that adults with a hoped-for health-related possible self articulated in memory engaged in more health-protecting behaviors than those with no possible self in the domain.

In this study, three self-schemas—the popular, the conventional, and the deviant schemas—and the related possible selves were selected for investigation based on previous studies that have shown the importance of these content domains in influencing adolescents' risky behavior choices (Dielman, Butchart, Shope, & Miller, 1991; Donovan, Jessor, & Costa, 1991; Kandel & Andrews, 1987; Oyserman & Markus, 1990). The popular self-schema and possible self refer to current and future-oriented conceptualizations of the self as well-liked or popular with peers (Sebal, 1981). The conventional self-schema and possible self refer to current and future-oriented conceptualizations of the self as socially valued and engaged in culturally sanctioned behaviors (Donovan & Jessor, 1985; Donovan, Jessor & Costa, 1991). Finally, the deviant self-schema and possible self refer to conceptions of the self as engaging in problem behaviors and holding values outside of the socially sanctioned norms (Costa, Jessor, Donovan, & Fortenberry, 1995; Donovan, Jessor, & Costa, 1991). This study focused on the junior high to high school transition because prior studies have shown that it is a developmen-

tal period associated with significant increases in the prevalence and rate of risky behaviors (Shope, Copeland, & Dielman, 1994; Simon, Sussman, Dent, Burton, & Flay, 1995) and important changes in the self-concept (Rosenberg, 1986).

For this study, three hypotheses were developed and tested. Based on Jessor's research on patterns of risky behaviors, it was predicted that in a sample of middle adolescents, tobacco use, alcohol use, sexual intercourse, and poor school performance will be intercorrelated forming a single risky behaviors factor. Based on self-schema theory and prior research on the self-concept and risky behaviors, it was predicted that (a) eighth-grade self-schema and possible self-scores will predict level of risky behaviors in the ninth grade and (b) eighth-grade risky behaviors will predict ninth-grade self-schema and possible self-scores.

Adolescence is a time of consolidation when risky behaviors begin to solidify into more enduring patterns of health.

Method

Subjects: Subjects were recruited from a single public junior high school in a suburban community that could be characterized as primarily working class. In this school system, junior high school extended through the 8th grade and high school included 9th through 12th grades

(total of 475 students). All students in the 8th-grade class were informed of the study and invited to participate. Of the total of 239 8th-grade students at the school, 67% ($N = 160$) received parental consent and agreed to participate.

The mean age of the sample was 13.5 ($SD = 0.60$). Thirteen percent of the sample was African American ($n = 21$), 83% of the sample was White ($n = 132$), 3% indicated other ($n = 4$), and 1% ($n = 2$) did not respond to the question about race. Fifty percent of the sample was female ($n = 80$) and 49% was male ($n = 79$). One student did not indicate gender.

Data were collected at two points in time: winter terms of the eighth and ninth grades. Of the original 160 subjects, a total of 137 (86%) completed the Time 2 measures. The mean age of the sample in the ninth grade was 14.5 ($SD = 0.60$). Twenty-three subjects were no longer enrolled in the school in the ninth grade year and, therefore, did not complete the time 2 measures. No significant differences in age, gender, race, prevalence of sexual intercourse, nor alcohol consumption were found between those who dropped out of the study and those who were retained. However, results showed that those who dropped out of the study used more tobacco, $t(22.59) = 2.17$, $p = .04$, and had lower grade point average (GPA) scores in the eighth grade, $t(22.87) = -2.45$, $p = .02$, than subjects who completed the ninth-grade measures.

Measures: Me: Now and in the Future. A questionnaire based on a format developed by Markus and Nurius (1986) was used to measure current self-schemas and possible selves. The questionnaire consists of 31 descriptors that could be true of the adolescent self both now and in the future. For each descriptor, three questions are asked: (a) How much does it describe me now? (b) Will it describe

me in the future? and (c) How likely is it that it will describe me in the future? Responses to the first and third questions were used for this study. A 5-point scale anchored by "not at all" at one end and "very much" at the other was used for both questions. Responses to the first question were used to measure the content of *current self-schemas*; whereas responses to the third question were used to measure the content of *possible selves*.

The questionnaire was constructed to measure the self-schemas and possible selves in nine content domains identified in the literature as important to the self-definition of adolescents. Principal components analysis with varimax rotation on the eighth-grade current self-schema data was used to investigate the construct validity of the measure. An accepted rule for sample size in factor analysis is 5 to 10 times the number of items (Nunnally, 1978). Therefore, the sample of 160 was minimally acceptable for analysis of the 31-item measure. Based on the scree test and the a priori domains, six- to nine-factor solutions were examined. The seven-factor solution was selected based on its conceptual clarity. The seven factors explained 53.1% of the total variance, and the eigenvalues of the factors ranged from 5.03 to 1.37. Two criteria including (a) factor loadings $> .40$ and (b) loading on a single factor were required to retain items in the scale. One item failed to meet this criteria and was deleted from the measure. The seven factors identified include the popular, conventional, deviant, body-weight and shape, job performance, affective, and dependent self-schemas.

Based on previous research on the content of the self-concept related to adolescent risky behaviors, three of the seven identified factor scales were used in this study: the deviant, conventional, and popular self-schema scales. The deviant self-schema scale includes seven items (*into drugs, drink too much alcohol, get into fights, in trouble with the police, poor student, good student, and failure*); the conventional self-schema scale consists of eight items (i.e., *pretty good at everything I do, important, loved, really into a hobby, enjoy the things I do, get along with my parents, pray often, and rich*), and the popular scale consists of two items (*popular and unpopular*). A third item, *unloved*, that loaded on the popular self-schema scale, was deleted after examining the internal consistency of the scale because the Cronbach alpha coefficient was substantially lower with this item included. Two items, *good student* and *unpopular*, were reverse coded to be consistent with the direction of the other items in their respective scales. Item scores were transformed to z scores because items within the scales had notably different variances. The alpha coefficients for the deviant, conventional, and popular self-schema scales based on the eighth-grade data were .75, .69, and .76, and based on the ninth-grade data were .73, .69, and .69.

The deviant, conventional and popular possible self-scales consisted of the same items included in their respective self-schema scales. As with the self-schema scales, the *good student* and *unpopular* items were reversed and item

scores were transformed to z scores. Cronbach alpha coefficients for the deviant, conventional, and popular possible self-scales based on eighth-grade data were .59, .77, and .60, and based on ninth-grade data were .68, .75, and .44. Although the alpha coefficients for the deviant and popular possible self are lower than traditionally considered desirable, they are consistent with the theoretical position that future-oriented conceptions of the self are less fully developed and coherent than conceptions of the self in the present (Markus & Nurius, 1986).

To further assess the construct validity of the self-schema and possible self scales, correlations between the scale scores and another well-known measure of the adolescent self-concept, the Adolescent Self-Perceptions Profile Questionnaire (ASPPQ) (Harter, 1988a), were examined. The ASPPQ is a 45-item questionnaire developed to measure judgments of personal competence in nine domains. Because feelings of competence are hypothesized to stem from underlying self-schemas and possible selves (Cantor, 1990; Cantor & Kihlstrom, 1987), moderately strong correlations between the relevant scales were expected. The behavioral conduct scale measures the degree to which one likes the way one behaves, does the right thing, and avoids getting in trouble (Harter, 1988a) and therefore was expected to be negatively correlate with the deviant self-scales. The behavioral conduct score was negatively correlated with the deviant self-schema score in both the eighth ($r(157) = -.31, p < .001$) and ninth grade ($r(136) = -.53, p < .001$) and with the deviant possible self-score in the both grades, ($r(157) = -.33, p < .001$) and ($r(136) = -.42, p < .001$). The social acceptance scale measures the degree to which the adolescent is accepted by peers and feels popular (Harter, 1988a) and was positively correlated with the popular self-schema scale scores in the eighth ($r(156) = .59, p < .001$) and ninth grades ($r(135) = .61, p < .001$) and popular possible self-scores in the eighth ($r(155) = .36, p < .001$) and ninth grades ($r(132) = .44, p < .001$). Finally, the global self-worth scale of the ASPPQ measures the extent to which the adolescent is happy with the way she is leading her life and was positively correlated with the conventional self-schema in the eighth ($r(158) = .43, p < .001$) and ninth grades ($r(136) = .49, p < .001$) and the conventional possible self scores in the eighth ($r(158) = .29, p < .001$) and ninth grades ($r(136) = .32, p < .001$). Together these results provide evidence to support the construct validity of the current self-schema and possible self-scales.

To assess the test-retest reliability of the measure, the questionnaire was also administered to a sample of 101 eighth-grade students at a public junior high school in a different but comparable community. The questionnaire was administered on two occasions approximately 2 weeks apart. The correlations between the Time 1 and Time 2 deviant, conventional, and popular current self-schema scale scores were .79, .83, and .87 and for the possible self-scales were .50, .81, and .57 (all $ps < .001$).

The self-schema and possible self-scale scores are the mean of the items included in their respective scales. Four measures of risky behaviors were also completed:

The eighth-grade popular self-schema score was predictive of ninth-grade risky behaviors.

Alcohol Use and Misuse Scale. A self-report questionnaire developed by Shope, Copeland, and Dielman (1994) was used to measure frequency and quantity of alcohol use. The measure includes separate questions for beer, wine, and hard alcohol use. Furthermore, separate questions are asked about frequency (i.e., "How often did you drink beer [wine, hard liquor] in the past 12 months?") and quantity (i.e., "When you drank beer [wine, hard liquor] during the past 12 months, how many drinks did you usually have at one time?"). Responses to the frequency items were (a) a few times a year or less, (b) about once a month, (c) about once a week, (d) 3 or 4 days a week, (e) every day. Responses to the quantity item included (a) < 1 drink, (b) 1 drink, (c) 2 drinks, (d) 3 or 4 drinks, (e) 5 or 6 drinks, and (f) 7 or more drinks. For each subject, a score reflecting the average number of drinks per week was computed by multiplying the frequency by quantity for each of the three substances and adding the scores. The midpoint was used for the response categories that included a range, and the value of 7 was used as the maximum number of drinks per time.

Studies completed by Dielman and colleagues provide evidence to support the validity and reliability of the frequency/quantity measure of alcohol use with children in Grades 6 to 12 (Campanelli, Dielman, & Shope, 1987; Shope, Copeland, & Dielman, 1994). To examine the validity of the self-report alcohol consumption score in this sample, the frequency/quantity score was correlated with two alcohol misuse subscales included in the questionnaire. The alcohol misuse scale includes 10 items designed to measure the frequency of various types of negative consequences experienced as a result of alcohol misuse during the past 12 months (Shope, Copeland, & Dielman, 1994). Two subscale scores were derived from the measure, including overindulgence (Cronbach alpha = .87 Year 1 and .89 Year 2) and trouble with peers (Cronbach alpha = .60 Year 1 and .80 Year 2). A third subscale, trouble with adults, was not used because of low Cronbach alpha coefficients (Year 1 = .15; Year 2 = .40). The positive and significant correlation coefficients between the frequency/quantity and overindulgence scores (year 1: $r = .58$; year 2: $r = .47$, $ps < .001$) and the trouble with peers scores (Year 1: $r = .48$; Year 2: $r = .41$, $ps < .001$) provide evidence to support the validity of the frequency/quantity measure.

Tobacco Use. Two questions derived from a smoking behaviors questionnaire developed by Young and Rogers (1986) were used to measure level of daily tobacco use. The first question focused on cigarette use and included seven response categories that ranged from *never smoked* to *more than two packs a day*. The second question focused on smokeless tobacco use. For this question, five response categories were provided that focused on the number of times used in a day. Responses to these two questions were combined and recoded into a 4-point scale ranging from 0 (never used) to 4 (current daily use), which was used as the measure of tobacco use.

Precocious Sexual Activity. A question based on items developed by Udry and Billy (1987) was used to measure sexual activity. Subjects were asked a yes/no question on whether they ever had sexual intercourse.

Grade Point Average (GPA). Each subject's cumulative grade point average was collected directly from school records at the end of the eighth- and ninth-grade school years. In this school system, the range of the grade point average was from 0 to 4. The GPA scores were reversed such that the higher the score, the greater the distance from a perfect 4.0 GPA.

Procedures: A letter explaining the study and a parental consent form were mailed to the home of each eighth grader in the school. Those adolescents who received parental consent were invited to participate. The questionnaires were completed during two data collection sessions. In the first session, the subject met individually with an interviewer in a private room. After completing the assent form, subjects completed the *Me: Now and in the Future* questionnaire. The second session, which occurred approximately 3 weeks later, was a group administration of a booklet of written questionnaires. The measures of alcohol use/misuse, tobacco use, sexual activity, and the ASPPQ were included in the booklet. Directions for the questionnaires were read aloud and subjects were carefully monitored as they completed the measures. Interviewers were sophomore and junior level undergraduate students who were taught basic interviewing skills and the use of the questionnaires in the training sessions that lasted approximately 20 hours.

Results

Prevalence of the Risky Behaviors: The prevalence rates of each of the behaviors increased during the transition from eighth to ninth grades. The largest increase was in the number of subjects who reported drinking an average of more than one drink per week. In the eighth grade, 6.1% of the sample ($n = 8$) reported drinking on the average more than one drink per week, whereas in the ninth grade, 20.5% ($n = 27$) reported drinking at that level. The mean number of drinks per week reported by the adolescents in the eighth grade was 0.77 ($SD = 3.23$, median = 0.03, range = 0 to 25.6) and in the ninth grade was 2.60 ($SD = 8.47$, median = 0.09, range = 0 to 80.6). The most common risky behavior in both the eighth and ninth grades was sexual intercourse with 24.6% ($n = 29$) reporting sexual intercourse in the eighth grade and 29.7% ($n = 35$) in the ninth grade. Tobacco use was the least prevalent of the four risky behaviors addressed in this study with 7.3% ($n = 9$) reporting use in the eighth grade and 16.1% ($n = 20$) reporting use in the ninth grade. In the eighth grade, no subjects reported current use of smokeless tobacco; 6 subjects reported smoking cigarettes "now and then but not everyday"; and 1 subject reported smoking less than a half a pack a day. In the ninth grade, 1 subject reported using smokeless tobacco 1 to 5 times daily; 5 subjects reported smoking cigarettes "now and then but not everyday"; and 7 subjects reported smoking less than a half a pack a day. Finally, the number of subjects with a GPA of C- (1.667) or below almost doubled across the eighth to ninth grade transition from 11.1% ($n = 15$) to 20.7% ($n = 28$). The mean eighth grade GPA was 2.66 ($SD = 0.72$) and the ninth grade mean was 2.41 ($SD = 0.85$).

Data of one male subject was dropped from all subsequent analyses because he was an extreme outlier on the

ninth-grade alcohol score (score was 80.6 drinks/week, which was more than 9 *SD* from the mean). Because the distributions of alcohol and tobacco scores were skewed, a square root transformation of the variables was completed. To standardize the unit of measurement across the diverse risky behavior measures, the four scores were converted to *z* scores.

Structure of the Risky Behaviors: Previous research has shown that adolescent risky behaviors are highly correlated (Donovan et al., 1988). As the first step in exploring the structure of the risky behaviors in this sample, the zero-order correlation coefficients were examined. Within both the eighth- and ninth-grade years, the four risky behaviors were positively and significantly correlated (Pearson's *r* ranged from .20 to .51; *p* < .01).

To further explore the structure of risky behaviors in this sample, a principal components factor analysis and an analysis of the internal consistency of the behaviors were completed. Results of the factor analyses demonstrated that a single factor solution accounted for 51% of the variance in the variables in the eighth grade and 54% in the ninth grade. As can be seen on Table 1, all behaviors loaded positively and strongly on the single factor for both the eighth and ninth grades. Furthermore, the Cronbach's alpha coefficient for the eighth-grade behavior scores was 0.68 and 0.71 for the ninth grade.

Predictors of Ninth Grade Risky Behaviors: Multiple regression analyses were conducted to examine the effects of the self-schemas and possible selves on risky behaviors. For these analyses, the dependent variable was the mean of the *z* scores for the four risky behaviors. Intercorrelations among the independent variables were examined and no evidence of multicollinearity was found. Table 2 shows the Pearson correlation coefficients between the self-schema and possible self-scores and the risky behaviors scores for the eighth and ninth grades. All the self-schema and possible self-scores were significantly related to the risky behaviors in the eighth grade. In the ninth grade, all scores except the conventional possible self-score were significantly related to the risky behaviors.

In the first regression analysis, the eighth-grade popular self-schema and possible self-scores were used to predict ninth grade risky behaviors. Gender (coded 0 for males and 1 for females) and eighth-grade risky behaviors score were

TABLE 1. Results of Principal Components Factor Analyses for the Four Risk Behaviors in the 8th and 9th Grades

Behaviors	Factor Loadings	
	8th Grade	9th Grade
Alcohol use	.71	.75
Tobacco use	.79	.78
Sexual intercourse	.65	.72
Grade point average	.70	.68

TABLE 2. Correlation Coefficients Between the Self-Schema and Possible Self-Scores and Risky Behaviors Scores

	8th Grade	9th Grade
	(<i>n</i> = 160)	(<i>n</i> = 137)
Popular self-schema	.22**	.32**
Possible self	.23**	.25**
Conventional self-schema	-.29**	-.16*
Possible self	-.18*	-.11
Deviant self-schema	.66**	.61**
Possible self	.38**	.46**

p* < .05. *p* < .01 one-tailed.

included in the model to control for their effects on the dependent variable. Results of the analysis are shown in Table 3. Together the four independent variables accounted for 52% of the variance in the ninth-grade risky behaviors score. Not surprisingly, the eighth-grade risky behaviors score was the strongest predictor of the ninth grade score suggesting that there is considerable stability in the level of risky behaviors across the junior high to high school transition. However, both gender and the eighth-grade popular self-schema score were significant predictors of ninth-grade risky behavior scores controlling for the effects of other independent variables. Results showed that being female and having a high popular self-schema score predicted increases in risky behaviors across the developmental transition.

Predictors of Ninth Grade Self-Schema and Possible Selves Scores: The next set of multiple regression analyses were completed to examine the effects of eighth-grade risky behaviors on ninth-grade self-schema and possible self-scores. The popular, conventional, and deviant self-schema and possible self-scores each served as a dependent variable in a separate regression analysis. The relevant eighth-grade self-schema or possible self-score and gender were included in the model to control for their effects. Table 4 shows the results of these analyses. As can be seen, the amount of variance in the ninth-grade popular and conventional self-schema and possible self-scores accounted for by the independent variables ranged between 30% and 42%. In each model, only the eighth-grade self-score was a significant predictor.

However, for the deviant self-schema and possible self, a different picture emerged. Although the eighth-grade deviant self-schema score was a significant predictor of the ninth-grade score, results showed that both gender and the eighth-grade risky behaviors score were significant predictors controlling for the effects of the other independent variables. Results showed that being female and having a higher risky behaviors score in the eighth grade predicted increases in the deviant self-schema score in the ninth grade. Finally, for the ninth-grade deviant possible self-score, only the eighth-grade risky behaviors score was a significant predictor accounting for 12% of the variance.

TABLE 3. Multiple Regression Analysis Predicting 9th-Grade Risky Behaviors Score With 8th-Grade Risky Behaviors Score, Gender and 8th-Grade Self-Schema, and Possible Self-Scores

Predictor Variables	beta	Partial Correlation	F	p
Model 1				
8th-grade risky behavior	.61	.59	87.06	.0001
Gender	.19	.18	8.47	.004
8th-grade popular self-schema	.21	.17	7.31	.008
8th-grade popular possible self	.04	.03	.20	.66
Multiple $R = .72$; $R^2 = .52$; $F = 33.27$; $p < .0001$.				
Model 2				
8th-grade risky behavior	.67	.66	103.79	.0001
Gender	.19	.19	8.29	.005
8th-grade conventional self-schema	.04	.02	.14	.71
8th-grade conventional possible self	.10	.06	.99	.32
Multiple $R = .70$; $R^2 = .49$; $F = 29.59$; $p < .0001$.				
Model 3				
8th-grade risky behavior	.70	.59	83.02	.0001
Gender	.17	.17	6.59	.01
8th-grade deviant self-schema	-.05	-.04	.40	.53
8th-grade deviant possible self	-.03	-.02	.13	.72
Multiple $R = .69$; $R^2 = .48$; $F = 28.28$; $p < .0001$.				

Gender Differences in the Models: Previous research that has examined the relationship between conventional and deviant attitudes and risky behaviors has failed to find gender differences (Costa, Jessor, Donovan, & Fortenberry, 1995; Donovan, Jessor, & Costa, 1991). However, as a final step in the data analysis, we examined whether the explanatory models between the self-schemas, possible selves, and risky behaviors were similar for females and males by completing the regression analyses with the appropriate gender interaction terms included. Across all of the models, a total of five significant interaction effects were found. First, the popular self-schema \times gender interaction effect was a significant predictor of the ninth-grade risky behavior score, (Beta = .26, $p = .009$), accounting for an additional 2.7% of the variance in the ninth-grade risky behaviors score. Second, the gender \times risky behaviors interaction effect was a significant predictor of the ninth grade deviant self-schema score (Beta = -.24, $p = .04$) accounting for 2% of the variance in the dependent variable. For both models, the predictors made an additional contribution for females. Third, the gender \times risky behaviors interaction effect was a significant predictor of the ninth grade popular self-schema score (Beta = -.28, $p = .02$) accounting for 2.6% of the variance in the dependent variable. For this model, the predictor variable made an additional contribution for the males. Finally, the conventional self-schema \times gender interaction and the conventional possible self \times gender interaction effects were significant predictors of the ninth-grade risky behaviors score. The

addition of the conventional self-schema \times gender interaction effect to the model accounted for an additional 2.7% of the variance in the ninth-grade risky behaviors score (Beta = .23, $p = .01$), whereas the conventional possible self \times gender interaction term accounted for an additional 3.2% of the variance (Beta = .26, $p = .005$).

Discussion

The profile of risky behaviors in this sample of adolescents was consistent with that found in other adolescent samples. Within our sample of eighth-grade adolescents, the prevalence of the individual risky behaviors of tobacco use, alcohol use, precocious sexual intercourse, and poor school performance was similar to that found in other population based studies (see Sells & Blum, 1996, for a review). Furthermore, as expected, the prevalence of the behaviors increased across the developmental transition from junior high to high school.

As predicted, the four risky behaviors addressed in this study are not independently occurring but are highly inter-correlated. These findings support Jessor's model in which adolescent risky behaviors are conceptualized as an organized syndrome (Donovan & Jessor, 1985; Donovan, Jessor, & Costa, 1988) or lifestyle pattern (Elliot, 1994).

Consistent with the theoretical predictions, the results of this study offer evidence to suggest that the relationship between the self-concept and risky behaviors during adolescence is bi-directional. For the adolescents in this study,

TABLE 4. Multiple Regression Analysis Predicting 9th-Grade Self-Schema and Possible Self-Scores With 8th-Grade Self-Schema and Possible Self-Scores, Gender, and 8th-Grade Risky Behaviors Scores

Predictor Variables	beta	Partial Correlation	F	p
9th-grade popular self-schema				
8th-grade popular self-schema	.62	.61	79.39	.0001
Gender	.02	.02	.09	.77
8th-grade risky behaviors	.12	.12	3.05	.08
Multiple $R = .65$; $R^2 = .42$; $F = 30.68$; $p < .0001$.				
9th-grade popular possible self				
8th-grade popular possible self	.56	.52	47.95	.0001
Gender	.02	.02	.08	.78
8th-grade risky behaviors	.03	.03	.11	.74
Multiple $R = .56$; $R^2 = .32$; $F = 18.72$; $p < .0001$.				
9th-grade conventional self-schema				
8th-grade conventional self-schema	.52	.50	47.03	.0001
Gender	-.03	-.03	.16	.69
8th-grade risky behaviors	-.13	-.13	3.02	.09
Multiple $R = .57$; $R^2 = .33$; $F = 20.63$; $p < .0001$.				
9th-grade conventional possible self				
8th-grade conventional possible self	.54	.53	49.75	.0001
Gender	.13	.12	2.74	.10
8th-grade risky behaviors	-.14	-.13	3.24	.07
Multiple $R = .55$; $R^2 = .30$; $F = 18.25$; $p < .0001$.				
9th-grade deviant self-schema				
8th-grade deviant self-schema	.41	.34	24.17	.0001
Gender	.16	.15	5.04	.03
8th-grade risky behaviors	.26	.21	9.61	.002
Multiple $R = .64$; $R^2 = .40$; $F = 28.49$; $p < .0001$.				
9th-grade deviant possible self				
8th-grade deviant possible self	.09	.08	1.00	.32
Gender	.14	.14	2.86	.09
8th-grade risky behaviors	.27	.26	9.77	.002
Multiple $R = .35$; $R^2 = .12$; $F = 5.93$; $p < .0008$.				

a current conception of the self as socially popular predicted engagement in the constellation of risky behaviors, whereas engagement in risky behaviors themselves contributed to the conceptualization of the self as currently deviant and expectations that one will be deviant in the future. When taken together, these findings suggest that the self-concept, when defined as a collection of self-schemas and possible selves, may not only play a role in the early stages of engagement in the risky behaviors. Rather it may also, as Jessor (1991) has suggested, be one means through which the behaviors become structuralized into a potentially enduring aspect of the self.

Already by the ninth-grade significant stability was observed in the adolescents' engagement in the constella-

tion of risky behaviors. Yet results of the regression analyses show that the eighth-grade popular self-schema score was predictive of ninth-grade risky behaviors even after the behavioral stability was taken into account. Unexpectedly, the data showed that this effect was stronger for the females. No other element of the eighth-grade self-concept including the conventional and deviant self-schemas and possible selves were significant predictors of the ninth-grade risky behaviors. Although speculative, one plausible explanation for these results is that conceptions of the self as popular in the eighth grade, particularly in the eighth-grade females, stem from involvement in a peer group of older high-school-aged adolescents in which precocious or risky behaviors are sanctioned or viewed as the norm.

Although acceptance by the older adolescents may contribute to the conceptualization of oneself as popular, involvement in the older peer group may also directly shape behavior by providing role models, expectations, and norms (Dielman, et. al., 1990-91; Hawkins, Catalano, & Miller, 1992; Kandel & Andrews, 1987). Rather than an expression of underlying conceptions of the self as deviant or otherwise defective, engaging in the risky behaviors at this stage of development may flow naturally, with little self-reflective thought, from the group's collective vision of the "way to be" (Stein, Markus, & Roeser, 1997).

The third major finding of this study is that risky behaviors influenced the contents of the adolescent's current and future-oriented selves. Results of the second set of regression analyses demonstrated that level of engagement in risky behaviors in the eighth-grade positively predicted the deviant self-schema score in the ninth grade. This effect was also significantly stronger for the females. In addition, the level of engagement in risky behaviors in the eighth grade also positively predicted the ninth-grade deviant possible self-scores. Finally, results showed that the level of engagement in risky behaviors in the eighth grade predicted ninth-grade popular self-schema scores for the males. These findings are consistent with the view that engaging in risky behaviors affects the content of the adolescent's emerging self-definition and, in doing so, holds the potential for becoming an integrated and enduring component of the self-concept.

According to schema theory, the self-schemas and possible selves include procedural knowledge that leads to organized and predictable behavior within the domain (Markus & Wurf, 1987). Self-schemas are gradually constructed through repeated experiences within the domain and once established include readily available, stable, and often automatic plans of action and behavioral routines (Cantor, 1990; Greenwald & Pratkanis, 1984; Markus, 1977). The positive strong correlations between the deviant self-schema and possible self and the risky behaviors scores in both the eighth and ninth grades are consistent with the theoretical prediction and suggest that within a given interval of time, the behaviors and deviant self-conceptions are closely linked. However, the lack of significant association across the junior to senior high transition suggests that the deviant self-conceptions may be still formative and lacking the stability and automaticity that would enable them to motivate behavior across a full year (Higgins, Loeb, and Ruble, 1995). This perspective is further supported by the Beta coefficients from the regression models predicting ninth-grade deviant self-conceptions from the eighth-grade scores. For the deviant self-schema, the Beta coefficient was significant but smaller than those observed for the other elements of the self including the conventional and popular self-schemas. In addition, the eighth-grade deviant possible self score was not a significant predictor of the ninth grade score. These findings suggest that the conceptions of the self as deviant are beginning to consolidate into enduring aspects of identity but have not yet become highly stable cognitions that solidly anchor behavior across longer intervals of time.

Previous studies of individual risky behaviors have shown that females experience greater increases in tobacco

and alcohol use across the eighth- to ninth-grade transition than males (Duncan, Duncan, & Hops, 1994; Young & Rogers, 1986). Studies on the developmental trajectory of alcohol use behavior have shown that males experience the greatest increase in drinking behaviors during their junior high school years (i.e., seventh to eighth grades), whereas for females, the transition from junior high to high school is associated with the greatest increase in drinking behaviors (Donovan & Jessor, 1978; Duncan et al., 1994). Consistent with these findings, the results of this study showed that females experienced greater increases in level of risky behaviors across the eighth- to ninth-grade transition and reported greater increases in their definition of themselves as currently deviant than the males. In addition, the results unexpectedly showed that the relationships between the eighth-grade popular self-schema and ninth-grade risky behaviors and eighth-grade risky behaviors and ninth-grade deviant self-schema were stronger for the females than the males. These results, when considered together, raise the possibility that the developmental trajectory for susceptibility to peer pressure varies for adolescent males and females. Recently, Higgins, Loeb, and Ruble (1995) posited that the period from junior high to high school is an important social transition that is associated with changes in behavioral regulatory processes and informational exposure. According to this theoretical perspective, as adolescents move from junior high to high school, the guides for behavior shift from parental expectations to peer values and ideals requiring adjustments in behavioral patterns and accommodations in established ways of thinking. The findings of this study offer preliminary evidence to suggest that the junior high to high school transition may be a period of greatest vulnerability for adolescent females—a period of time when parental expectations are viewed as less compelling guides for behaviors and the acceptance of peer group norms and values leads to increases in risky behaviors and concomitant changes in the definition of the self. The findings of this study raise important questions about gender differences in the self-concept and risky behaviors that occur at this developmental transition and point to the need for continued research.

The limitations of this study include the nonrepresentativeness of the sample and the nonequivalence in tobacco use and GPA between subjects who were retained in the study and those who dropped out after the first year. Replications with more diverse and at-risk adolescent samples are needed before the results can confidently be translated into specific clinical recommendations. Furthermore, longitudinal studies that track the evolution of risky behaviors and their relations to self-concept through the high school and even young adult years are needed.

In summary, the findings of this study suggest that the self-concept may not only play a role in the early stages of engagement in the risky behaviors but also may be one means through which the behaviors become structuralized into potentially enduring aspects of the self. Although additional research is needed, the findings raise important questions about the appropriate foci for clinical interventions. Rather than focusing exclusively on changing established components of the self-concept as the means to

change risky behaviors, the findings of this study raise the possibility that interventions designed to limit repeated enactment of the behaviors may impede the elaboration of the deviant self-schema and possible self and may prevent stabilization into enduring patterns of behavior. ▼

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